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## **U.S. RAILWAY ASSOCIATION**



### **PRELIMINARY SYSTEM PLAN**

**Identification of Necessary Rail Services  
in the Midwest and Northeast Regions,  
and Proposed Restructuring,  
Rehabilitation and Modernization**

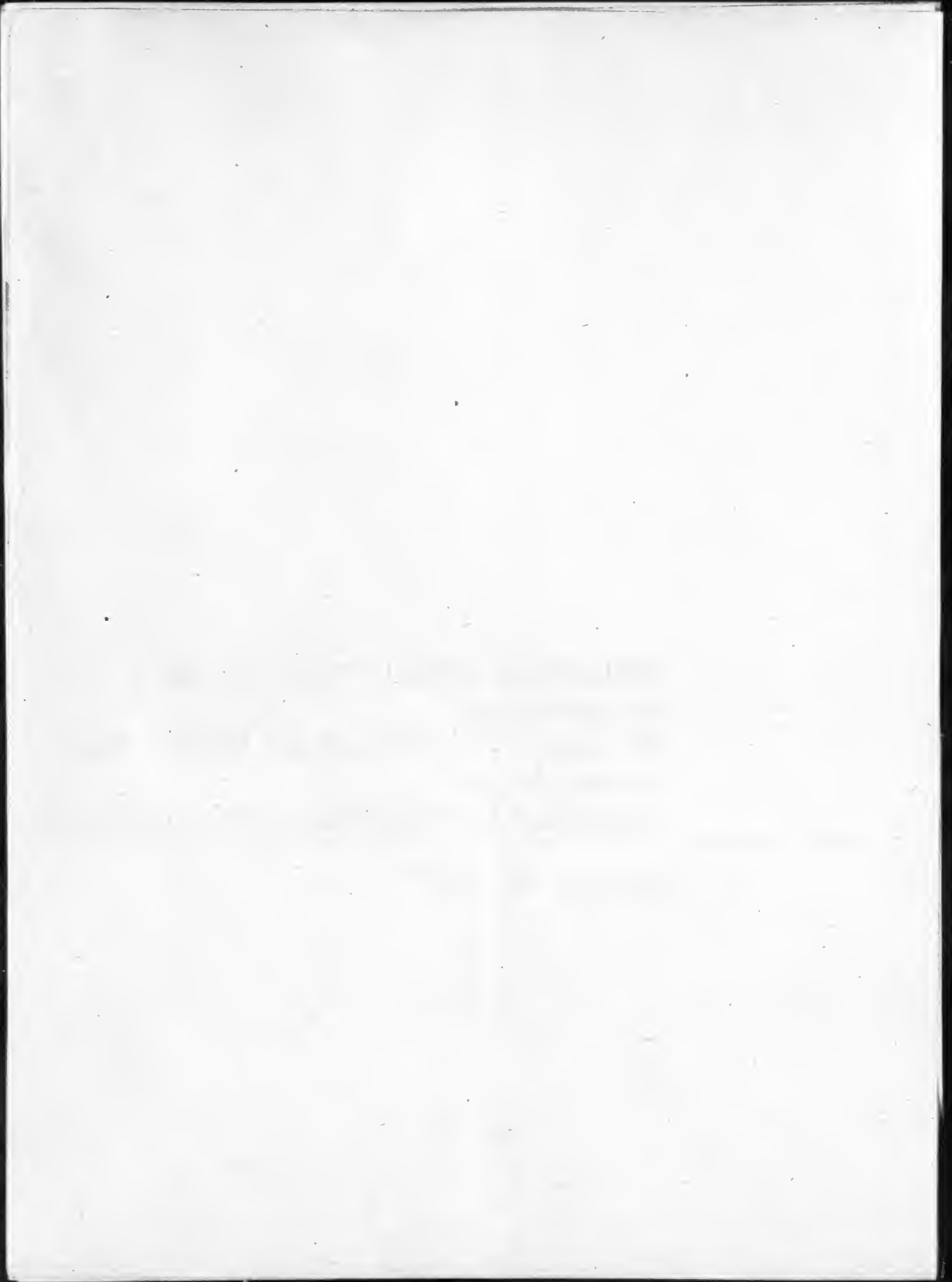




PRELIMINARY SYSTEM PLAN, VOLUME I  
for restructuring  
Railroads in the Northeast and Midwest Region  
pursuant to the  
REGIONAL RAIL REORGANIZATION ACT OF 1973

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February 26, 1975



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FOREWORD by ARTHUR D. LEWIS

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**margin to trim****UNITED STATES RAILWAY ASSOCIATION****BOARD OF DIRECTORS**

The approval, adoption and release of this Preliminary System Plan is an act of the Association's entire Board. In joining in this unanimous act, not every member of the Board necessarily concurs in every statement or determination in the report.

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## Foreword

On January 2, 1974 the Regional Rail Reorganization Act of 1973 (the Act) became law. It was passed in response to a threat to the Nation's transportation system posed by the bankruptcy of eight railroads in the Northeast and Midwest, including the Nation's largest transportation company, the Penn Central Transportation Company. The Act reflected a growing conviction that the ordinary processes of individual railroad reorganizations under Section 77 of the Bankruptcy Act were inadequate to assure a continuing rail system in the Northeast and Midwest region (the Region). The Penn Central bankruptcy occurred in June 1970, just two years after the merger of the Pennsylvania and New York Central railroads. Other bankrupt carriers are the Ann Arbor, Erie Lackawanna, Boston & Maine, Central of New Jersey, Lehigh Valley, Reading and the Lehigh & Hudson River.

It was the Penn Central's collapse which focused the Nation's attention on the Northeast rail situation. Penn Central alone employed over 90,000 people and operated some 20,000 miles of railroad covering 16 states, the District of Columbia and two Canadian provinces. Included in the Penn Central's territory are 55 percent of the Nation's manufacturing plants and 60 percent of its manufacturing employees. An integral part of the Nation's transportation system, the Penn Central handles more than 20 percent of all the freight cars loaded in the United States. Over 70 percent of its traffic interchanges with other railroads. It is the Nation's leading carrier for the transportation of automobiles, chemicals, metals, coal and manufactured consumer products. Moreover, the eight bankrupt carriers employed almost 120,000 persons, a quarter of all rail employees in the United States.

Most of the Region's railroad bankruptcies differ from earlier railroad insolvencies in one essential respect. Until the 1960's railroad bankruptcies typically were the result of an inability of the railroads to carry debt costs. There were multiple reasons for such financial difficulties, but the point is that reorganization of the debt structure of the bankrupt railroads was adequate to reestablish an ongoing corporate structure and insure continuing rail service. The causes of the present railroad bankruptcies are more complex and the consequences more severe. The bankrupt roads today are unable to pay taxes or cover operating expenses in spite of the fact that they often drastically curtailed maintenance

of their physical plant. This deferred maintenance expense results in even further revenue loss and increased operating expenses. The problems of Penn Central and other bankrupt railroads require more than traditional reorganization procedures.

The reasons underlying the current financial difficulties of the Region's carriers are discussed at some length in the body of this report. Essentially, the current bankruptcies are the result of fundamental forces affecting profitability of the entire rail industry—forces which have had their greatest adverse impact in the Northeast and Midwest Region. It is generally agreed that management had some responsibility for the failure of the Penn Central. But to put the primary responsibility on management would wrongly conceal the underlying problem. It would mask the need to deal with the broader issues which will adversely affect the long-term financial condition of the industry as a whole, including ConRail and the restructured eastern roads envisioned by the Act. A Senate Commerce Committee special staff report prepared in 1972 stated that:

"While a study of the Penn Central results in a strong indictment of its management, it would be a mistake to end the examination with the conclusion that management failures were the principal reasons for the railroad's downfall . . . (T)he environmental circumstances (economic and competitive) surrounding the Pennsylvania Railroad, the New York Central Railroad, and the Penn Central Railroad were so burdensome that it is not easy, nor perhaps valid, to conclude that a different management would have prevented the collapse of the Penn Central. . . ."<sup>1</sup>

During the first 3 years of the Penn Central bankruptcy, it was believed that the carrier's financial problems could be overcome within the existing framework of Section 77 of the Bankruptcy Act. Early in 1973, however, the Penn Central trustees reported to their reorganization court that substantial governmental assistance would be needed to upgrade Penn Central's plant and equipment so as to permit obtaining the increased traffic necessary for a successful Section 77 reorganization. This amount later was estimated at between \$600 and \$800 million.

Congress responded to the bleak Penn Central situation by passing a joint resolution in February 1973 directing the Secretary of Transportation to submit, within 45 days, a "report which . . . provides a full and

<sup>1</sup> U.S. Congress, Senate, Committee on Commerce. *The Penn Central and Other Railroads*. Committee Print, 92d Cong., 2d sess., 1972, p. 135.



comprehensive plan for the preservation of essential rail transportation services of the Northeast. . . ." Before such a report could be drafted, the presiding judge in the bankruptcy proceeding, Judge Fullam, issued an Order on March 6, 1973 expressing his concern that continued operation of the Penn Central would violate the Fifth Amendment rights of creditors. This Order directed the Penn Central trustees to file either a plan of reorganization or a proposal for liquidating the railroad.

Faced with a possible liquidation of the Penn Central, Congress undertook the extensive deliberations which led to the passage of a new reorganization act tailored to the needs of the bankrupt carriers.

The Regional Rail Reorganization Act of 1973 is what its name specifically implies. It shortens the normal bankruptcy process by giving special powers and responsibilities to the United States Railway Association (USRA), to the Rail Services Planning Office (RSPO) of the Interstate Commerce Commission (which it created), to the Secretary of Transportation and to the newly created Special Court. These powers are in addition to those available to a normal Section 77 Bankruptcy Court, and indeed the purposes of the Act are considerably broader than those of previous bankruptcy statutes. A basic goal of the Act is to take the several bankrupt railroads found to be incapable of individual reorganization under Section 77 and reorganizing and consolidating their essential rail properties into a financially self-sustaining rail company. In turn, securities of the new company and other benefits are to be provided to creditors of the bankrupt railroads, in exchange for those rail properties designated for use in continued rail service under the reorganization plan. A successful reorganization requires creation of an ongoing rail company with earning ability (combined with other benefits available under the Act) sufficient to underwrite the securities of the new company and hence to compensate the creditors adequately for properties transferred to the planned system. The transfer of designated property is mandatory following acceptance of the Association's Final System Plan by Congress.

The claimants of the Penn Central already have tested the constitutionality of the Act. They contended that the ultimate value of the stock or securities of ConRail would not be equal to the "constitutional minimum" value of their property. Following an expedited appeal schedule, the Supreme Court of the United States upheld the constitutionality of the Act. The Court held, in effect, that should the securities and benefits of the Act be inadequate, the creditors could then bring an action against the United States government in the Court of Claims for any deficiencies. In addition, the Special Court established by the Act has found that the Act, in conjunction with a Court of Claims remedy, provides a

"fair and equitable" process for compensating the creditors.

The Act provides for many imaginative and innovative solutions in the effort to avoid the catastrophe that would result from cessation of most of the railroad operations in the Northeast. These provisions include reduction of the delays and uncertainties characteristic of Section 77 proceedings, mergers and discontinuances of uneconomic rail service. The Act also provides governmental assistance in meeting labor protection costs. Most important, it provides funds for rehabilitation and modernization of neglected physical plant and subsidy of rail lines which generate too little traffic to warrant continuation with purely private financial backing. The Act also provides subsidies to continue operation of the bankrupt carriers during the planning process until a successor operation could take over.

At the time of the Act's passage, railroad bankruptcies were geographically limited. The Act applied, therefore, only to railroads in reorganization under Section 77 of the Bankruptcy Act in a region that can be generally described as the Northeastern United States—from the Canadian border on the North to Virginia, West Virginia and the Ohio River on the South; from the Atlantic Ocean on the East to Michigan and Illinois on the West.

Three new entities were provided for by the legislation. First, there is the United States Railway Association, which has the duty to develop a "Final System Plan" providing for the reorganization of rail services and the disposition of rail properties of the bankrupt railroads. It is authorized to issue obligations totaling not more than \$1.65 billion to be used for making loans to assist in carrying out the Act.

Second, the Act established a Rail Services Planning Office in the ICC to evaluate the reports of the Secretary of Transportation and USRA, to assist communities and users of rail service which might not otherwise be adequately represented in the evaluation process, to publish standards for various costing and subsidy calculations, and to assist States and other agencies in determining whether to provide rail service continuation subsidies.

Third, the Act provides for the creation of a new for-profit corporation, Consolidated Rail Corporation (ConRail), to acquire and operate the rail properties conveyed to it under the "Final System Plan."

A timetable for accomplishing specific tasks is set forth in the Act, and the Association is required to devise a Preliminary System Plan by February 26, 1975. This report contains that Plan.

On January 9, 1975, trustees of the Erie Lackawanna Railroad, a railroad in reorganization, made known to the Association their desire to be included in the reorganization planning process. This report reflects inclusion of the Erie Lackawanna, but in certain key areas it has been impossible to include the full impact of such a

change in the planning process. In the interim between issuance of the Preliminary and Final System Plans, a supplemental report on certain specific elements such as an analysis of Erie Lackawanna branch lines will be issued for public comment.

The financial projections included in this report are predicated on a continuation of the level of traffic, revenues and expenses the industry has experienced in the last 2 years. The Association has tried to assemble the best available data and has commissioned reputable outside experts to aid in the presentation of forecasts of traffic and inflation factors.

It is impossible to determine at this time the extent and duration of the current business recession. The recession will have significant direct effects on ConRail operations and financial performance in its initial years. These distortions cannot be reflected fully in USRA's present estimates of ConRail's financial performance.

The Association believes that with a proper expenditure of funds, a good management, more flexibility in pricing its services and relief from debilitating losses from unprofitable branch lines and passenger services conducted for Amtrak and local communities, we can forecast a profit for ConRail that would be about equal to the average rate of profitability for the major solvent railroads in the Nation. Even these carriers, however, earn only a marginal return on the investment required and the gross volume of business conducted; ConRail can do no better.

Whether this result can be brought about, however, will depend on many factors outside the planning process. As one studies the Association's Preliminary System Plan, it will become evident that there are no simple solutions in revitalizing the bankrupt railroads. The economics of the industry cannot be changed overnight. Recessions such as the one we are now experiencing can ruin the rail system while periods of economic expansion have done no more than permit realization of a very modest profit for the industry as a whole.

The Association can only plan a system and recommend methods of financial assistance. Others will have to share in the creation of an environment favorable to an economically viable rail system for the Nation. The industry itself collectively must do those things which bring about a major improvement in utilization of cars, facilities and equipment. Future profitability of the industry also will depend in part on increases in productivity of people; organized rail labor must find a way to contribute to that increased productivity. Existing relationships of the Region's railroads to their customers and to the government will have to be altered. Shippers and passengers will have to bear a larger share of the costs of providing rail services. A small number of communities and shippers will have to be prepared to forego rail service where the provision of such service is no longer economical and subsidy funds are not forth-

coming. In general, a vigorous effort must continue to identify those transport markets which rail serves best and to adopt rail service and operations to such optimal economic functions.

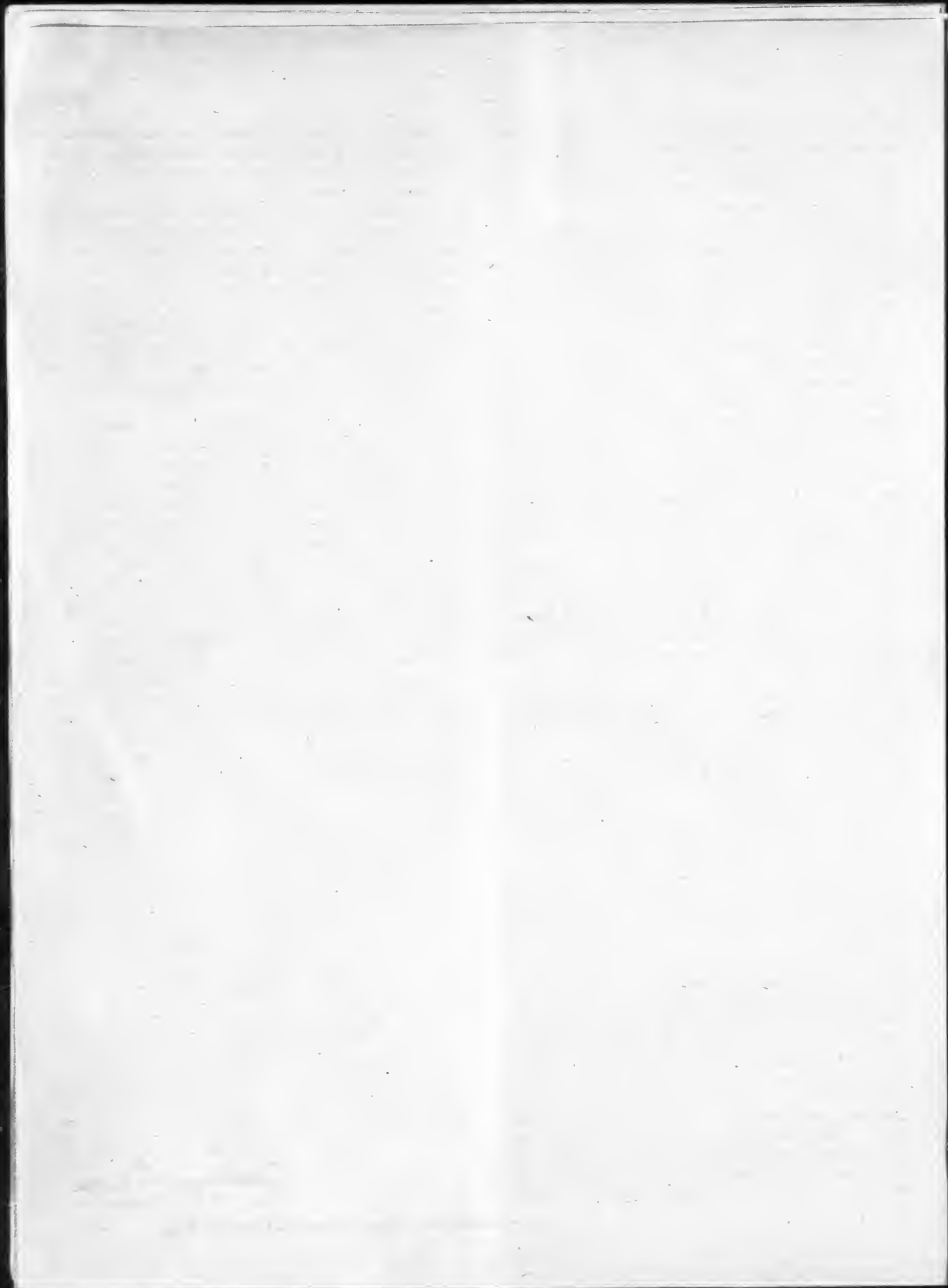
In addition to the individual and local responsibility described above, federal, state and local governments must be prepared to change their policies toward transportation. Ultimately, economic viability for all transportation is a function of a realistic recognition of the necessity for the industry, and those who use it, to pay its costs and permit it to obtain a reasonable profit. If fundamental changes are not made in these factors, and those enumerated above, an alternative is nationalization, a solution no more desirable now than it has been in the past.

The Regional Rail Reorganization Act contemplated that this report and the plan which it describes would be "preliminary", and the Association wishes to stress the aptness of that description. The February 26 statutory deadline has given the Association less than eight months from the date the Board of Directors took office to conduct a transportation planning effort of unprecedented complexity. During the period between the release of this report and the completion of the Final System Plan, USRA will continue the collection and refinement of relevant data and will develop more fully aspects of the rail services plan which now are tentative. Within the next 60 days, the RSPO is to hold public hearings on the Plan and send to the Association an evaluation of public testimony as well as its own evaluation of the Preliminary System Plan. At the same time, the ICC will consider whether proposed acquisitions by solvent carriers meet the requirements of Section 5 of the Interstate Commerce Act. The Final System Plan is to be adopted by the Executive Committee of the Association's Board of Directors not later than June 26 and presented to the entire Board for its approval. On that same date the Final System Plan will be forwarded to the Interstate Commerce Commission. By July 26, 1975 the Plan is to be submitted to Congress for its consideration. The Association will not hesitate to revise or amplify what is being presented in this report should additional analysis or improved data point to new or better ways of providing adequate rail transportation service to the Region in keeping with the mandate of the Act.

This Preliminary System Plan raises many issues for public debate and offers recommendations for many but not all of the significant questions that are posed. The public discussion to follow publication of the Plan will aid in developing the Association's recommendation in the Final System Plan.

For the Board of Directors

*Arthur D. Lewis*  
ARTHUR D. LEWIS, *Chairman*





**VOLUME I — PART 1**  
**Background and Summary**

VOLUME I - PART I

1900-1901

# 1

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## The Economic Decline of the Railroad Industry

*Essential to an understanding of the United States Railway Association's Preliminary System Plan is an appreciation of the economic history of the rail industry. The railroads played a key role in the rapid expansion and development of this country during the 19th and early 20th centuries. Over the last 50 years, however, a far different picture has evolved.*

*Since 1947, the railroad industry has experienced an 80 percent decline in passenger revenue miles. During the same period, freight revenue ton-miles increased by only 30 percent, as opposed to an increase in the gross national product of 170 percent. As competing technologies matured and public policy accommodating those technologies came into being, the railroad industry in the Northeast and Midwest Region was unable to respond fully to changing economic trends.*

*There is no single cause of the bankruptcies in the Region and, therefore, no single remedy. But problems which have beset the rail industry in general are uniquely combined in the Region. Each factor contributing to the current state of rail service must be addressed satisfactorily*

*if the industry is to be restored to a competitive, constructive position and provide the nation with safe and efficient service.*

*Chapter 1 explores those major economic factors affecting the rail industry's decline, particularly in the Region. Appendix B, a supplement to this Chapter, details the current financial condition of the industry.*

The nation's railroads were the marvel of an earlier day. Rail technology opened the West, giving access to millions of acres of wilderness. The national rail system grew from 767 miles of rail along the Atlantic seaboard in 1835 to a 254,000 mile intercontinental network at its peak in 1916. The rail construction era was finished for the seaboard states by 1900 and soon afterward for the remainder of the Northeast states.

Much of the rail plant was constructed to meet local needs rather than to serve regional or national transport functions. Coordination of rail lines was minimal and, as a result, the present network is not the most efficient system that could have been designed. The rail system today retains much of its early duplication and complex ownership.

Railroads were the first of the modern transportation technologies to develop. In the absence of a competing technology, the rail system of the 19th Century provided a comprehensive array of transportation services, including both freight and passenger services. Railroads provided the only way to develop an area intensively either for agricultural or industrial uses. More than any other factor, the railroads linked the regions of this country into a transcontinental economy.

During World War I, railroads were vital in this country's role of providing material to the allies. They continued to be the dominant intercity form of transportation throughout the decade of the 1920's. Their market position was reflected in their financial strength and the value of their equity and debt securities. The railroads were truly one of America's great industries.

Over the last half-century, however, a far different industry has evolved. Although railroads continue to be the largest carrier of intercity freight in terms of ton-miles, they no longer dominate intercity transportation. Efficient competing systems of transportation have eroded the rail traffic base. The last period of heavy reliance on railroads occurred in World War II when the rail system mobilized to handle greatly expanded traffic and again supported a nation at war. Gasoline and rubber rationing limited the use of the private automobiles, trucking was in relative infancy and the inland waterway network was less extensive than it is today.

After World War II, the competitive position of the railroads deteriorated. Revenue passenger miles de-

clined 80 percent from 1947 to 1973 in spite of explosive growth in passenger travel generally. Railroad's market share of perishable agricultural produce and higher-rated manufacturing products declined significantly. During the post-war period the growth of the railroads has lagged behind the economy in general. In 1947 the railroads carried nearly two-thirds of the intercity freight; by 1973 that share had dropped to 39 percent. During the same period, when the gross national product grew approximately 170 percent (after adjusting for inflation) and while industrial production grew 219 percent, total U.S. rail revenue ton miles grew only 30 percent while ton miles carried in the Eastern District (see Chapter 10, Figure 4 for definition of Eastern District) actually declined 17 percent.

Sluggish traffic and revenue growth have depressed the railroads' financial performance. Railroad earnings today are only three-quarters of their 1947 level (again, after adjusting for inflation). For many years the cash generated by the American railroads has not been sufficient to meet capital requirements of the industry, and the return on investment has not been sufficient to enable the railroads to finance capital expenditures by selling common stock.

The general decline in market share and the accompanying financial problems of railroads are most severe in the Northeast. Eight carriers in the Northeast and Midwest are bankrupt; several elsewhere in the country are in precarious financial condition, but none are bankrupt. Six of the bankrupt railroads cannot meet their operating and maintenance expenses.<sup>1</sup>

### **Causes for the Decline**

Much of the discussion surrounding the plight of America's railroads, and particularly the financial collapse of the Penn Central, fails to grasp the complexity of the issue. There is no single cause and no simple solution. Underlying all aspects of this problem is the significant difference in the degree of public support en-

<sup>1</sup>The courts have determined that these six carriers cannot be reorganized on an income basis within the provisions of Section 77 of the Bankruptcy Act, and they were included in the USRA planning effort at the outset. Trustees of a seventh, the Erie Lackawanna, recently stated that the line cannot be reorganized on an income producing basis and have petitioned Congress to permit reclassification as a railroad in reorganization under the Act. The Boston & Maine reorganization court determined that it can be reorganized under normal procedures.

joyed by the various transportation systems (see Appendix H). Railroadings' ills cannot be traced to one or another single cause, nor can these causes be readily corrected. The current economic condition of the railroads is attributable to many complex and interrelated factors, among the more important of which are:

- The virtual explosion of the technology of rival forms of transportation since 1920, which radically changed the competitive position of the rail industry. In contrast, the rate of technological development of the rail industry has been slow, reflecting its relative maturity.

- Massive public support for the newer auto, truck, barge and airline technologies through provision of public funds for ground facilities and rights-of-way. Only a portion of these costs are repaid by user charges.

- Basic changes in underlying market conditions as industry locations shifted and traffic flows declined and as heavy industry and agriculture gave way to a service-oriented, high technology economy.

- The inability of the railroad industry to adjust to changing market conditions because its facilities are fixed in place, because the regulatory climate constrained management's flexibility in setting rates, in merging and in abandoning obsolete properties and lines and because of loss of traffic to other modes of transportation. Public law prevented the rail industry from developing unified systems of transportation using many different methods of moving goods.

- The preoccupation of some rail managements with operating problems while neglecting the development of modern marketing practices. An additional factor is the inability of management and labor to agree on methods for improving labor productivity following implementation of innovations wholly or partially designed to economize labor costs.

- The industry generally has had insufficient internal funds to maintain and upgrade its facilities nor have private capital or public funds been available. The result has been deferred maintenance, which has further weakened the competitive position of the lines involved. Thus, the vicious cycle is complete.

All these problems must be attacked if satisfactory rail freight service is to exist in the future. The problems attributable to a failure of operations or management must be corrected within the industry. Public policy burdens must be resolved and policies revised. Government must grant the railroad industry the flexibility to adjust where competing technologies have altered the competitive position.

All this can be done. Furthermore, it can be done within the framework of private ownership and operation, but it will take a prudent planning phase, a sizeable commitment of public funds, realistic revisions

in national transportation policy and the genuine cooperation of the industry.

### Changes in Technology

Fifty years ago there simply was no other form of intercity transportation for the bulk movement of goods and people other than the railroads. Although rail technology has not been wholly static, developments since that date in no way rival the technical developments of competitors.

With the emergence of the automobile, society became more highly mobile, a development as important to the economy as to social custom. This, coupled with the development of the high speed, pressurized airplane for medium range and long distance travel, effectively eliminated the train as a competitor for passenger services. After a long downward decline in traffic, the rail industry basically phased out of the intercity passenger market, once a major contributor to profits.

Innovations in trucking along with the development of modern highway systems have enabled motor carriers currently to carry 23 percent of the total intercity freight ton-miles. A combination of waterway development and improved barge technology has created a major water carrier industry since 1920, and inland waterways now account for 16 percent of total intercity ton-miles of freight. Pipeline technology has captured the movement of fluid petroleum and natural gas, and oil pipelines now account for about 22 percent of intercity freight movement. Moving coal slurry (particles of coal suspended in water) through pipelines may cause this mode to grow substantially in the future.

The past three decades have seen the advent of a number of technological advances in the railroad industry, among them: diesel power, modern freight car equipment, piggyback and unit trains, scheduled maintenance programs, automated classification yards, computerized clerical functions and centralized traffic control. But these have been incremental in nature, as opposed to the major advances realized by rail's competitors, and railroads have thereby suffered in the marketplace.

### Government Policies

All forms of modern transportation (except pipelines) have received a generous helping hand from all levels of government and all are subject to various laws and regulations. Public policy toward transportation has two elements: financial support and regulation. In both, public policy appears to have worked to the disadvantage of railroads.

*Financial.* The federal government's basic policy has been to promote development of different methods of transportation. This has been a deep-seated national policy from the very beginning of the United States,



one of its early applications being land grants to Western railroads in the 19th Century. The federal government has continued this policy of large scale promotional aid into this century by the support of the new transportation technologies as they came into being.

The early assistance to railroads pales when compared to the continuing aid given to the development of the private automobile and trucking industry, the airlines and inland barge operations—all competitors to the railroads.

Through 1973, total federal, state and local expenditures to support rival forms of transportation have been in excess of \$450 billion, most of it spent since 1920 (see Appendix H). Only a portion of this outlay has been recovered by user charges, such as fuel taxes, rate surcharges, rental, landing fees and the like.

Government policy toward the railroads contrasts sharply with national policy toward the coastal and inland waterways, where facilities from lighthouses to locks have been constructed and operated directly by governmental authorities without charge to water carriers. All government expenditures on waterway facilities totaled approximately \$16 billion through 1971, a substantial proportion of which represents benefits to water carriers.

Government support of airways and airports has been substantial. User fees were not levied until the 1960's and not until 1970, in the Airport and Airways Development Act, did Congress set up user taxes and a trust fund for capital expenditures in airports and airways.

In Appendix H, it is noted that government support for airlines in expenditures for operations of the airways, on the order of \$500 million annually, is not compensated in user charges. In addition, local service airlines receive subsidies for service to small cities in excess of \$60 million annually. In the area of freight, air transport has little influenced the railroads' current situation, but the airplane has been a key factor in the demise of what was once a very profitable passenger service.

Highways and motor transport have received the broadest and most substantial governmental aid, with expenditures for highways by all levels of government amounting to over \$20 billion per year in the early 1970's. Fuel taxes and other fees have paid much of the cost of highway development and maintenance, but many experts believe that the large rail-competitive trucks have not paid their share relative to the benefits they receive.

Without question, the major highway improvements of the last 30 years, especially the construction of the Interstate Highway System, have aided truck movement greatly and have accelerated the diversion of freight traffic to trucks from rail. Even at 55 m.p.h., and with allowance for rest and stops, trucks have an over-

night service range of more than 400 miles in a single-driver truck,<sup>2</sup> thus allowing rapid service throughout a region from a limited number of distribution centers.

In this century, the railroads and the pipelines are the only competing forms of transportation which have not benefited substantially from public expenditures for their basic rights-of-way and ground facilities. This has distorted the cost comparisons between the railroads and their competitors significantly. The cost of maintenance of way and communications and related facilities of the railroads, including interest charges, were 21 percent of total rail revenues in 1973. Thus, railroads are at a considerable disadvantage in competing for traffic.

Even if user fees were fully compensatory, the fact that rail competitors obtain their fixed facilities and rights-of-way by such charges acts again to the substantial disadvantage of the railroads. For the railroads, these costs are largely fixed while rail competitors pay a user charge only as needed for the facility involved. Costs thus vary directly with volume of business.

By virtue of public provision of rights-of-way, non-rail transportation businesses do not have to maintain, repair and re-construct facilities and rights-of-way. Rail competitors therefore have a less complex managerial burden.

Another major disadvantage for railroads is the long-term effect of inflation on the comparative costs of doing business. Barge operators pay nothing for the right to operate over the waterway system. Truckers pay fuel taxes which are raised infrequently so that their unit expense on right-of-way varies only with volume and has risen slowly. For example, federal fuel taxes have not been raised since 1959. By contrast, railroads must maintain their facilities with their own money, and rising prices and higher labor costs must be borne more immediately.

*Regulation.* The railroads were the first American industry to come under extensive state or federal government regulation, even antedating passage of the Interstate Commerce Act of 1887. Undoubtedly, the public interest was well served by the original regulatory structure because of the geographic unevenness of competition between rail routes and railroads' concentrated economic power.

Railroad regulation in today's transportation environment, however, warrants reexamination. A recent study estimated the economic losses from excess capacity (inefficient use) and misallocation of traffic attributable to transportation regulation at \$4-\$9 billion.<sup>3</sup> Regulation of railroad rates has failed to assure adequate industry profits and rates of return and has retarded the railroads' ability to compete, because the existing process is "slow, cumbersome, inflexible and hostile to

<sup>2</sup> Estimate suggested by American Trucking Association, based on 10 hours at 40 m.p.h.

<sup>3</sup> Thomas G. Moore, *The Feasibility of Deregulating Surface Transportation*, pp. 22-23.

marketing innovation by the railroads".<sup>4</sup> The Interstate Commerce Commission on the one hand has frequently used the power it possesses to hold down rates, and the evidence suggests that hold-downs have been to protect movement of commodities that otherwise would be isolated geographically. On the other hand, the Commission often has disallowed rate reductions that competition would have dictated.

The return on railroad investment has not appeared to be a foremost consideration to the ICC. The prevalence of across-the-board rate increases attuned to general price and wage levels, not rates of return, is not sufficiently responsive to the changing economic and transport environment.

Railroads offered a full range of transportation services in the 1920's, but they have not evolved further into *transportation companies*, the Congress having created law that impedes such evolution. By law in 1935, railroads were precluded from offering competitive truck service, unless they were then offering such services, although they were not precluded from securing operating rights to undertake the pickup and delivery functions which trucks perform so well.

Mergers and other forms of coordination within the railroad industry also are subject to regulatory restriction and delay. Thus, the railroad industry has been handicapped while its competitors have exploited new technologies to the full and have enjoyed the benefits of public funds that have so greatly assisted competing methods of commercial transportation. These pressures have had massive adverse effects on the dynamics of railroad development and the profitability of the industry.

Not having developed as integrated transportation companies, railroads became more and more narrowly defined in the markets in which they could effectively compete and in their approach to the problems of transportation. Railway labor took the full brunt of the competitive impact of other forms of transportation; job protection became a major element of rail labor objectives and, in part, an aspect of regulation. It is questionable whether rail labor would have been so preoccupied with job protection if the railroads had been permitted to develop as integrated transportation systems.

### Freight Growth and Character

Freight transportation has grown slowly relative to the gross national product (GNP), and the composition of freight that has grown is less suitable to rail service and more adaptable to trucking. Between 1947 and 1972, intercity freight traffic grew at an average annual rate of 2.8 percent compared to an average annual growth rate of 3.8 percent for GNP. If intercity

<sup>4</sup> U.S. Senate, Committee on Commerce, *The Penn Central and Other Railroads*, p. 280.

ton-miles are calculated exclusive of oil pipeline movements, the average annual growth of all freight between 1947 and 1972 was only 2.2 percent.<sup>5</sup>

The forces which cause freight transport demands to grow more slowly than the economy include:

- The substitution of lighter-weight materials to be transported.
- The growth of submarkets which justify multiple regional production sites.
- Improved transport and distribution systems.
- More radical technological changes, such as high-voltage long-distance lines for the "shipment" of electricity, as opposed to the transportation of energy resources.<sup>6</sup>

It appears that established industries have managed to reduce their transportation requirements. In addition, the consumption of bulk raw materials, another staple of rail traffic, reflects population growth more closely than it does economic activity. For the last quarter century or more, the agriculture, mining and forestry sectors of the economy have been declining as a share of GNP. Historically, these industries provided the basic source of railroad freight and their relative decline has contributed to rails' falling share of traffic.

Even worse from the railroads' perspective, bulk commodities traditionally transported by rail, such as iron ore and grains, have grown less rapidly than plastics or meat, for example. Coal production showed no growth at all between 1957 and 1965,<sup>7</sup> but it may rebound as a major source of domestic energy.<sup>8</sup>

Manufacturing production has grown more rapidly than that of bulk commodities, but within the manufacturing sector the fastest growth has been in industries producing goods that are of high value relative to their bulk and also relative to the transportation costs incurred. Good examples are computers, business machines and such consumer goods as television sets, high fidelity equipment, cosmetics and pharmaceuticals—articles generating little demand for rail transport. The fastest growing sectors of the economy are personal services, finance and government—activities needing little goods movement in general or rail transportation in particular.<sup>9</sup>

### Location of Economic Activities

Production locations exert an influence on transport demand apart from the nature of the goods themselves, and for the railroads this influence has been negative.

<sup>5</sup> *Improving Railroad Productivity*, Final Report of the Task Force on Railroad Productivity, to the National Commission on Productivity and The Council of Economic Advisers, 1973, p. 2.

<sup>6</sup> U.S. Senate, Committee on Commerce, *The Penn Central and Other Railroads*, pp. 232-33.

<sup>7</sup> *Ibid.*, p. 220.

<sup>8</sup> *Improving Railroad Productivity*, Final Report of the Task Force on Railroad Productivity, Chapter I for a general discussion, and Alexander L. Morton, *Freight Demand*, unpublished Ph.D. dissertation, Harvard University, 1973, for additional detail.

Population shifts to metropolitan centers reduce the amount of traffic to and from rural areas and leave excess rural trackage, which has not decreased concurrently with population shifts away from areas the lines once served. As a result, railroads are burdened with facilities that no longer are productive. Further, the most rapid production and population growth is in areas such as Atlanta, Dallas, Phoenix and Denver, not in the older Eastern production centers with extensive rail plants.

Thus, railroads in these older areas suffer as jobs and factories move to and natural resource development takes place in newer growth areas. Multiple centers and natural resource development encourage producers to move their plants, creating less interdependent regions of the nation. This in turn has favored the use of short-haul trucking. Today, good highways, especially the interstate system, are prime factors in business and plant location.

Truck, barge and pipeline have the decided advantage of being unencumbered by inherited equipment and operating patterns. They can focus on the most promising areas of cargo carried by rail; railroads, to some extent held back by regulation, cannot fight back with equal competitive vigor. Trucks and airplanes appear to have captured the transportation of light high-value commodities for decentralized shippers requiring high-quality service.

Manufacturers generally choose plant locations by considering both good highway access and good rail connections, and many aerospace and electronics firms producing very high-value goods will be found near airports. Barge and pipeline firms vigorously solicit transportation of bulk goods; the ton-miles they move roughly have quadrupled during the last two decades.

#### Deficit Service Requirements

The early rapid expansion of the railroad industry and the absence of effective competition led to the construction of many lines no longer economic to operate. Traffic once almost the sole domain of the railroad industry was captured by competitive transport businesses, and this trend continues today, with railroads in the Northeast and Midwest facing the largest readjustment problem.

Some excessive rail capacity has resulted from changes within the industry itself, as a result of centralized traffic control systems, automated yards, larger freight cars and more powerful locomotives. Railroad mergers and internal redirections of traffic flows result in unnecessary trackage as the industry seeks better use of roadway and rolling stock.

Traditionally, the railroad industry seeks to unburden itself of deficit-producing services (usually light density branch lines or passenger services) by

petitioning regulatory agencies to discontinue or abandon the service. However,

the essential approach of both legislation and regulation was to consider abandonment as an aberration . . . small town grain elevators, like whooping cranes, were to be preserved whenever possible . . .<sup>9</sup>

Where the losses on branch lines have been substantial, especially in the Region, the condition of all railroad properties is financially damaged. Maintenance of way expenditures are deferred and the attempts to meet minimum safety standards lead to a lack of funds for main line maintenance as well as the deficit-producing branch.

Estimates of avoidable losses from light density branch operations nationwide vary from about \$57 million to more than \$100 million per year. This is not an amount sufficient to restore the financial health of the industry, but "the correlation between financial condition and the incidence of the light density line problem suggests that the problem may be somewhat greater than the FRA estimate implies."<sup>10</sup>

#### The Railroad Problem in the Region

The railroads in the Region and particularly those in the Northeast have been affected most severely by the negative factors influencing the financial health and condition of the railroad industry. The Northeast was the first area to be developed, has the oldest industries and the oldest and most extensive railroad system. Many of its railroads were built purely for local service well before the advent of trucking. The current railroad system represents a splicing of hundreds of constituent roads, each having its own outdated branches and spurs.

The industries predominating in the Region, particularly the Northeast, are among the most slowly growing sectors of the economy and are the most easily displaced by new location patterns. In addition, they tend to produce goods that lend themselves to trucking competition, especially because predominating shipments are short haul in nature. Water carriers are also active in and around the Region and intermodal facilities are much more extensive there.

The railroads in the Region also are responsible for a predominant share of passenger service, representing a loss to operate and a distraction for management. The plant facility built to provide extensive passenger services also represents a greater degree of redundancy than anywhere else in the system.

<sup>9</sup>James R. Nelson, "The Economics of Railroad Abandonments," *Symposium on Economic and Public Policy Factors Influencing Light Density Rail Line Operations*, January 1973, sponsored by U.S. Department of Transportation, Federal Railroad Administration, p. 6.

<sup>10</sup>*Improving Railroad Productivity*, Final Report of the Task Force on Railroad Productivity, p. 162. Loss estimates were taken from pages 160 and 161.



In addition, the depletion of natural resources in the East has led those industries and the traffic they generate to depart to the newer and more rapidly developing population centers. This situation has resulted in decreased tax revenues to serve social purposes of communities in the Northeast. They in turn have been more reliant on property taxes levied on railroad holdings and most resistant to abandonments depriving them of those revenues.

### The Problem of the Penn Central Merger

Generalizations about the Penn Central merger are difficult to make. They depend on three underlying factors that are hard to separate: the difficulties and constraints management faced, the quality of personnel and their decisions and agreements reached with labor and the ICC as conditions of the merger, i.e., labor protection arrangements and the agreement to absorb the New Haven railroad into the merged system.

The legacy of railroading in the Northeast would lead many to believe correctly that successful management of the merged railroads would be a miraculous and almost unobtainable goal. One study refers to the Penn Central merger as the birth of "a grotesque set of Siamese twins."<sup>11</sup> The two partners were both in financial difficulties, mostly a result of developments beyond management control as discussed elsewhere in this chapter.

Management decisions in the railroad industry are constrained by many considerations, including regulatory policies and decisions, relationships with shippers and dependence upon connecting railroads, the position of competitive carriers such as trucks, rail technology and the plant and equipment inherited from the past. Regulatory procedures and delays, a necessary part of the merger process, left the merger's outcome in doubt. From the late 1950's until final approval was won in 1966 and court procedures and objections exhausted in 1968, merger planning was stifled by uncertainty.

One element of management capability does seem to lend itself to discussion. It concerns the implementation of the merger itself, the scale of the resulting merged company and the dynamics of transition toward this new and greatly expanded scale of operations. Prior to the merger, the two major parent railroads served a large amount of identical geographic territory, had substantial parallel route structure and experienced similar traffic patterns. It was understood that merger meant consolidation. Savings were anticipated from the elimination of duplicate operations and facilities.

It appears, however, that "little thought was apparently given to the difficult process of forging one company from the pieces of its predecessors, . . . the pre-

merger planning . . . did not spell out the steps or processes necessary to move from two separate roads to one unified railroad."<sup>12</sup> In the rush to consolidate, the difficulties of a major change in physical flow of traffic and reorganized work patterns for labor were not given systematic attention, and managerial philosophies of the two parent companies appeared to differ widely.

The results of a crash program to merge incompatible systems were devastating. Without detailed operational planning the attempt to grow suddenly introduced a dynamic element which overrode all else. In hindsight, Penn Central proved not to have adequate management, sufficient time or financial stability to support the consolidation of the two major operating companies.

Changing patterns of production, a declining share for the Northeast economy and the increasingly competitive service of alternative modes required innovative responses from management that did not appear. Specific managerial shortcomings played a role: examples are high dividends paid out in the face of cash shortages, the deterioration of internal accounting controls leading to deterioration of the billing and collection functions and overly imaginative accounting procedures to bolster reported income. In addition, it was questionable wisdom to proceed with the merger itself as the cost of labor protection, the absorption of the New Haven and the generally drawn out delays escalated the negative aspects of the problem.

### Summary and Future Outlook<sup>13</sup>

Several pervasive and enduring causes for the decline of railroading were examined in the first part of this chapter. These causes gave the appearance of a concerted act—by the general public, other industries, government, even the railroads themselves—to cause the railroads to fall from power into financial difficulty. The problems of the Northeast and the bankrupt carriers simply are extensions of those found elsewhere, and the financial conditions provide ample evidence of decline becoming collapse among the candidates for consolidation.

Yet railroads have shown considerable staying power. It is striking that, after several decades of expanding truck operations and a deteriorating rail industry, railroads are still the leading producers of freight ton-miles. The more than 850 billion revenue ton-miles moved in 1973 represent approximately the same volume as all other carriers combined, except pipelines. In 1973, the railroads set an all-time record for ton-miles of freight, and they experienced a slight increase in their share of total intercity traffic for the first time in almost a decade.

<sup>11</sup> *Ibid.*, p. 335.

<sup>13</sup> A full discussion of the current financial conditions of the railroad industry and the Region in particular, accompanied by supporting tables and graphs, appears in Appendix B.

<sup>11</sup> U.S. Senate, Committee on Commerce, *The Penn Central and Other Railroads*, p. 179.

A review of the factors affecting the growth of inter-city freight traffic in the Northeast and the competitive balance among modes does not suggest a strong revival, however, regardless of the relative efficiency of the rail industry. The Northeast will continue to experience population outmigration and a lower rate of population growth. The nation's birth rate has reached its lowest point in decades and continues to fall.

Diminished year-to-year growth in real income per capita also would contribute to diminished growth in traffic volumes. A number of factors point to lower growth in real income than was achieved between 1945 and 1970, continuing the trend of the past few years. Thus, the volume of raw materials and manufactured goods handled by freight carriers should grow less rapidly than it has during the post-war period. Further accentuating this trend, more is being spent on services and highly-fabricated manufactured goods that generate fewer ton-miles per dollar of finished product.

The relocation of raw material sources and manufacturing centers away from the Northeast will aggravate its retarded growth of freight. Manufacturing facilities have tended to remain disproportionately concentrated in the Region, although it has ceased to be a major source of raw materials other than coal. As its population or market disperses, the tendency of recent decades for manufacturing to leave the area should persist. Higher costs of freight transportation, spurred by higher fuel costs and the uncertain outlook for the Region's rail transport, should stimulate further decentralization of manufacturing.

One of the largest rail users, the automobile industry, just announced a \$5 billion capital program to develop smaller and more fuel efficient cars. This can only have a negative effect on the movement of total freight in the Region.

While these inherent negative factors must be considered in any forecast, the Association has projected a slight increase in rail freight traffic over the next decade. This is based on the assumption of general growth in traffic and maintenance (rather than decline) of rail's share in the freight market.

The one bullish traffic forecast is for the movement of coal. Railroads are the dominant coal carriers, and a massive conversion to coal consumption could lead to substantial growth in Northeast freight tonnages and ton-miles, despite the depressing effect of other factors. A growth of coal traffic would, of course, place rather different demands on the rail system than an equal growth of other traffic. However, even if coal consumption does grow rapidly, there is no assurance that railroads will benefit accordingly.

The availability of rail transport has been a prerequisite for coal production in the past, but mine-mouth generation and high-voltage electricity transmission have been used increasingly as an alternative to coal transport, and further technological breakthroughs in

transmission may be expected. Coal gasification and liquefaction presumably will attract greater attention as volumes grow. Only the railroads' share of export coal traffic seems reasonably secure from such diversion, although it is concentrated over a limited number of rail routes.

The prospects for rail freight growth in the Northeast also are clouded by a possible shift of freight to competing modes. There already has been a substantial diversion of high-valued freight to trucking, and trucks are appearing to become steadily more aggressive in competing for bulk commodities as well. Three factors that may perpetuate this trend are greater freedom for private truck operations to solicit backhauls, increased truck size and weight allowances and high interest rates that reward inventory reduction and tight scheduling. On the other hand, higher fuel costs and stricter enforcement of reduced highway speeds may deprive the trucks of some of their competitive advantage.

The network of high-performance highways is not likely to be expanded much further in the Northeast, and the relocation of factories and warehouses to sites with easy highway access is pretty much complete. These two influences were important in the diversion of freight to trucks in the past, but may be considerably less significant in changing modal shares in the years ahead.

Further increases in fuel prices would work to the advantage of the railroads, as they are more fuel efficient on the long haul, and the implicit weight-sensitive cost differential might retard or arrest truck penetration into the movement of bulk commodities. For the short run, petroleum prices appear to have reached a supply-demand equilibrium level and further percentage increases on the scale of the past two years are unlikely. Even these recent increases, it should be noted, put little more than a crimp in the growth of trucking. Looking further to the future, the nation will have to rely increasingly on relatively abundant coal supplies.

Though the relative importance of heavy materials has diminished in the economy, shipments of lumber, grain, agricultural exports, woodpulp, paper products and stone, to name but a few, will remain as basic traffic generators for the railroads, and their displacement as bulk haulers over long distances seems unlikely. Scrap and materials for recycling, while not replacing virgin materials, represent a potential growth market for bulk hauling.

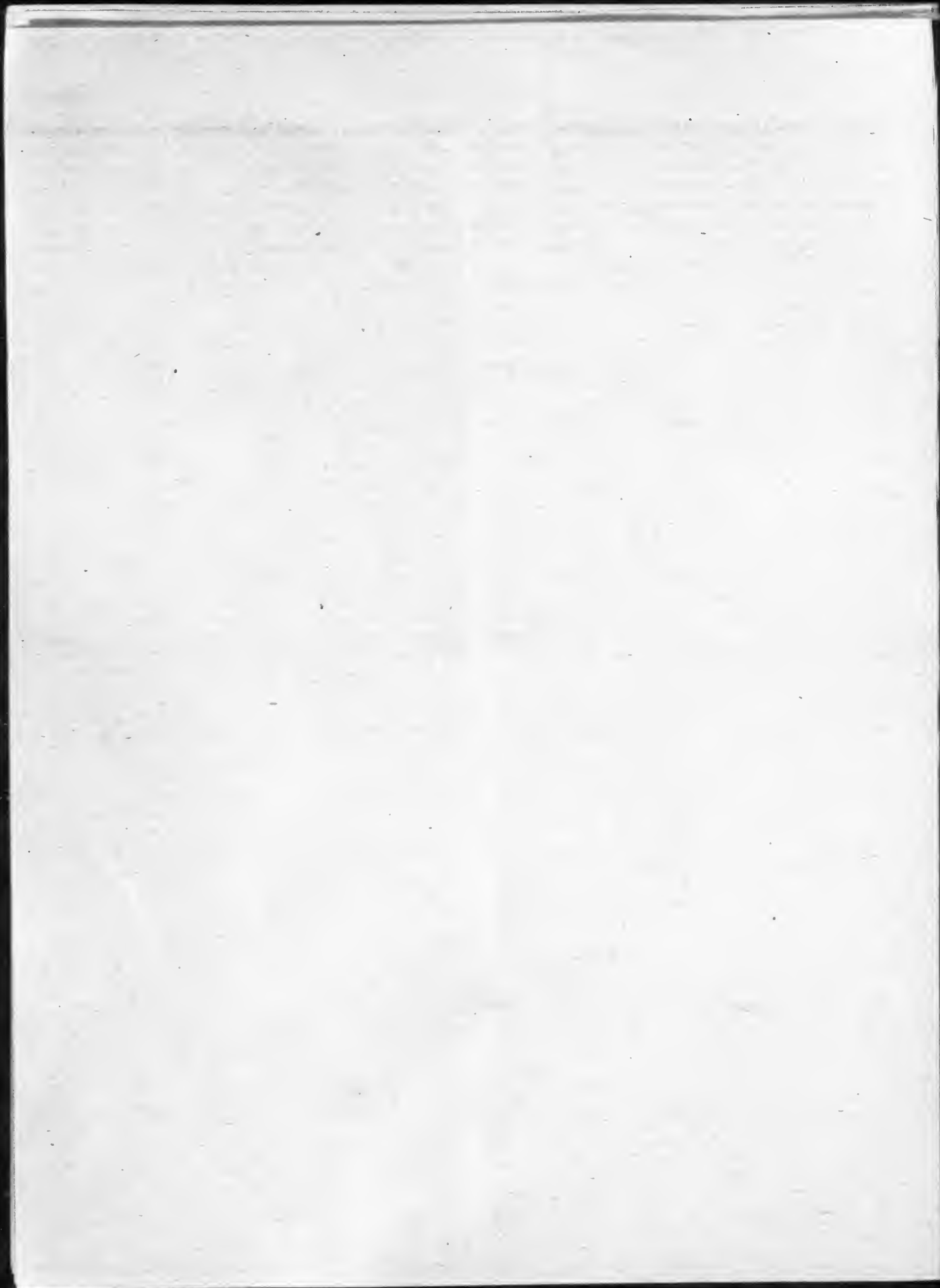
Other modes have relatively limited ability to absorb much of this rail-oriented traffic, and there may be some shift in the modal choice of bulk commodities between rail and water carriers as well. The imposition of user charges on river traffic in the Northeast would divert bulk cargoes to rail, depending on the extent to which the user charge is intended to recover

capital costs or operating and maintenance costs.

There are two general areas of major promise for railroad traffic. A commitment to aggressive development and promotion of containerization and reliable intermodal service could reopen large movements of manufactured goods for railroads. This sort of breakthrough into profitable service-sensitive traffic could work wonders.

The remarkable ability of railroads to expand traffic

without major disruption may prove to be a most valuable asset. Society today is conscious of the fragile nature of our environment, our excessive consumption of petroleum and continuing misuse of much urban land by highway construction while congestion persists or worsens. This attitude can lead to greater recognition of the railroads' potential as a fuel-efficient, land-conserving and low-pollution alternative for future traffic-growth.



## 2

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# Goals and Issues Underlying the Preliminary System Plan

*This chapter sets the stage for the presentation of the Preliminary System Plan by addressing several issues that had to be resolved in the process of drafting the Association's specific recommendations.*

*Two issues receive special attention in the chapter. One is the question of the extent of federal involvement in restructuring and rehabilitating rail-service provided by the bankrupt carriers. The amount of federal financial support required by ConRail will be substantially larger than contemplated in the Act and it will be necessary to find ways of providing this support without resulting in de facto nationalization of the firm. The other is the issue of balanced public policy for transportation. The nation must develop transport policies that take full account of cost, energy and environmental considerations.*

*The purposes and goals of the Act provided guidelines for USRA's work, but a number of underlying conflicts remained to be resolved. This Preliminary System Plan attempts to achieve a balance among the Act's competing goals.*



In enacting the Regional Rail Reorganization Act of 1973, Congress declared its purpose to provide for:

- Identification of an adequate rail service system for the Northeast and Midwest Region,
- Reorganization of railroads of the Region into an economically viable system capable of providing adequate and efficient service,
- The establishment of the United States Railway Association and the Consolidated Rail Corporation (ConRail),
- Assistance to the states and local authorities for continuation of local rail service threatened with cessation and
- Necessary federal financial assistance at the lowest possible cost to the general taxpayer.

The statutory goals guiding preparation of the Final System Plan are outlined in Section 206 of the Act. These goals complement the purposes of the Act and offer further direction to the Association and those who review the Association's work. The Act stipulates that the restructured regional rail system should:

- Be financially self-sustaining,
- Meet regional rail transportation needs adequately,
- Improve high-speed rail passenger service in the Northeast Corridor and identify other corridors in which major upgrading of track for high-speed passenger operation would yield substantial public benefits,
- Preserve, as much as possible, existing patterns of service,
- Preserve facilities and service for coal transport and conserve scarce energy resources,
- Retain and promote competition,
- Attain and maintain desirable environmental standards,
- Achieve efficiency in train operations and
- Minimize unemployment and adverse effects on communities.

### Resolving Conflicting Goals

The Association feels a strong responsibility to ensure that the purposes of the Act are met and the goals of the Plan are effectively balanced. It is significant that pursuit of an *adequate and financially viable rail service system* (to paraphrase the combined wording) appears both among the purposes and the goals of the Act. There can be no doubt of the importance. Congress attached to these objectives.

Though all of the Act's goals have been considered, these two basic statutory aims have been at the core of the Association's planning process. Like any broad reaching legislation, the Act's goals are not fully consistent with one another. Testimony of public witnesses at the Rail Service Planning Office hearings last year clearly demonstrates the difficulty of balancing certain goals against the others.

*On this point, it is important to bear in mind the fact that the eight goals of the Act apply to the entire Final System Plan. None is limited to ConRail or any other single aspect of the Plan, nor can any one goal be viewed in isolation and applied narrowly to a particular issue, such as each individual light-density line or the economic impact on a shipper or community.*

Congress itself recognized, at least by inference, the lack of consistency in the goals. For example, the House Interstate and Foreign Commerce Committee report on the Act said that it "recognized the need for safeguards for small areas, to be able to continue essential service which is not economical for the carrier. This was recognized as a social cost to be borne by the government" (House Report 93-620, pp. 28-29). The conflict between needed service and financial self-sufficiency was proposed to be resolved in this fashion.

Adjustment and accommodations are inevitable, and the Association has attempted to do this in a rational and logical way, but there is no magic formula for reconciling these conflicts. The greatest challenge facing the Association in its planning task was not the conflicting goals and competing interests; given the situation, it could hardly have been otherwise. Instead, the Association's challenge was to draw those conflicts and competing interests together in a manner that would convert the broad purposes and goals of the Act into specific decisions and recommendations for the Preliminary and Final System Plan. What became clear in the process is that unless USRA provides for an economically self-sufficient system, the Act's basic intent will not be achieved.

The Association believes that this Plan represents a fair and reasonable, although preliminary, resolution of the issues inherent in the Act's purposes and goals. The Board of Directors of the United States Railway Association hopes that this report will help to focus the necessary and desirable public discussion which is to follow publication of this Plan.

### The Extent of Federal Involvement

The Regional Rail Reorganization Act contemplates reorganization and operation of the Region's bankrupt rail carriers as profitable companies within the private sector of the economy. The Association believes that ConRail can be brought to a profit position about equal to the average for the rail industry. The financial statements in this Plan show that ConRail's cash flow should be sufficient to pay interest charges on federal debt incurred within the 10-year forecast period, but that retirement of federal debt will not occur within the 10 years. The Association recognizes that the importance of achieving a profitable ConRail will depend on many factors, including workable agreements with the solvent railroads in the Region and the manner in which necessary additional federal financing is provided.

The amount of federal financial support required by ConRail will be substantially larger than contemplated in the Act, and the period during which more than 50 percent of the debt structure of ConRail will be "federal" probably will exceed 20 years. This is due to several factors. First, rehabilitation requirements are somewhat greater than expected and thus higher than contemplated in the Act. In 1973 prices, the cost of rehabilitation and capital improvements to ConRail right-of-way and structure properties (in essence, raising them in their former level of operation and service) is estimated to be \$2 billion during the first 10 years. USRA expects that inflation during the period of rehabilitation will about double the actual dollar cost.

Second, because of the shortage of steel rail and the requirement that rehabilitation be coordinated and coincident with normal line operations, it is anticipated that the rehabilitation program will take place over a period of 10 to 15 years. Third, ConRail will need working capital loans until its cash flow from operations meets its operating cash needs, including funding interest payments in the early years. Assuming normal financial methods as set forth in the Act and ConRail's ability to raise \$500 million in the private sector for equipment, total federal loans or loan guarantees are estimated to be approximately \$3 billion by 1985 (excluding any obligations in the initial conveyance of properties).

The Association believes that the necessary federal funding support for the operating company can take place in a manner which does not result in *de facto* nationalization. The entire thrust of the Regional Rail Reorganization Act of 1973 was to provide a private-enterprise solution to the railroad crisis so as to leave ConRail a "for-profit" company which ultimately could operate free of direct government involvement; nationalization was to be avoided.

There has been a natural reluctance on the part of Congress to become deeply involved financially in private companies. The Act itself represents a break with tradition but was felt to be necessary because of the catastrophic effects cessation of transportation by the bankrupt railroads would have on the Nation's economy. Congress passed a "reorganization" Act designed to seek a private enterprise solution to resolve the problem of the bankrupt carriers. An increase in funding over that contemplated in the Act to adjust for the greater amount of rehabilitation and to take into account the inflationary factors which are substantially more important today than when the Act was passed, might be required. Such an increase would not change the basic thrust of the Act as it originally was passed.

This will not have been the first time in recent periods when the federal government has made extensive loans to the troubled railroad industry. Through 1944, the Reconstruction Finance Corporation (RFC), as part of its

general assistance program to industry and commerce, extended \$938 million to railroads. Inflation of these loans to a value equivalent of a USRA loan commitment today to meet ConRail's rehabilitation requirement would raise the value of the original loans to a figure over \$7 billion. The controls exerted by the RFC as a basis for these loans were less than contemplated by the Regional Rail Reorganization Act of 1973 since they did not require a government majority position on the Board of Directors of the organization to receive support as a condition of the loan.

Recognizing that there may be some concern with such an extensive public loan commitment to ConRail, a private company, the Association has studied the possibility of the creation of a separate corporation which would own the rights-of-way of ConRail and have the responsibility for their rehabilitation. The range of alternatives to be studied includes a completely private company owned by the stockholders of ConRail, a mixed ownership company with both private and public ownership of stock in the company and a wholly owned government corporation.

In Chapter 3 the Association presents each of these alternatives briefly to provide the basis for public debate and consideration by Congress.

The projected financial viability of ConRail is predicated on a major rehabilitation program. Though relatively minor changes might take place both in the scope and location of specific rehabilitation projects, the Association does not believe that significant changes can be made without affecting the profit and loss projections.

The Final System Plan will show the full financial commitment needed. That Plan as approved by Congress must grant sufficient funding to meet working capital needs and the planned rehabilitation program in order to support the value of ConRail securities.

### **Balanced Public Policy for Transportation**

Another compelling issue affecting the successful reorganization of the bankrupt carriers is the absolute necessity to provide a more even balance in public support policies and regulation of the various modes of transportation and to integrate planning for their development. As explained in Appendix H, public support for all competing modes of transportation except pipelines is large and pervasive. This has adversely affected the rail industry. Not only has there been a direct effect on the profitability of the rail industry but also such public support has facilitated the development of competing forms of transportation, some of which are more harmful to the environment and consume much more energy per ton mile transported than do railroads.

Chapter 11 shows the comparative energy consumed by rail technology as compared to other modes. For high

volume operations, if an additional 10 percent of the traffic which could be carried by the rail industry were diverted to trucking, total energy consumed in intercity freight transportation would increase approximately 8 percent. On the other hand, if the rail industry regains that same volume of traffic, total energy consumed in transportation would be reduced by about that same percentage. Changes in national transportation policy could help achieve this energy saving.

The lack of profitability of the rail industry, partially due to its impaired competitive position, is resulting in some disinvestment of capital in the industry and in inadequate maintenance of some of its facilities. Many important operating companies are literally consuming their own assets. Only a few rail systems now exist without substantial deterioration of facilities due to deferred maintenance. Reports filed with the Interstate Commerce Commission indicate that nationwide deferred maintenance and capital expenditures now total about \$4.3 billion and that figure is increasing. The deferral of maintenance over a long period of time was one of the primary reasons for the ultimate collapse of the Penn Central and the inability of its trustees to reorganize the company through normal procedures. A continuation of this trend in the industry has significant implications for the future.

The effect of inflation on the competitive position of the rail industry and its competitors is not uniform. In supplying its own investment in rights-of-way and basic facilities, the rail industry will be forced to withstand the full effects of long-term inflation in the cost of the materials and labor which go into those facilities. Thus, market forces, including the high cost of money, will affect the rail industry directly, and the industry has little ability to control those costs. *In fact, the deferred maintenance bill, because it must be paid over the next 10 years, will about double due to inflation.*

On the other hand, the cost of using the rights-of-way and many basic facilities of other transportation modes, except pipelines, is fixed by law. Such costs will vary only if legislative action is taken to increase user charges in keeping with inflationary trends. The implication this has for rail profitability and for energy consumption is significant.

The rail industry presents a fundamental problem in public policy in a private enterprise system. There is a natural hesitancy to provide government assistance to railroads because doing so seems to be in conflict with the underlying philosophies of our free enterprise system. It would be tragic if the rail industry were relegated to a lesser and lesser role in transportation. *Balancing and equalling the government support for all*

*transportation modes can help prevent or retard further erosion of rail's competitive position and ensure that each mode performs its most effective role.*

Central to the planning of the Association has been its attempt to take a broader look at the role of railroading in the transport system of the Region. Subsequent sections of this Plan offer suggestions on the kind of rail service most likely to serve genuine transport needs in the next 10 to 15 years. The Plan also addresses the question of how that type of service will fare in competition with other modes, both in cost and service.

This report presents an analysis of the impact of total abandonment of rail service and the substitution of service by alternate modes; it also considers the prospects for saving economic resources by substituting truck service to points now served unprofitably by rail. Assessments are made of the energy, environmental and local economic impacts associated with substituted service.

The goal that stands over all of these intricate mode-choices and impact analyses should be efficiency in the use of available resources. The Association seeks to recommend a System Plan that calls for the right amount of the right kind of rail service. There is no sense in building or rebuilding more and better rail facilities than are justified on a cost-benefit basis. There is no need to preserve rail service to points served far more economically by other modes.

In this regard, the Association believes that our Nation's major systems of transportation must be regulated in a balanced manner that adds to the strength of each mode. Federal support as may be necessary should not produce competitive distortions among modes of transportation. The Nation will not be well served by continuing policies of separate development of each form of transportation regardless of cost, energy and environmental considerations.

There is much waste that already has occurred as a result of separate development, and the Nation no longer can afford wasteful policies. The capital requirements of the bankrupt railroads and the rail industry as a whole during the next decade will be enormous. But they will pale beside the amount which will be invested through existing programs in competing modes of transportation. If these expenditures are made according to the status quo and without a sensible evaluation of the need for an integrated transportation system, the Nation will make bad use of its resources, bankruptcies will continue to spread through the rail industry and the public will suffer.



## AN ALTERNATIVE TO HIDDEN CROSS SUBSIDIES

The railroads, like other common carrier transport modes with high fixed costs, traditionally have financed some deficit services through transfer of funds within the firm, a device known as "cross subsidy". Railroads always have had certain obligations beyond those associated with a normal business enterprise; the charters, powers of eminent domain and regulatory system under which they operate all reflect a presumption in public policy that common carriers have special responsibilities. Stated somewhat differently, public policy was willing to tolerate a measure of railroad monopoly power partly because that monopoly power created a flow of funds which could be tapped to finance, via cross subsidy, some services which public officials wanted continued but not at direct taxpayer expense.

Extensive development of waterway and highway systems and the increased availability of private carriage have weakened the economic base that traditionally enabled railroads to support these public service obligations. Shippers increasingly have developed and exercised the option of operating their own transportation system (usually trucks) when common carrier rates were excessive. In addition, shippers over time have been able to change distribution patterns to avoid high transportation costs. This combination of private carriage and altered production and distribution patterns has undermined the ability of common carriers, especially railroads, to support deficit services.

As rail revenues and profits were lost, the effort to achieve financial viability while serving all customers often required compromises that served neither corporate nor public interests. For example, as passenger losses mounted, services were downgraded if not totally abandoned. Although service to the public was poor, carriers still had significant losses. A similar pattern is now occurring on light-density freight lines, resulting in plant deterioration and a decline in service quality. The carrier minimizes deficits and the public still has some service, yet neither party benefits, or at least the situation is far less than optimal.

In the past, the burden of cross subsidy has fallen primarily on two groups—the owners of railroads (through reduced profit margins) and certain freight shippers (through rates higher than otherwise would be required). Since public policy relied on a flow of funds from these sources that no longer is sustainable (partly because of other public policies), the underlying concept is no longer valid. Recently, government has begun to assume a portion of the burden through direct and indirect subsidy programs.

The issue to be addressed now is how deficits are to be funded in the future. Abandonment of all deficit services is not an alternative, at least in the near term. The historical role of common carriage, as well as programs such as Amtrak, commuter service subsidies and funding under Title IV of the Regional Rail Reorganiza-

tion Act of 1973, all suggest continuation of certain deficit rail services in the public interest.

The Regional Rail Reorganization Act of 1973 was quite explicit with respect to subsidy funds for one kind of deficit operation, light-density lines. In mandating criteria to the Rail Services Planning Office for rail continuation subsidies, the Act states the following policy: "Rail properties are suitable [for subsidy] if the cost of the required subsidy for such properties per year to the taxpayers is less than the cost of termination of rail service over such properties measured by increased fuel consumption and operational cost for alternative modes of transportation; the cost to the gross national product . . . ; the cost of relocating or assisting . . . individuals and firms adversely affected thereby; and the cost to the environment measured by damage caused by increased pollution." (Section 205 (d) (4)).

These are considerations in establishing subsidies for services not otherwise profitable. The law does not require the Final System Plan to provide services meeting these conditions without subsidy. The Act explicitly recognizes that the purpose of subsidy is to enable retention of public benefits that pure private accounting cannot consider.

The provision of large amounts of federal funds to upgrade properties of the bankrupt railroads in the Region has important implications for the issue of cross subsidy, but it does not obviate the need for the recommended policy. Some interests have contended, for example, that if large amounts of public funds are required for rehabilitation of the decrepit physical plant of the Region's bankrupt carriers, a substantial "nationalization" of the rail industry has already come about and that such an institution ought to be capable of bearing the marginal additional costs of deficit services such as light-density lines.

USRA believes that relaxation of the position against cross subsidy would lead to a larger and larger financial burden on the federal government, further blurring the distinction between private and public management of the industry. The Association, while rejecting the concept of cross subsidies, recognizes that ConRail or other railroads should be free to operate deficit services which offered potential economic benefit to the railroad. Carriers should engage in product or market development programs as would any normal business enterprise.

A large federal role is unavoidable in repairing the collapse of rail service by the Region's bankrupts, but it must be sharply defined and held to the minimum. Public policy should insist upon private responsibility for rail services which can carry their own weight in the marketplace and the provision of public financial support for money-losing services which private carriers are required to conduct for public purposes.



## Summary and Conclusions

In preparing the Preliminary System Plan, the United States Railway Association faced the challenge of defining how to revitalize regional rail service while accommodating all the diverse goals of the Act. To meet the basic intent of the Act, the Association had to try to find a way to restructure the bankrupt carriers so as to insure adequate and efficient rail transportation, achieve a private sector solution, preserve competition, conserve energy, protect the environment and minimize unemployment and adverse effects on communities—all at minimum expense to the taxpayers. These complex and often conflicting goals were the fundamental point of reference for each of the many decisions required in developing this plan.

Broadly, the most critical decisions addressed by the Association were:

- Definition of an industry structure for the Region which embodied the elements of service, efficiency, competition, preservation of the financial strength of the solvent carriers and most of all, achievement of a new company(s), ConRail(s), able to sustain itself financially.
- Determining the system configuration of the new companies, including the principal and secondary through and feeder routes, and recommendations on light-density local service lines.
- Determining the financial results for these new companies and their financial needs from both the public and private sectors.
- Establishing specific goals and recommendations concerning the ancillary, but important area of passenger service.

The Association's conclusions are that:

- The Northeast and Midwest Region should be served by three major rail systems—a ConRail largely based on Penn' Central, the Norfolk & Western and the Chessie System—supplemented by strengthened operations of the smaller solvent railroads. In the interest of preserving competition in major markets, the Norfolk & Western and/or the Chessie System should expand to control and operate services over certain main lines of the bankrupts. Because of these transfers of properties to solvents, ConRail would not exercise monopoly control over any major market in the Region.
- ConRail's System initially should include some 15,000<sup>1</sup> miles of principal, secondary and feeder lines including 3,400 miles of light-density lines. This system will enable ConRail and the Region's solvents to provide carriage for more than 95.5 percent of the traffic currently generated by the Region's shippers.
- ConRail should generate a positive net income by 1978, but it will not internally generate sufficient cash flow to finance necessary rehabilitation over the next 10 years.
- ConRail will need financing substantially in excess of the \$1 billion now provided in the Act. This financing should be arranged in a way that minimizes the duration of the government's involvement.
- Passenger service in the Region should be improved by transferring financial and operational respon-

<sup>1</sup> The Erie Lackawanna is excluded here and hereafter except as noted otherwise.

sibility for the Northeast Corridor from ConRail. A major upgrading program in the Northeast Corridor and the development of 16 other passenger corridors in the Region are recommended.

The remainder of this chapter discusses each of these conclusions, indicates the Association's tasks leading to the preparation of the Final System Plan and outlines the chapters of the Preliminary System Plan that follow.

### Regional Rail System

*The Association has concluded that the Northeast/Midwest Region should be served by three major rail systems—a single ConRail (as defined herein) along with expanded Norfolk & Western and/or Chessie systems. These carriers generally would be balanced and competition would be provided by at least two of them in each of the major markets of the Region. They would be supplemented by the smaller solvent carriers now operating in the Region, each of which should benefit by this system definition.*

To develop this two-carrier competition, the Association proposes that the Chessie System be expanded significantly in metropolitan Philadelphia and be given access to the Allentown-Bethlehem markets. It is also proposed that either the Norfolk & Western or the Chessie System be extended through Upstate New York and Northeastern Pennsylvania to Northern New Jersey and the Newark/New York metropolitan area. Using connections this system would assure competition to New England. ConRail would be made up of the present Penn Central system plus certain parts of the smaller bankrupt carriers. This regional system would achieve competitive balance and lead to reduction of duplicate mileage in the eastern part of the Region.

The proposed plan would meet the goals of the Act by providing competition in all the important markets in the Region, strengthening each carrier in the Region affected by the restructuring process, providing the best chance for the development of a profitable ConRail and resulting in the lowest possible cost in rehabilitation of the bankrupt carriers' deteriorated facilities.

*The route and operating configuration of the ConRail system represents an interim step between that which exists today and that which necessarily must evolve in the next decade. The initial ConRail operating and route structure represent estimates of how best to reverse the fortunes of the bankrupt carriers so they can once again perform adequate and efficient rail transportation. The Plan, however, is not carved in stone and it will be subject to many modifications in the next decade.*

### Alternative Structures

Drawing upon the goals of the Act, the Association established three criteria for evaluating alternative structures: (1) an adequate and efficient rail service to

preserve competition and existing traffic flows so far as possible, (2) the effect on the financial self-sufficiency of ConRail and (3) the financial self-sufficiency of other railroads in the Region. In addition, because some theoretically attractive alternatives might be very difficult to implement, the Association examined the likely, practical consequences of implementation.

Four major structural alternatives were considered by the Association. These were the following:

- *Establish a single ConRail to take over operations on all main lines of the bankrupts.* This alternative would offer the best chance for ConRail to become financially self-sustaining. It would lead, however, to monopoly situations in significant geographic areas, thus depriving shippers of the advantages of competitive alternatives.
- *Establish a ConRail East and West.* The adoption of this structure would lead to the creation of two companies, divided roughly along a line extending from Albany to Harrisburg to the Potomac River. The eastern railroad would operate as a neutral terminal company, primarily providing switching services for cars originating and terminating in the area. All railroads reaching the terminal interchange points would have access to the terminal area. The western railroad would operate as a line haul railroad over all the Penn Central and Ann Arbor properties west of the dividing line. This alternative would encourage the provision of competitive services. It would create, however, two organizations that together, as a result of less efficient operations, would be less profitable than one company. The western company, taken alone, would be no more profitable than a single ConRail. Moreover, this alternative assures continued losses and therefore continued government involvement in the neutral terminal company providing solvent railroads and ConRail access to all shippers. Its selection also would require that two new organizations be created, inherently a more complex undertaking than establishing a single new organization.
- *Establish a ConRail North and South.* This split could be accomplished essentially by "unmerging" the Penn Central into two railroads roughly approximating the old New York Central and Pennsylvania railroads; properties of the smaller bankrupts would be joined with either of these two organizations. This alternative offered less chance of financial self-sufficiency for the railroads, either individually or in total, than the single ConRail alternatives; creating two organizations, both of which face difficult challenges in becoming self-sustaining, doubles the probability of failure. This alternative also raises complex operations questions related to breaking up the Penn Central



into two new railroads. And it would not be particularly effective in encouraging competition.

- *Establish a single large long haul railroad, with neutral terminal companies in key areas.* This option would lead to the consolidation of the bankrupt carriers into a single system and would create jointly-owned terminal companies as subsidiaries of the line haul carriers; these terminal companies would perform pickup and delivery services in the important Philadelphia and New York/Newark market areas. The solvent carriers would have access to these terminal companies over their own lines or via operating rights over ConRail tracks—thus providing competition in New York/Newark and Philadelphia. Under this alternative, the total profitability of ConRail and the terminal companies together will be somewhat less than the profitability of a single ConRail. It also would require the start-up of three or more new organizations and it would present artificial operating barriers to the line haul carrier which would hamper its efficiency.

This last option, however, did provide the basic elements of an approach to resolving the regional structure issue and meeting the various goals and purposes of the Act.

The Association's proposed structure would maintain competition in the major East Coast markets and minimize track and terminal duplication (thereby reducing rehabilitation costs) without the creation of an additional operating entity, other than ConRail in the Region. Thus, the outline of a solution was available and the Association undertook development of the following alternatives.

- *Establish a single ConRail to take over most operations of the bankrupts, but transfer some lines from the bankrupts to solvents to provide them with access to certain key markets.* This alternative probably would create a ConRail somewhat less profitable than one with access to all the traffic of the bankrupts. This alternative, however, would enhance competition in significant geographic markets (such as New York/Newark) and would offer more protection to the solvents' existing traffic base than an alternative not offering them access to key markets. As indicated, the Association has selected this alternative as best meeting the purposes and goals of the Act. If one solvent does not desire access to these markets, then a solution centered on the other in combination with ConRail would be acceptable. If the Association is unable to implement its selected system, for example, because neither solvent desires access to certain markets, the following alternative would be the second choice.
- *Unite the smaller bankrupts in the Region to compete with a company operating over the Penn*

*Central lines.* This option would involve creating two east-to-west carriers: the Penn Central and the Ann Arbor competing with the Erie Lackawanna, the Central of New Jersey, the Reading and the Lehigh Valley. To provide adequate competitive strength, the latter system would require access, through joint ownership of lines or trackage rights, to such gateway points as Cincinnati and St. Louis. While USRA has not yet made a complete financial analysis of this option,<sup>2</sup> it appears somewhat less attractive financially than either of the single ConRail alternatives. In addition, although it does provide competitive service to major points and would be easier to implement than either the east-west or north-south ConRail splits (since both companies would be formed by joining, rather than splitting, existing bankrupts), it would impair the competitive position of the Regions' solvents. Detailed evaluation of all the alternatives is presented in Chapter 3 and Appendix C. The coordination projects, over which ConRail and the solvents will carry out joint operations, will offer additional opportunities to improve efficiency and profitability. These projects are described fully in Chapter 4 and Appendix D.

#### Line Transfers

*Implementation of this selected system concept requires that certain main lines be conveyed to ConRail and other lines transferred to solvents.* The proposed structure is indicated in the large color map enclosed with this report, titled *Northeast and Midwest Recommended Industry Structure*. As shown, the selected system would have the following important features:

- ConRail would consist of the present Penn Central, the Reading (less the Reading's Philadelphia and Allentown markets), the Lehigh Valley (from Newark to the point where it intersects the Erie Lackawanna west of Binghamton, N.Y.), the Central of New Jersey, the Pennsylvania Reading Seashore Lines, the Lehigh & Hudson River and the Ann Arbor railroads.
- The Norfolk & Western Railroad would operate its present system, plus the Erie Lackawanna lines from Buffalo to Binghamton and on to Newark. The resulting system would enable the Norfolk & Western, the Delaware & Hudson and the Boston & Maine to operate as an integrated system, should they choose to do so.
- The Chessie would operate its current system plus the Reading's Philadelphia and Allentown markets. Because the present Reading route from Harrisburg to Allentown and Philadelphia also would

<sup>2</sup> This is due to the late decision of the Erie Lackawanna to seek status as a "railroad in reorganization."

be main ConRail routes, Chessie's access probably would be provided through trackage rights.

- The Delaware & Hudson would operate over its current lines, plus over the Lehigh Valley line from Wilkes-Barre to Allentown. This would protect the Delaware & Hudson's current north-south traffic and establish a "friendly" connection with the Chessie.
- The Boston & Maine, the Maine Central, the Bangor & Aroostook, and the Grand Trunk Western would retain their present independent status as would the Detroit, Toledo and Ironton and the Pittsburgh & Lake Erie. They also would be strengthened through the coordination projects.

It is important to note that implementation of the Association's recommended industry structure depends critically on the successful conclusion of complex negotiations between USRA and the Norfolk & Western and the Chessie. Each solvent is examining the proposals in terms of its responsibility to its shareholders, with a view to minimizing the financial risk involved. Should both of these solvents decide that it is not in their best interest to participate in the proposed restructuring, USRA would need to adopt one of the less satisfactory system options. USRA and the solvents will continue discussions prior to the issuance of the Final System Plan.

### Freight Routes Included in ConRail System

After arriving at its conclusions concerning the structure of the regional rail freight system, the Association addressed the task of identifying the specific principal and secondary through routes and feeder routes that should comprise ConRail's freight system.

Based on analyses of traffic flows, line and terminal capacities and the condition of the trackage, the Association has concluded that *ConRail should operate over 15,000 miles of principal, secondary and feeder trackage—including 3,400 miles of light-density branch lines* (discussion on this issue to follow). Figure 1 shows the recommended structure, which features:

- 3,000 miles of principal through routes connecting major freight terminals;
- 3,800 miles of secondary through routes that provide system connections, capacity to accommodate future traffic growth and through service, pending completion of the rehabilitation program on primary through routes;
- 8,200 miles of feeder routes to be used for gathering local traffic and moving that traffic into yards, and
- twenty-five major system yards to accept and classify traffic for movement over the principal freight routes.

The Association believes this ConRail system adequately meets the needs of the shippers and contributes significantly to meeting the total rail transportation needs of the Region.

### Light-Density Rail Lines Included in the System

The Association has concluded that ConRail can and should provide services over at least 3,400 miles of light-density lines based on review of 9,600 miles of light-density lines now receiving service. This conclusion implies that the operations over about 6,200 miles of light-density lines should be subsidized or service should be discontinued.<sup>3</sup>

The subsections that follow discuss the nature of the light-density line issue, describe the method used by the Association in determining which lines should be included in the ConRail system and present specific conclusions on lines to be included.

### Issue of Light-Density Lines

The issue of how best to decide on the light-density lines to be included in ConRail's system was among the most complex faced by the Association for it required careful consideration of the somewhat conflicting implications in the various goals of the Act. For example, the goal of economic self-sufficiency requires that ConRail not be saddled with providing unprofitable service, and service over many light-density lines clearly would be unprofitable. The Act also specified, however, that USRA define a rail service system that meets the needs of the Region and minimizes adverse community effects and disruptions in service to shippers.

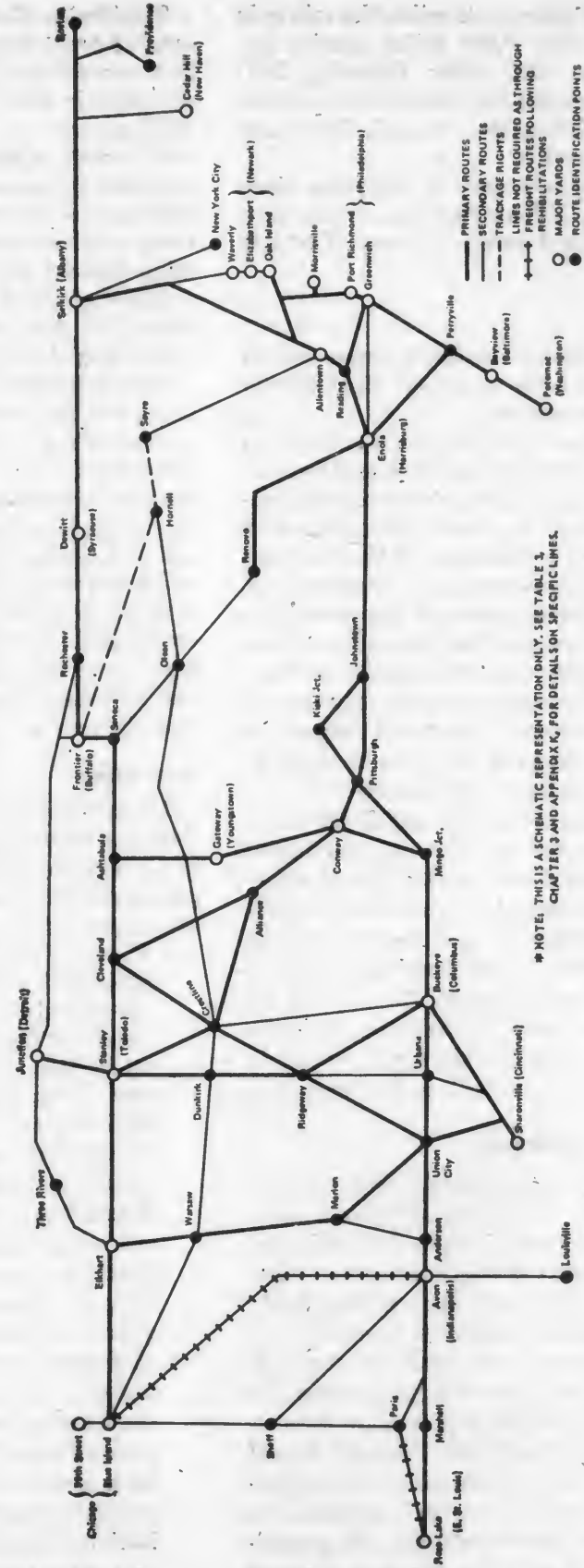
### Approach to Analyzing Light-Density Lines

Against this background, USRA took the following steps in examining light-density lines. First, USRA defined an analytic process aimed at ascertaining for each present and potential (after through traffic re-routing) light-density line the economic contribution or burden on the railroad operating such service. Second, data were collected for each line that included physical characteristics, freight service over the line, shippers on the line and traffic characteristics. This material was provided by railroads serving the line, individual shippers, federal agencies and by concerned citizens and state groups usually in testimony given in public hearings held by the Rail Services Planning Office. Finally, each was analyzed to determine whether revenues currently generated are sufficient to cover the costs directly attributable to that traffic.

In all, the analysis encompassed 844 line segments and 11,800 miles (not including any lines of the

<sup>3</sup> Upon receipt of additional information between preparation of the Preliminary and Final System Plans, USRA will analyze the traffic growth potential of these lines. On this basis, additional light-density lines may be recommended for inclusion in ConRail's system. The Association will also give further review to those lines which serve recoverable coal reserves.

FIGURE 1  
 THE CONRAIL SYSTEM PLAN: \*  
 PRINCIPAL FREIGHT ROUTES AND MAJOR CLASSIFICATION YARDS



\* NOTE: THIS IS A SCHEMATIC REPRESENTATION ONLY. SEE TABLE 3, CHAPTER 3 AND APPENDIX K, FOR DETAILS ON SPECIFIC LINES.



Erie Lackawanna). Of these route miles, the railroads now provide service over 9,600 miles, service has been abandoned over 1,200 miles following ICC abandonment procedures and the railroads are not providing service over 1,000 miles, although these have not been abandoned formally.

A description of the approach to analyzing these light-density lines and USRA's findings are presented in Chapter 7 of Volume I and in Volume II of this report.

### Conclusions

The Association concluded ConRail's system should include 3,400 of the 9,600 miles of light-density lines currently under operation.

The lines recommended for inclusion would retain about 75 percent of the traffic on branch lines; if service were discontinued on the remaining lines, it would represent only 4.5 percent of the total traffic (measured in carloads originated or terminated) of the bankrupt railroads. Though it is apparent that, in some cases, termination of service would adversely impact specific shippers and communities, the Association found that the overall regional impact of potential service termination, based on unemployment increases, reduction in county income, environmental impact and increase in transportation costs to shippers, would be minimal on a county-level basis in all but a few instances.

The light-density lines not recommended for inclusion in ConRail's Final System Plan may be eligible for the joint 2-year federal-state rail continuation subsidy program. Thus, the states, local governments, shippers and private organizations can determine which lines they wish to include in that program, a task in which USRA stands ready to help. *Even if all the branch lines not recommended for inclusion were subsidized, the Association estimates the total cost will be within the funding subsidy available under the Act.*

### ConRail Financial Projections

A key goal of the Act is to organize the bankrupt railroads into a financially self-sustaining system operated by private, for-profit corporations. In particular, Congress anticipated that ConRail's securities would have sufficient value to compensate the creditors fairly and equitably for the assets conveyed to ConRail.

To ascertain whether this goal could be achieved, USRA developed detailed financial projections for ConRail through 1985. On the basis of these projections, the Association has concluded that *ConRail should begin generating a positive net income by 1978. However, while net income should improve continuously, the substantial investment in rehabilitating the properties will cause a negative cash flow for 12 to 14 years after start-up.*

Specifically, the projections show that ConRail reasonably could expect to improve its net income from a 1973 consolidated loss of the bankrupt carriers of approximately \$221 million to a \$91 million deficit in 1976, a profit of approximately \$161 million in 1980 and a profit of \$382 million in 1985. These figures are expressed in constant dollars; if inflation is considered, performance looks less impressive. Due to the investment requirements over the 10-year period 1976-85, using inflated figures, ConRail will have a financing shortfall of about \$3 billion (including rehabilitation, interest on debt and losses) that probably will not be supplied by the private sector.

The projections were developed through detailed analysis and field work by the Association and its contractors. The projections derive from intricate relationships among a host of variables, but it is possible to identify a relatively small set of assumptions with a significant impact on the financial results. The ConRail financial projections do not include Erie Lackawanna which so recently came into the planning process. The Association estimates that revisions reflecting that increase would not materially change the result. The remainder of this section discusses the key assumptions and provides a more detailed presentation of projected financial results.

### Assumptions

The key assumptions underlying the financial projections can be grouped into four areas: financial policy, profit improvement due to revenue increases, profit improvement due to cost reductions and rehabilitation and capital program.

- *Financial policy.* Early in its work, the Association adopted two financial policies that are reflected in the financial projections. *First, the Association decided that ConRail should not cross-subsidize operations that generate financial losses.* In adopting this policy, the Association anticipated that ConRail would be fully compensated for the services it provides to passenger authorities. Moreover, it would not operate over unprofitable light-density lines unless some other organization provided a full operating subsidy; and noncompensatory rates would be raised to at least a breakeven level. *Second, the Association adopted an accounting approach termed "modified betterment accounting," that differs from the usual ICC approach.* The intent of the approach is to portray more effectively the financial status of a railroad facing the complete rehabilitation of its basic facilities contrasted with a railroad needing to continue an ongoing maintenance program. The approach allows ConRail to capitalize the rehabilitation expenditures necessary to return the property to a normal condition rather than recording the entire expense in the



year incurred. The result of using this approach is a truer year-to-year picture of revenues and their associated costs; it does not in any way change ConRail's cash requirements.

- *Profit improvement from revenue increases.* As a starting point in projecting ConRail's revenues, USRA projected traffic growth, commodity by commodity, through 1985. The effort indicated that by 1985, total freight tonnage should increase 64.6 million tons over 1973 volume (352.2 million tons), reflecting an annual compound growth of 1.41 percent. Coal, accounting for 52 percent, is the most significant contributor of this tonnage increase. All other commodity growth is forecasted at an annual figure of .99 percent (compounded) in the period through 1985; this compares to .85 percent in the period 1968-73.

These traffic increases should result in 1985 freight revenues that exceed 1973 revenues by \$376 million (expressed in 1973 dollars). Trailer-on-flat-car (TOFC) service represents the largest share, contributing \$135 million in additional revenues in 1985, and selective rate increases relative to currently unprofitable traffic will provide \$6.7 million in revenues in 1976 and reach \$64.4 million in 1985.

Reflecting the financial policies concerning cross-subsidization, the Association also has assumed full recovery of passenger deficits (\$55 million in 1976 and decreasing to \$31.8 million in 1985) and the provision of light-density line subsidies (\$27.7 million in 1976 and 1977, then phasing out).

- *Profit improvement due to cost reductions.* Working from detailed field analysis, engineering studies, etc., USRA staff estimated that total improvement in cost performance that reasonably could be attained by ConRail. Assumptions in four expense areas had the most significant impact on financial results.

—*Maintenance of way* expenses will be lower due to reduction in system size, although the unit costs will be higher as a result of maintaining ConRail's track and facilities at upgraded levels. ConRail will have average annual maintenance of way expenses some 60 percent higher per mile than the bankrupt railroads expended recently.

—*Maintenance of equipment* expenses should increase slightly over the period, reflecting the higher locomotive and car maintenance costs needed to reduce the high equipment bad order ratio of the bankrupt railroads.

—*Transportation expenses* should decline gradually, beginning in ConRail's first year of operation. This gradual decrease should result from the implementation of improved car handling procedures and systems, consolidation gains, and

greater efficiency resulting from rehabilitation of facilities.

—*Net car hire paid* is estimated to improve substantially over this period (savings will increase from approximately \$29 million in 1976 to \$80 million in 1985). This favorable change results from the assumed use of an improved car management system, the impact of rehabilitation on train speeds, (enabling ConRail to achieve better car utilization), and the assumption that ConRail will acquire cars through purchase rather than lease (thus reducing the amount of lease payments).

- *Rehabilitation and capital program assumptions.* The Association estimates that during ConRail's first 10 years \$2.0 billion (uninflated) or \$4.2 billion (inflated) will be needed for rehabilitation and capital improvements to track structure and facilities. New locomotive and car purchases will total \$6 billion (uninflated) or \$1.0 billion (inflated). This program when completed should bring the right-of-way, facilities, motive power and equipment to standards generally maintained by more profitable and efficient carriers in the Nation. To maximize dollar return, optimize service and maintain flexibility, rehabilitation funds expended in the initial years, recognizing material constraints, would be devoted principally to ConRail's primary through freight routes and major yards. Under this rehabilitation strategy, the main lines will be brought up to adequate standards (50-60 m.p.h.) within 3 to 7 years. It means, however, that many secondary and branch lines will have only minimum maintenance done during this period. Capital expenditures for modernization projects and new equipment would be devoted principally to signal projects and new locomotives.

#### Financial Results

Table 1 presents key financial data projected for ConRail over the period 1976 to 1985. These show that:

- ConRail will operate with a net deficit of \$91 million in 1976, its first full year of operation,
- ConRail will break even in 1978, its third year of operation and
- Net income in 1985 will be \$382 million.

Such an improvement in net income represents a dramatic turn-around in view of recent trends of the Northeast's railroads. Yet, the improvement should be possible because ConRail is not intended to be a composite of the bankrupt carriers, but a revitalized, restructured railroad serving the same territory now served by the bankrupt carriers. The opportunity to repair and rehabilitate track and facilities of six railroads is unique in the railroad industry.

TABLE 1.—Summary of key financial projection data, 1976-85

[In millions of dollars]

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Operating results in 1973 dollars:										
Railway operating revenues:										
Freight.....	\$1,892	\$2,060	\$2,016	\$2,055	\$2,069	\$2,124	\$2,161	\$2,196	\$2,234	\$2,275
Passenger and other.....	488	503	503	502	502	499	491	495	498	499
Total railway operating revenues.....	2,380	2,563	2,519	2,557	2,591	2,623	2,652	2,691	2,732	2,774
Income (loss) before taxes and interest.....	(54)	26	100	212	242	300	333	367	427	459
Net income before income taxes.....	(91)	(27)	32	135	161	218	253	289	349	382
Net income before income taxes in inflated dollars.....	(94)	(38)	10	99	107	142	156	169	205	215
Selected balance sheet items in inflated dollars:										
Net properties.....	665	1,062	1,466	1,889	2,302	2,772	3,174	3,696	4,223	4,727
Total assets.....	1,531	2,040	2,489	2,989	3,476	4,008	4,477	5,078	5,678	6,269
Net external financing: <sup>1</sup>										
Equipment notes.....	215	178	195	221	254	296	307	371	441	502
Federal notes.....	554	952	1,254	1,537	1,798	2,066	2,282	2,552	2,781	2,966
Total.....	769	1,130	1,449	1,758	2,052	2,361	2,589	2,923	3,222	3,488
Retained earnings (deficit).....	\$ (94)	\$ (182)	\$ (121)	\$ (22)	\$ 84	\$ 227	\$ 383	\$ 552	\$ 756	\$ 971

<sup>1</sup> Excluding the amounts assigned to any assets acquired by conveyance from the bankrupt estates and any securities issued at conveyance other than the equipment indebtedness assumed which is included in net properties, total assets, and equipment notes.

The forecast results are not out of line with the current performance of a well managed railroad. Table 2, a ratio analysis, compares anticipated ConRail performance with that of 10 solvent railroads. It shows that ConRail will need to perform well to achieve these results, but that other railroads have, in fact, reached the assumed levels. Thus, the performance assumptions underlying these projections appear to be reasonable.

The Association stresses, however, that the levels of performance underlying the above projections will not occur by happenstance. *The performance of ConRail will exceed that of the bankrupts only if ConRail employs management leadership of the highest quality.* The selection of ConRail's top management team ultimately will determine whether ConRail becomes a railroad on the way to a healthy future or a sick corporation salvagable only by continuing infusions of government funds.

The Association's financial projections are based on

long-term secular trends and the improvements identified and implementable by a good management. *Nevertheless, the present state of the U.S. economy compounds the uncertainties of the future and suggests some caution in reviewing their precise accuracy.*

*Impact of Inflation.* The results just presented have been stated in constant 1973 dollars. Inflation, however, can change the results significantly. To demonstrate its impact, USRA prepared projections reflecting anticipated inflation rates through 1985. Estimates used by USRA indicate that inflation will continue above 10 percent for 1975 and gradually recede to about 5 percent by 1980, remaining in that vicinity through 1985.<sup>4</sup> Using these assumptions, ConRail's financing need would change in that:

- Debt as of 1985 will be \$3.5 billion, representing an increase of \$2.7 billion over the uninflated case and

<sup>4</sup> The details of these estimates are included in Chapter 14, summary information presented on Table 4.

TABLE 2.—Comparison of key operating ratios,<sup>1</sup> ConRail and other railroads

Railroad Performance

Key operating ratios	Railroad Performance												
	Penn Central 1973	ConRail 1976	ConRail 1985	ATSF	Chessie <sup>2</sup>	BN	MILW	ICG	N&W	SOU <sup>2</sup>	SP <sup>2</sup>	SCL	UP <sup>2</sup>
Operating expenses/railway operating revenues.....	0.827	0.896	0.717	0.791	0.748	0.836	0.803	0.752	0.725	0.714	0.770	0.708	0.741
Maintenance-of-way/railway operating revenues.....	.130	.164	.114	.156	.120	.163	.166	.138	.117	.162	.122	.142	.130
Maintenance of equipment/railway operating revenues.....	.167	.175	.157	.186	.159	.167	.140	.155	.179	.176	.186	.183	.179
Transportation expense/railway operating revenues.....	.470	.481	.387	.281	.382	.415	.415	.381	.359	.310	.392	.384	.353
General, administrative and other expense/railway operating revenue.....	.060	.076	.059	.068	.085	.081	.082	.077	.070	.066	.071	.069	.079

<sup>1</sup> Revenues and expenses for ConRail and all other railroads were computed using accounting rules comparable to those used by the industry in 1973. In addition to adjustments made to transform ConRail from a modified betterment to an ICO betterment accounting method, other adjustments were made to reflect revenues and

expenses on a basis comparable with other railroads with respect to light-density line subsidies, Amtrak remuneration and recoveries of passenger deficits not currently being reimbursed.

<sup>2</sup> Consolidated companies.

- *ConRail will require external financing (largely assumed to be federal) until after 1985, rather than stopping borrowing in 1981 as in the uninfated case.*

Simply to maintain the income projections shown, a regulatory policy is required that permits rate increases equivalent to costs without significant time lag. In addition, rate increases which do not allow for full recovery of investment costs compound the problem. As the work of the Association proceeds, it is critical that all parties associated with the future of the Northeast rail system—especially industry management and regulatory bodies—appreciate the impact of regulatory policies and procedures and work to improve them.

### ConRail Financing

As shown in Table 1, ConRail's net external financing requirements over the 10-year period 1976-85 are likely to be \$3.5 billion.<sup>5</sup> The Association projects that private sources will provide about \$.5 billion of this sum (primarily in equipment notes), but the long-term debt requirement not met from private sources will be about \$3 billion by 1985. Since the Act allows government guarantees of only \$1 billion of ConRail debt, a \$2 billion shortfall must be made up.

The financial projections show that ConRail would likely be able to service additional debt of this size if its operating performance matches that assumed in the projections. However, the Association does not believe that the private sector would be willing to provide additional funds in this total amount without some form of government participation.

*Hence, the Association has concluded that ConRail will need financing in excess of the \$1 billion now provided in the Act. However, given the desire to implement quickly a private sector solution to the Northeast rail problem, should this assistance be provided by the government, it must be in a way that minimizes the duration of the government's involvement.*

The Association faced two broad options in considering the financial question. It could have instituted means to reduce the financing requirement so that ConRail could function using the \$1 billion provided in the Act, or it could have recommended that the government take steps to meet ConRail's additional requirements. More specifically, the alternatives are of two kinds:

- *As a means of enabling ConRail to function within the funding in the Act, reduce either the miles of track in the system or the scope of the rehabilitation program. To stay within the financing pro-*

*vided in the Act, USRA attempted to define a reduced rail system that would enable ConRail to become financially self-sustaining, yet require only \$1 billion in government financing. The analysis<sup>6</sup> showed that the resulting system size would approximate 5,000 miles, eliminating over 75 percent of the existing trackage of the bankrupt carriers. This alternative was rejected as incompatible with the goal of meeting rail service needs in the Region.*

The Association also considered reducing the level of the rehabilitation program by reducing expenditures over the entire system. This alternative also was rejected. The condition of the principal routes and yards is so poor and yet so important to enable ConRail to provide good service that a rehabilitation program that spread the available funding over the entire system would result in uniformly poor service and efficiency systemwide and simply perpetuate what exists today.

- *Additional means of financing ConRail should be established. The Act has several programs designed to provide financial assistance to the Northeast railroads. However, none of the programs provide sufficient long-range financing to ConRail, or to other railroads. It is the USRA's conclusion that the federal government appears to be the only available source of this financing for ConRail. Thus, the Association has begun to consider how this long-range solution might be developed.*

The Association's studies on alternative forms of financing, combined with its work on valuation of properties, will provide the basis for a complete recommendation on financing to be presented in the Final System Plan.

### Northeast Rail Passenger Service

*The Association has concluded that passenger service in the Region should be improved by shifting primary financial and operational responsibility for the Northeast Corridor<sup>7</sup> from ConRail, carrying out a major upgrading program in the Northeast Corridor and developing 16 other passenger corridors. The sections that follow briefly describe the background to USRA's passenger service work and discuss each conclusion.*

Since the primary planning effort was to be freight oriented, Congress sought to emphasize explicitly the importance of passenger service in the Region. Specifically, the Act states that the Final System Plan

<sup>5</sup> USRA attempted to evaluate the financial implications of such a system, but it is not possible to develop complete financial projections for this option because of the major adjustments in traffic flows, costs and revenues associated with this option.

<sup>7</sup> The Corridor is defined as the present Penn Central's route from Boston to Washington.

<sup>6</sup> These estimated liabilities exclude any debt payment for assets conveyed by the estates to ConRail since definition of the securities package must await the conclusions of the studies, but the estimates do include assumptions of existing indebtedness of revenue equipment.



should help effect "the movement of passengers . . . including the requirements of commuter and intercity rail passenger service . . . and the identification of all short to medium distance corridors in densely populated areas in which the major upgrading of rail lines for high speed passenger operation would retain substantial public benefits." Moreover, the Act instructed the Secretary of Transportation to improve service in the Northeast Corridor.

In response to this mandate, USRA conducted a study of the scope and quality of rail passenger service in the Region—focusing primarily on the identification of intercity corridors that would be appropriate candidates for upgrading programs. Building on this study, the Association concluded that:

- *Responsibility for the Northeast Corridor should be transferred from the freight railroads.* The Northeast Corridor could play a more effective role in intercity transportation than it does today. The Washington-Newark portion of the Corridor has heavy freight services now and there is much interference between freight and passenger operations. With the implementation of recommended service improvements (increased frequency and speed), the interference problem could become more severe. The Association recommends that ConRail through-freight services be rerouted to separate most freight and passenger train operations. Local freight service will continue to be provided by ConRail, but ConRail should yield responsibility for the entire Northeast Corridor—which will be used principally for passenger service. Through freight services currently provided in the Corridor would be transferred to a parallel route composed of segments of the Baltimore & Ohio, the Reading and the Lehigh Valley railroads. It is anticipated that this transfer could be accomplished over the next few years.
- *Corridor service in the Region should be considered for extension and improvement between 16 city pairs.* USRA identified 16 city pairs as candidates for new or improved corridor service (Figure 2). The most significant new corridor service would be provided between the cities of Cincinnati and Detroit, Cleveland and Pittsburgh, Chicago and Cleveland and Washington and Pittsburgh. The services recommended would be intermediate speed (80 m.p.h.), modest frequency operations. Improvements from that base could proceed if demand warranted. The start-up date for most services will be 3 to 5 years hence as most will utilize ConRail track which must first be rehabilitated.

As a closing point relative to passenger service, the Association emphasized the need to resolve an issue that

has been the source of considerable controversy and irritation—namely the issue of compensation to freight railroads for the provision of passenger services. This controversy has contributed to a lack of cooperation in many instances between the freight railroad and the passenger authorities—and performance in providing passenger service has suffered. While USRA is not seeking to blame past problems on one side or the other, it stresses the need to establish arrangements that fully and equitably compensate freight and passenger organizations for the services they provide to each other.

Thus, USRA recommends that the approach to be used in determining the compensation rendered is for the facility to be owned/controlled by the exclusive or dominant user, bearing the full costs; the secondary user should pay an appropriate charge for the use of the facilities.

In sum, USRA believes its recommendations on passenger services will contribute to the improvement of both passenger and freight services in the Region. It provides for improved passenger service in these areas where it is most needed; it fixes responsibility for passenger service with authorities whose whole concern is with the passenger; and it clarifies and establishes fair and equitable principles for compensating either freight or passenger agencies for services one renders to the other.

### USRA's Continuing Program

A significant amount of work remains to be done between issuance of the Preliminary and Final System Plans. Broadly, the tasks to be carried out include completing USRA's planning work, synthesizing and responding to public comment on the Preliminary System Plan, negotiating with outside parties, assisting in ConRail activation and preparing the Final System Plan.

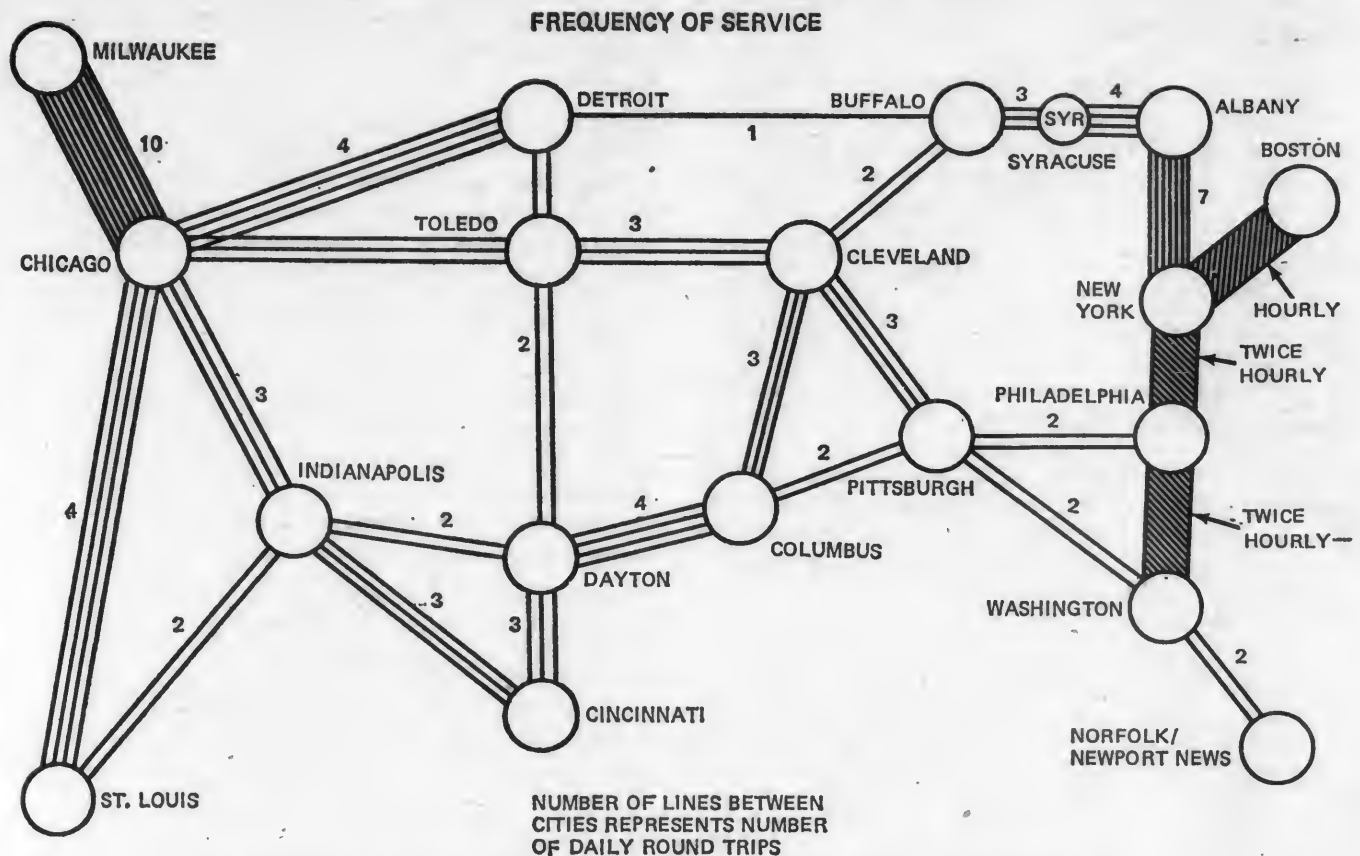
### Negotiating With Outside Parties

The Association has recommended a number of actions in the Preliminary System Plan contingent on the consummation of negotiations with outside parties. Complex negotiations with solvent railroads, Amtrak and public authorities must be carried out in order to implement the Plan's industry structure recommendations. Additional negotiations with respect to light-density lines and coordination projects (e.g., joint facilities agreements) also must be carried out with solvent carriers. Substantial effort will have to be devoted to these tasks to finalize as many agreements as possible prior to the issuance of the Final System Plan.

### Completing the Planning Work

A number of critical planning tasks must be completed in the coming months. In financial planning, USRA must value both the properties to be acquired

FIGURE 2



and the securities accruing to the estates and develop a definitive capital structure for ConRail. A second planning task relates to including the Erie Lackawanna in the system. USRA must conduct analyses of the Erie Lackawanna's light-density lines, operations, facilities and equipment. In the manpower area, USRA must develop a detailed plan for manpower utilization and deployment, project labor protection costs under Title V of the Act and assess the benefits of utilizing an employee stock ownership plan.

#### Responding to Public Comment

During Rail Services Planning Office hearings, a number of interest groups including state and local governments, shippers and creditors will review and make substantive comments on the Preliminary System Plan. The Association must be in a position to assimilate these comments, respond to questions raised and factor these results into ongoing planning work. Information received will, for example, result in a reevaluation of many light-density line decisions to determine where lines recommended for exclusion in the Preliminary System Plan should be included in the Final System Plan.

#### Assisting in ConRail Activation

USRA is only the planning agency for the revitalized Northeast rail system; management of ConRail and other railroads must make the plan happen. A large number of projects must be launched between now and conveyance-day in order to place ConRail on a sound footing to begin operations. Such projects will relate to organization, executive selection, administrative systems, operations control, budgeting and a host of other tasks associated with ConRail start-up. USRA must play a leadership role relative to these activities.

#### Preparing the Final System Plan

Through the months ahead, the Association must review and refine all conclusions reached in the Preliminary System Plan. Drawing on new information, RSPO hearings, results of negotiations, etc., the plan must be revised, approved by the board and prepared for submission to the Congress by July 26, 1975.

#### Organization of the Preliminary System Plan

The findings and conclusions developed as part of the Association's plan for rail service in the Northeast and Midwest Region are presented in the following 13 chapters of Volume I.

**Chapter 3, *The Regional Rail System*:** Presents conclusions on the structure of the rail system that should serve the Region.

**Chapter 4, *Coordination with Solvent Railroads*:** Describes potential opportunities for consolidation, pooling and joint use or operation of facilities to enhance the efficiency of the Region's railroads.

**Chapter 5 *Operating the Restructured Rail System*:** Analyzes the bankrupts' operations, describes the process followed in preparing a preliminary ConRail operating plan; summarizes estimated ConRail route and terminal requirements and projects ConRail operating improvements.

**Chapter 6, *Upgrading Rail Facilities and Equipment*:** Summarizes the results of comprehensive engineering and field analysis of the physical condition of trackage, facilities and equipment and presents an upgrading program.

**Chapter 7, *Light-Density Lines and Their Community Impact*:** Discusses the policy aspects of the light-density line problem, the impact on communities of discontinuance of service, and the programs available (Title IV of the Act) for continued rail service.

**Chapter 8, *Intramodal and Intermodal Competition*:** Describes the competitive environment between railroads and among railways, trucks, barges, pipelines and air cargo carriers and raises issues of public policy.

**Chapter 9, *Marketing Rail Freight Service*:** Describes the traffic and revenue forecasts used to develop financial projections and lays out ConRail's pricing strategies.

**Chapter 10, *Availability of Service by Alternate Modes*:** Describes economic and social costs of diverting rail traffic to trucks, focusing on the impact of discontinuation of service on light-density lines.

**Chapter 11, *Factors Affecting Environmental Assessment*:** Summarizes energy, pollution and aesthetic factors involved in transportation services and provides a foundation for examining the environmental effects of the Final System Plan.

**Chapter 12, *Manpower Requirements and Policies*:** Discusses the manpower plan and the implementing agreements.

**Chapter 13, *Passenger Service in the Region*:** Presents findings on the scope and quality of passenger services and summarizes conclusions on transfers of ownership, control of the Northeast Corridor and service improvements needed in 16 other intercity passenger corridors.

**Chapter 14, *Financial Analysis of the Preliminary System Plan*:** Presents pro forma financial statements for the single ConRail system.

**Chapter 15, *Financial Programs Under the Act*:** Describes the financing programs provided in the Act.

Appendixes to the Plan present results of detailed analyses to support findings and conclusions in the chapters and provide general background information and a bibliography of USRA reports.

Volume II of the Preliminary System Plan describes the detailed analytic process used in developing the light-density line conclusions and provides a detailed description of each line analyzed and the recommendations on each line. Appendixes describe community impact analyses and present line-by-line recommendation.



# **VOLUME I — PART 2**

**Presentation of the  
Preliminary System Plan**

NO. 100 - 1000

### 3

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## The Regional Rail System

*The central issue facing the Association has been to determine how the services and properties of the bankrupt carriers should be restructured so as to achieve the goals of adequate and efficient rail service and a self-sufficient private sector ConRail at minimum cost to the taxpayer.*

*USRA considered four major operating alternatives for restructuring the bankrupts. They are:*

- *ConRail I—a merger of all bankrupt carriers,*
- *ConRail East and West—ConRail East as a large eastern terminal district railroad with the western lines of Penn Central as a ConRail West,*
- *ConRail North and South—essentially a breakup of the Penn Central along the lines of the former Pennsylvania and New York Central railroads and*
- *ConRail/Neutral Terminal Companies—merger of the bankrupt lines while concurrently providing solvent carrier access to the major eastern markets.*

*This last option provided the basis for resolving the regional structure issue and meeting the various goals and purposes of the Act. It would maintain competition in the major east coast markets, minimize track*

*and terminal duplication (thereby minimizing rehabilitation costs) and create no new operating entity, other than ConRail, in the Region.*

*The structure recommended for the Region is a Three Carrier System involving ConRail (consisting basically of Penn Central), the Chessie and the Norfolk & Western. Segments of smaller bankrupt carriers (including Erie Lackawanna) would be transferred to each of these carriers. Discussions are progressing with the solvent carriers to determine the potential for achieving this recommended structure.*

In achieving the critical balance required by the goals of the Regional Rail Reorganization Act of 1973, the most difficult task in developing the Preliminary System Plan has been the definition of the industry structure for the Region. Embodied are the elements of competitive service, efficiency, preservation of the financial strength of the solvent railroads and, most of all, achievement of a new company able to sustain itself financially at minimum cost to the taxpayer.

The regional system recommended by the Association involves organization of ConRail around essentially the Penn Central and portions of the smaller bankrupts with transfer (either property or operating rights) of other, significant portions of these smaller bankrupts to the Chessie System, Norfolk & Western and Delaware & Hudson. It maintains competitive service at major points in the Region and equal competitive access to routes. Furthermore, it achieves significant rationalization of plant. As a Three Carrier System (ConRail, Chessie and Norfolk & Western and connections), it appears to provide the best chances for future stability of earnings and service in the Region.

The risks and capital requirements involved in an undertaking as vast as the formation of ConRail require caution in the early years of development. Blindly proceeding towards the stated structure could make ConRail the instrument of both further financial failure and increased government involvement in the operation of the railroad. To that end, in the following description of the process to develop the proposed regional rail system structure, the requirement for future change or evolution is indicated.

To present the industry structure, this chapter is divided into three basic parts:

- USRA-recommended structure for the Region, outlining where and by whom various rail services should be provided and the reasons for USRA's determinations, including concepts considered and rejected.
- A summary description of the principal ConRail routes, ConRail operating and modernization strategies and
- A discussion of special issues relating to the operat-

ing structure that are caused by the financing problems of ConRail.

One option available under the Act would be for the Association simply to merge all of the bankrupt carriers into a single carrier (presumably including Erie Lackawanna and Boston & Maine as both were bankrupt when the Act became law). The structure of the Act is predicated on the assumption that, if the bankrupt carriers were merged, rationalized and rehabilitated, the resulting efficiency gains would result in a financially self-sustaining entity. While the law seeks economic self-sufficiency as a major goal, it also requires that the reorganized system provide adequate and efficient rail service to the Region, that it retain and promote competition and preserve, to the extent consistent with other goals, existing railroad service patterns.

Considering all of the goals of the Act in concert, the planning effort simply cannot solve the problems of the bankrupt carriers by bringing about the demise of other carriers through the creation of a more viable competitor in the Region. The avoidance of any impact on solvent carriers is not possible, but adequate and efficient rail service in the Region cannot be achieved if the well-being of the presently solvent carriers is ignored by the restructuring process.

The importance of the structure is highlighted further by the fact that a process of government funding will initiate a time consuming and expensive program. Once begun, this restructuring process will be difficult to change, so the time for considering various operational alternatives is before it has been set in motion. For this reason, numerous structures were analyzed. Comments from the Rail Services Planning Office (RSPO) hearings, from shippers and from solvent carriers in the Region further emphasized that a USRA planning process ignoring any solution except merger of all the bankrupt carriers would be irresponsible.

#### **The Present Structure**

An understanding of the complexities of industry structure necessarily must start with the basic traffic



TABLE 1.—Rail traffic in the Northeast and Midwest Region, 1973

(In thousands of tons)

State or territory of origin	State or territory of destination																			Total <sup>1</sup>					
	CT	DE	D.C.	IL	IN	ME	MD	MA	MI	N.H.	N.J.	N.Y.	OH	PA	R.I.	VT	VA	W.V.	Off- cial		South.	W. Trunk	S. Western	Mtn. Pac.	
Connecticut.....	464	6	0	217	97	87	109	87	162	12	148	433	70	380	7	26	63	64	110	341	131	152	344	3,556	
Delaware.....	28	47	18	141	63	6	63	16	307	0	56	302	251	1,058	0	5	5	100	24	285	36	382	92	3,560	
District of Columbia.....	6	12	0	63	18	22	120	0	23	4	48	45	37	190	0	0	117	465	49	85	70	4	57	1,441	
Illinois.....	181	80	18	35,773	6,480	255	423	452	2,228	41	1,060	944	2,728	2,053	44	36	2,177	2,176	5,470	10,322	10,452	3,307	1,300	95,067	
Indiana.....	20	12	0	6,686	12,037	88	140	34	1,685	2	178	211	1,087	1,848	0	0	442	2,284	811	2,650	990	1,381	1,300	33,847	
Iowa.....	14	9	0	137	53	3,643	36	65	188	51	61	321	162	210	0	110	44	14	52	435	100	73	93	5,882	
Maryland.....	8	47	6	881	1,873	31	563	14	632	10	208	408	1,957	5,728	0	13	420	1,522	419	995	410	392	782	17,449	
Massachusetts.....	468	60	4	562	226	425	106	518	464	246	325	1,508	741	683	24	78	121	90	279	878	516	405	937	9,710	
Michigan.....	61	52	1	2,060	1,963	60	156	103	10,265	26	514	1,176	10,639	1,825	16	13	593	1,884	1,316	4,364	1,494	1,040	1,960	50,439	
Minnesota.....	55	0	3	80	24	240	12	32	60	83	38	431	159	121	0	28	20	706	54	218	63	63	139	2,638	
New Hampshire.....	30	143	6	1,707	428	98	220	120	1,446	25	2,902	1,533	1,597	2,099	2	60	568	711	537	2,648	1,115	1,286	2,300	21,476	
New Jersey.....	456	123	3	1,161	703	338	375	276	1,274	54	688	4,987	2,129	8,535	30	91	456	3,144	882	2,990	1,230	718	2,107	32,779	
New York.....	23	87	10	2,545	1,600	253	795	126	3,299	27	630	1,127	30,448	15,239	3	38	3,499	15,169	6,192	11,777	1,413	2,190	2,254	98,879	
Pennsylvania.....	134	234	7	1,900	1,138	408	3,210	147	1,224	47	1,474	2,896	17,073	40,948	21	31	1,806	7,688	849	3,637	1,268	928	1,868	89,849	
Rhode Island.....	22	3	0	63	13	14	16	72	19	5	42	131	63	73	0	3	24	9	7	61	35	44	102	820	
Vermont.....	0	5	0	61	6	91	0	9	90	3	8	44	71	0	0	33	6	0	10	13	42	6	33	559	
Virginia.....	5	69	14	589	361	43	443	19	169	5	104	355	699	571	0	10	23,694	22,037	1,995	10,191	168	808	473	63,247	
West Virginia.....	4	6	8	645	190	8	106	1	302	0	113	195	4,946	644	0	0	1,448	16,681	3,219	2,832	214	404	210	32,221	
Official.....	24	19	25	13,801	2,394	157	96	60	1,997	7	124	448	1,214	701	3	15	219	294	.....	.....	.....	.....	.....	.....	21,625
Southern.....	91	233	12	8,904	4,884	126	1,211	213	2,222	43	1,239	760	5,198	2,667	28	53	9,921	4,764	.....	.....	.....	.....	.....	.....	42,533
Western Trunk.....	11	31	0	8,263	1,441	96	145	62	3,246	22	187	319	1,077	639	19	16	111	148	.....	.....	.....	.....	.....	.....	15,822
South Western.....	23	35	4	3,699	724	46	93	67	1,012	6	475	396	1,460	836	11	24	161	249	.....	.....	.....	.....	.....	.....	9,321
Mountain Pacific.....	35	31	0	3,159	776	21	235	169	1,661	37	440	601	1,368	806	53	16	145	282	.....	.....	.....	.....	.....	.....	9,836
Total <sup>1</sup> .....	2,069	1,340	152	98,147	37,546	6,537	8,705	2,666	43,141	755	11,107	19,505	86,031	87,558	261	700	46,155	80,521	22,392	54,778	19,633	18,586	23,123	.....	

<sup>1</sup> Totals may not sum due to rounding.

Source: U.S. Department of Transportation, Federal Railroad Administration, 1973 Carload Waybill Statistics, 1974.

patterns in the Region and the role of the major regional carriers in the movement of that traffic. Basic traffic information is displayed in Table 1 and Figure 1; the first shows state-to-state origin destination flows of freight traffic within the Region and flows between the Region and other geographic areas in the Nation. Figure 1 is a density map displaying traffic volumes on the major routes in the Region.

The Region is dominated by three carriers: the bankrupt Penn Central (PC) with 35 percent of the ton miles and 36 percent of the revenue; the solvent Chessie System (Baltimore & Ohio/Chesapeake & Ohio/Western Maryland) with 26 percent of the Region's ton miles and 23 percent of revenue and the solvent Norfolk & Western (N&W) with 21 percent of the ton miles and 17.5 percent of the revenue. Table 2 shows the 1973 freight revenues and ton-miles for all carriers in the Eastern District.

PC has the most extensive network in the Region, with direct service between every traffic producing or receiving area except the West Virginia coal fields. It is the only carrier in the Region providing single line service between all the major eastern seaboard cities and major points in the remainder of the Region. Though largely debilitated today, it usually enjoys the shortest and often the best engineered route between the Region's primary traffic points. This market dominance and potential for operating and service gains led Chessie and N&W to commence negotiations toward a merger of their own, an effort which perhaps partly because of the collapse of PC never has been consummated.

The major solvent carriers, Chessie and N&W, have somewhat similar characteristics. Both have a strong base in the West Virginia coal fields and a manufactured and miscellaneous traffic base concentrated in Ohio, Indiana, Illinois and Michigan. N&W ends in the east at Buffalo and Connellsville (just east of Pittsburgh), while the Chessie's eastern terminal is at Philadelphia. Beyond these eastern terminals, both carriers rely on either potential ConRail carriers or upon reorganizable bankrupts to provide access to important seaboard points.

The fourth largest railroad in the Region is the Erie Lackawanna (EL) with 5.8 percent of the ton miles and 5.6 percent of the revenue. EL is a major east-west trunk line, providing single carrier service from Newark to Buffalo, Cleveland and Chicago. Its route structure both complements and competes with the solvent carriers in the Region. It can bypass Chessie and N&W for traffic to Chicago destined to western connections but works with them (especially N&W) for traffic destined to points such as Detroit and St. Louis. At the east end, it is dependent on smaller roads for access to Philadelphia and Boston.

These four carriers account for over 85 percent of

TABLE 2.—Freight Revenues and Ton-Miles, Eastern District Class I Railroads, 1973

Eastern District railroad	(In thousands) (Acct. 101) freight revenue	Percent of total	(In millions) (Acct. 608) revenue ton-miles	Percent of total
Akron, Canton, and Youngstown (NW)	8,659	.19	293	.12
Ann Arbor.....	10,237	.22	616	.25
Baltimore and Ohio (Chessie System).....	532,882	11.56	28,896	11.79
Bangor and Aroostock.....	13,547	.29	488	.20
Bessemer and Lake Erie.....	50,095	1.09	2,598	1.06
Boston and Maine.....	67,956	1.47	2,749	1.12
Canadian Pacific.....	9,230	.20	514	.21
Central of New Jersey.....	26,701	.58	644	.26
Central Vermont.....	8,901	.19	334	.14
Chesapeake and Ohio (Chessie System)	467,811	10.15	29,456	12.02
Chicago and Eastern Illinois.....	43,687	.95	2,988	1.22
Delaware and Hudson.....	43,277	.94	2,577	1.05
Detroit and Toledo Shore Line.....	8,621	.19	261	.11
Detroit, Toledo and Ironton.....	42,439	.92	1,454	.59
Elgin, Joliet and Eastern.....	56,333	1.22	1,040	.43
Erie Lackawanna.....	256,862	5.57	14,206	5.80
Grand Trunk Western.....	104,138	2.26	3,276	1.34
Illinois Terminal Co.....	12,727	.28	482	.20
Lehigh Valley.....	56,178	1.22	3,231	1.32
Long Island.....	8,570	.19	38	.02
Maine Central.....	29,419	.64	946	.39
Missouri-Illinois.....	6,843	.15	266	.11
Monongahela.....	7,386	.16	399	.16
Norfolk and Western.....	806,753	17.55	51,610	21.06
Penn Central.....	1,702,876	36.95	86,061	35.12
Pennsylvania-Reading Seashore Lines.....	8,310	.18	124	.05
Pittsburgh and Lake Erie.....	39,082	.85	1,369	.57
Reading.....	100,841	2.19	3,749	1.53
Richmond, Fredericksburg and Potomac.....	26,021	.56	1,232	.50
Western Maryland (Chessie System).....	50,811	1.10	3,097	1.26
Total.....	4,609,193	100.00	245,023	100.00

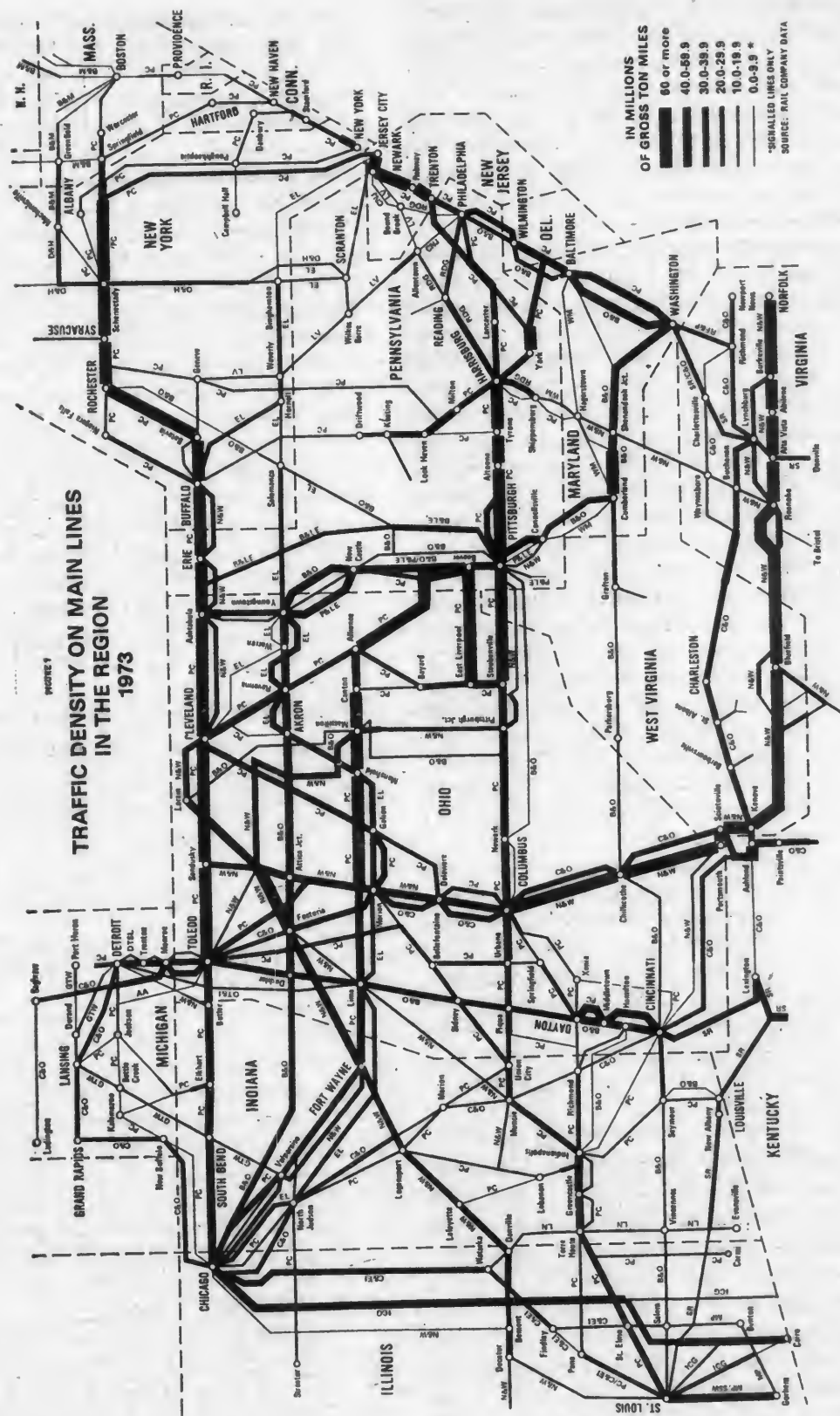
Source: 87th Annual Report on Transportation Statistics in the United States for the year ended Dec. 31, 1973, by the Interstate Commerce Commission. The percentages shown are for the Eastern District as defined by ICC. For data purposes, this is the closest approximation to the region.

the Region's ton miles. No other carrier has over 2 percent of the ton miles in this market, but this fact understates their importance. Many serve either as major feeders to the dominant trunk line systems or as key connecting routes.

Each of the following railroads, as indicated earlier in the Plan, are railroads in reorganization. The Central of New Jersey (CNJ) is a major terminal operation in the Newark metropolitan area and into Southern New Jersey; it feeds traffic to the Chessie System in conjunction with the Reading and also to the Lehigh Valley, EL and PC.

The Reading (RDG) is a major originator and terminator of traffic in Eastern Pennsylvania and provides a feeder service to Chessie at Park Junction (Philadelphia) for north-south traffic and at Lurgan, Pennsylvania for east-west traffic.

The Lehigh Valley (LV) has terminal operations in the Newark area, is a strong carrier in the Allentown-Bethlehem market and offers a trunk line service from the eastern seaboard to Buffalo. It provides N&W with access into the Allentown and Newark markets. In addition, its route between Allentown and Wilkes-Barre is a key link in the competitive alternative to PC for traffic to and from New England and the South.



The Ann Arbor (AA) operates from Toledo to Frankfort, Michigan, at which point it has car ferry service across Lake Michigan. It handles very modest overhead traffic plus some local industry traffic.

The Class II Lehigh and Hudson River (LHR) has very little traffic today, but once was an important link between the former New Haven on the east and the major trunk line carriers (EL, LV and former Pennsylvania Railroad) on the west.

The smaller, profitable railroads that are not candidates for inclusion in ConRail also are diverse. Delaware & Hudson (D&H) is an important bridge carrier linking the Boston & Maine with EL for east-west traffic and LV with B&M for traffic between New England and the South. D&H's line into Montreal provides a competitive route to PC's Montreal line. The reorganizable Boston & Maine (B&M), the only competitor to PC in the Boston metropolitan area, is also an important overhead carrier for traffic from northern New England to the west. The solvent Maine Central (MEC) and Bangor & Aroostook (BAR) railroads perform gathering services in Northern New England, feeding traffic to the B&M or the Canadian railroads (through their subsidiaries) for movement west.

The major Canadian railroads have lines into Northern New England. The Canadian National's subsidiary, Central of Vermont (CV), forms a through link with PC from New York to Montreal and provides a central artery for Vermont commerce. The Canadian Pacific (CP) line connects with B&M at Wells River, Vermont, and affords an alternate north-south route for Montreal and other Canadian points.

There are six other important solvent carriers in the Region. The Richmond, Fredericksburg & Potomac (RF&P) is a link between the Seaboard Coast Line Railroad (SCL) at Richmond and Chessie and PC at the Potomac Yard (Alexandria, Virginia) Gateway. The Pittsburgh & Lake Erie (P&LE) serves the steel industry in the Pittsburgh-Youngstown area; it is also utilized by the Chessie System for the movement of a large portion of its east-west through traffic under a trackage rights agreement.

The Detroit, Toledo & Ironton (DT&I), a north-south carrier from Detroit to Ironton, Ohio, is an originator and terminator of steel, automobile and automobile parts traffic and as such feeds the major trunk lines in the Region. DT&I also handles significant amounts of northbound coal. Grand Trunk Western (GTW), a subsidiary of Canadian National, is a major automobile and automobile parts carrier and provides its parent company with access to the Chicago market for movements of east-west traffic.

The Bessemer & Lake Erie and the Elgin, Joliet & Eastern are both owned by U.S. Steel and are primarily haulers of coal and ore and finished steel products. The former operates from Lake Erie (Conneaut,

Ohio) to the Pittsburgh area, the latter from Porter, Ind., west around Chicago to Wankegan, Ill.

Though these carriers are not important in overall regional statistics, their merger in one fashion or another with other carriers could change significantly the competitive balance in the Region. For example, if B&M had not been declared reorganizable and become a part of ConRail, New England would have been left without any rail competition, and the D&H and EL potentially would have been denied a substantial portion of their traffic base. When these smaller carriers undergo structural changes, therefore, ripple effects go well beyond their own boundaries. For this reason, there is great concern about what actions USRA takes regarding the smaller bankrupt carriers which could become part of the reorganized system.

It is important to realize that USRA can make only recommendations concerning the reorganizable and solvent carriers in the Region. Its power to change structure is limited to the bankrupt carriers which are potential ConRail partners. Those carriers, again, are Penn Central (PC), Erie Lackawanna (EL), the Central of New Jersey (CNJ), the Reading (RDG) and the Lehigh Valley (LV), plus the smaller Lehigh & Hudson River (LHR) and the Ann Arbor (AA).

#### USRA's Approach to the Structure Decision<sup>1</sup>

Starting points for analysis of the best structure for the Region are the goals of the Act. Sections 101 and 206 indicate that the major aims are:

- Adequate and efficient rail transportation.
- Minimum cost to the general taxpayer.
- A financially self-sustaining system.
- Adequate competition.
- Preservation to the extent consistent with other goals of existing service patterns in the Region.

<sup>1</sup>When basic operational alternatives were being developed and studied, Erie Lackawanna, having been declared reorganizable, was not a potential ConRail carrier. Throughout the analysis, special consideration was given EL because of its marginal financial condition and its importance as a major carrier on the eastern seaboard. No data presented in the discussion of the original options, however, reflects inclusion of EL, e.g., the financial results for ConRail North and South assumed it would be an independent carrier.

EL's subsequent financial problems and its petition to be included in the USRA planning process had a major impact on plans for the various industry structures. The financial implications of EL inclusion in the various alternatives are not available. Significant information on the competitive ramifications of its inclusion had been developed, however, which examined the role of EL as a competitive alternative for the east-west traffic and its relationship to other carriers such as the Delaware & Hudson and Boston & Maine.

Industry structure recommendations assume that EL is part of the planning process and that USRA must make specific recommendations concerning the disposition of its property. For example, it is assumed that ConRail will obtain the EL routes west of Hornell, New York. The precise means of transferring EL assets, whether under the Regional Rail Reorganization Act of 1973 or through liquidation, must await final legislative action. The USRA board has recommended to Congress that the Act be amended to make EL a railroad in reorganization, thereby extending the benefits of labor protection provisions and accelerated procedures for disposing of deficit lines and transfer of other routes to other carriers. If the Act is so amended, the transfer of EL assets in reorganization would come under its mandatory provisions.



The Association has considered service routes throughout the Region, but a primary focus must be on the area east of Pittsburgh and Buffalo. The extensive services of the solvent carriers west of this area assure continued competitive services. It is in the East that amalgamation of the bankrupt carriers can occur and this could deny both N&W and Chessie access to competitive markets they now enjoy. Although market protection might be maintained through open junctions, N&W and Chessie would have no independent traffic base. Con-Rail would have the capability of denying traffic to those solvent railroads. Such a decision would be irrevocable; once the physical amalgamations are made, it would be very costly to reverse events.

Given the size and complexity of the rail network in the Region, there was a great variety of possibilities for restructuring services. To organize USRA discussion and analysis and to provide the basis for public discussion, the Association first defined several concepts for reorganization of carriers in the Region. USRA then prepared specific networks under each of these concepts. This second step permitted quantitative analysis of the alternative structures.

*The structure concepts were stated in the form of the following hypotheses to be tested. Many are necessarily mutually exclusive.*

- Merger of all the bankrupts should produce the most efficient system possible under the existing law.
- Merger of all the bankrupts would result in a monopolistic system on the eastern seaboard. Competition is vital for efficient railroad operations and good service to shippers. Therefore a means must be found for maintaining adequate competition and existing patterns of traffic, to the extent possible.
- The really significant problems of the Region's rail carriers lie along the eastern seaboard, where there is the greatest duplication, level of passenger losses and potential problems from merger of the bankrupt carriers. Therefore, the eastern seaboard should be split off and dealt with as a separate entity, possibly allowing the Penn Central lines in the midwestern portion of the Region to be reorganized conventionally.
- The Penn Central merger was a mistake to start with. Size does not produce significant efficiencies, and both present and future rail needs in the Region could be met more effectively by splitting up the present Penn Central and forming two smaller systems.
- There is no opportunity for a private sector solution unless maximum efficiency in the rail system is achieved. Given the pervasiveness of intermodal competition, there is no reason for continued rail/rail competition, and the Region would be better served if a single monopoly encompassing both the bankrupts and the solvent carriers were created.
- The bankrupt carriers have been economic failures and rail efficiency would be best served if the present

operations were liquidated and absorbed by other carriers—either those within or outside the Region.

• The basic problem of rail carriers is not in their operating pattern but rather in their financial organization. Except for pipelines, rail carriers are the only mode responsible for both operations and for their fixed plants. The separation of operations and fixed plant has been successful for other transportation modes and should be considered as an alternative for reorganization of rail carriers in the Region.

Once these concepts were defined for discussion and analysis, USRA staff considered several specific operating plans for each concept. For example, under the premise that the problem basically lies along the eastern seaboard, the next issue was what constituted the eastern seaboard—east of Buffalo and Pittsburgh or an area roughly comparable in scope with the Northeast Corridor definition (Boston to Washington and out to Harrisburg and Albany)?

In this case, it was determined that passenger activity, potential mergers and originations and terminations of traffic were concentrated heavily along the eastern seaboard, with relatively little activity between such points as Harrisburg and Pittsburgh and Albany and Buffalo. Simply stated, if there was an east coast problem at all, it appeared that it had to be in Newark, New York, Philadelphia and similar points and not in Altoona, Syracuse or Rochester. Therefore, the operational plan studies involved a split at Selkirk (Albany) and Enola (Harrisburg).

One operating plan representing each concept was then chosen for detailed analysis. This process was a starting point and did not necessarily eliminate other operating arrangements for ultimate study; rather, it was recognized that, through the analytical process, further modifications might be made or a specific structure might be rejected entirely.

During this review process, two original concepts also were dropped from consideration. The idea of a regional monopoly, involving merger of all the bankrupts and solvents into a single carrier in the Region was so contradictory to the intent of the law and potentially so difficult to achieve (Chessie and N&W having indicated no desire to want to withdraw from the railroad business) that it did not merit detailed analysis. Similarly, the lack of interest by either N&W, Chessie or other carriers in acquiring large portions of the bankrupt system led USRA to conclude that a detailed analysis of this solution should not be undertaken.<sup>2</sup>

This process of redefinition, discussion and judgment whittled the more than 10 initial operating options down to four operating alternatives and one non-operating alternative. They are:

<sup>2</sup>This initial judgment proved to be in error and in fact, studies were initiated on a limited basis to consider this concept.

- ConRail I (merger of all the bankrupt carriers).
- ConRail I/Neutral Terminal Companies (merger of all the bankrupt carriers but allowing solvent carriers access to key east coast markets).
- ConRail East and West (organizing an eastern seaboard regional system with boundaries at Albany and Harrisburg and Washington and a western system consisting primarily of the Penn Central lines either reorganized conventionally or as a separate ConRail entity).
- ConRail North and ConRail South (the unmerging of the Penn Central into a mainline route structure closely following that of the former New York Central and the former Pennsylvania Railroad, with the smaller bankrupts going to either the North System or the South System).
- ConFac, the Consolidated Facilities Corporation (a separate corporation to hold assets for ConRail, thereby concentrating the government role on the fixed plant of the bankrupt carriers).

#### Assessing the Alternatives

A detailed description of the four alternatives is presented in Appendix C. ConFac as a concept is described at the end of this chapter. The following briefly summarizes each alternative and describes USRA's conclusion regarding how well each structure served the goals of the Act.

*ConRail I* contemplates merger into one restructured entity followed by rehabilitation.<sup>3</sup> As originally envisioned, this option should have resulted in the maximum reduction in duplicate facilities and solved the most critical problem of finding the money and material to rebuild the fixed plant of the bankrupt carriers. It was presumed this option also offered the greatest opportunity for increased efficiency and use of equipment, and therefore greater productivity, of owned equipment and decreased rents for cars owned by other railroads.

ConRail I did not demonstrate sufficient financial results to enable USRA to ignore the potential for further regional problems it engendered. The creation of a monopoly of traffic in Eastern New York, Pennsylvania and New Jersey could cause increasing deterioration of the traffic base of the major solvents after several years. Potentially, an increasing monopoly would be established. Clearly, the position of New England carriers would be worsened with the inclusion of EL. Only the most sanguine financial forecasts, coupled with other techniques of competitive protection, justified this step.

The *ConRail I/Neutral Terminal Company* structure originally was proposed to assure continued competition in certain key markets along the eastern seaboard with-

out the attendant duplication of facilities and operations which would result otherwise. This alternative was to be formed in the same manner as outlined above, except that neutral terminal companies would be set up in the Newark/New York area, in the Philadelphia metropolitan area and perhaps in the Allentown area. As envisioned, these terminal companies would be jointly-owned subsidiaries of the line haul carriers, serving the markets to assure service to all line haul operators to the extent possible. The operating pattern studied would have had Chessie with access to Philadelphia and either N&W or Chessie with access into the Newark area.

The Association concluded that the basic objective of the *ConRail I/Neutral Terminal Company* option—that of maintaining competition in important markets while minimizing the duplication of mainlines, terminal facilities and operations—provided a start toward a possible resolution of the structure problem. The Association believes, however, that the precise operational plan outlined would require substantial revision in light of the Erie Lackawanna situation, and is reluctant to create new institutions which would be a barrier to the efficient functioning of the line haul carrier. Finally, this modest separation of an acknowledged problem did little to solve it, merely dividing its cost.

*ConRail East and West* alternative originally envisioned ConRail East organized as a major terminal district operation in the area east of Albany and Harrisburg. ConRail would provide all switching services for cars originating and terminating in the area and then provide line haul service to the major interchange points of Selkirk (Albany), Allentown, Enola (Harrisburg) and Potomac Yard (Alexandria, Va.). While ConRail East would be a monopoly, the connecting services at these gateways would provide competitive service for all long haul traffic. ConRail West would be a separate entity both managerially and operationally and would consist of the Penn Central main lines west plus appropriate parts of the Ann Arbor.

The essential premise of the *ConRail East* alternative was based on the probability that the separation would isolate the losing operations surrounding the terminals on the eastern seaboard, permitting unique solutions for these problems. Simultaneously, the western operations would become intrinsically more profitable and capable of future success. Analysis of these assumptions, however, proved them inaccurate or fraught with potentially wider dangers.

First, it does not appear that there are unique solutions for the eastern terminal operations; severing significant aspects of the railroads operations more likely would perpetuate the problem. The need to remedy inefficiencies in archaic yard operations or delivery patterns would have to be reinforced with an economic

<sup>3</sup> The original concept studied did not include the Erie Lackawanna. The study would have included EL had EL not been declared reorganizable at the time.

incentive, missing if the operations were isolated. Second, this fear is reinforced if the suggestion is followed to make this area permanently government-supported. There is no evidence that subsidies will be temporary.

Third, the possibility of raising rates to cover costs might limit losses (even though not solving basic cost problems); however, it could ensure permanent high-cost operations in these areas. This could stimulate the relocation of present industry or deter new industry, both undesirable for the economic well-being of these areas. Finally, the thought that potential government "nationalization" is contained by this maneuver is serious. Any permanently government-supported entity in the industry holds potential for expansion or a convenient vehicle to escape problem solution.

Problems with the eastern terminal concept would be more palatable if the western company clearly showed less of a tendency to fail financially than under other alternatives. The Association's estimate of increased costs of the interface between east-west operations and added investment in rolling stock combined to make the western company slightly less profitable, in forecasts, than ConRail I. Therefore, the USRA found this alternative unsuitable for reaching the Act's goals.

The *ConRail North and ConRail South* alternative involved unmerging the Penn Central system. Many professionals and laymen believe the Penn Central merger was a mistake and that many of the carrier's difficulties can be ascribed to its size. This alternative would divide Penn Central into two firms with route structures roughly following the mainlines of the pre-merger Pennsylvania and New York Central railroads. The smaller bankrupts then would be merged into one of the two systems. The operational plans studied assumed that RDG would be merged with ConRail South and that CNJ, LV, LHR and AA would be merged with ConRail North. The former New Haven properties also would go to ConRail North.

The Association rejected the proposed split on the grounds that its benefits are more illusory than real and would be obtained over the long-term only in the event that more extensive mergers were a factor. Financially, the North-South companies would incur sufficient added cost and require so much added capital that, rather than reducing the risk of possible future failure (i.e., one company failing out of two), they doubled the risk by both being so unworkable. Furthermore, the management requirements of disaggregation, combined with the already critical rebuilding needs, made the prospects of execution slim at best.

### Recommended Structure for the Region

Although none of the alternatives discussed were totally satisfactory, the ConRail I/Neutral Terminal Company seemed to have more elements of a solution than any other. The principles embodied in that alternative were the starting point for the recommended solution. They are that:

- The major markets on the eastern seaboard must have competitive rail services, preferably provided by not more than two carriers.
- Duplicative plant and terminal facilities must be minimized; joint trackage and joint yard operations are therefore essential.
- Competition will be best served if the strong solvent carriers are brought into the major markets requiring competition, rather than building separate feeder systems.

Working from these fundamental objectives, what evolved was a "Three-Carrier System" operating structure. (See color fold-in map at back.) The USRA recommended regional system is:

- ConRail consisting of the present PC and the RDG (less the Philadelphia and Allentown markets); LV from Newark to Waverly, New York; CNJ; the Pennsylvania Reading Seashore Lines; LHR and AA.

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## FINANCIAL ANALYSIS OF THE EAST-WEST ALTERNATIVE

- The financial and operational analysis of the east-west solution disclosed that the two companies combined, in relation to ConRail I, would require 6,000 more freight cars costing \$110 million, 1,900 to 2,700 more employees and approximately one percent more road and track miles.

- This option, compared to ConRail I, would sacrifice the ability to divert traffic to longhaul, be exposed to a loss of significant interchange traffic and cost \$59 million per year in increased transportation, car hire and general expenses.

- An estimated \$80 million additional transportation expense would be incurred during the first five years

while the system was being split into east and west portions.

- These factors resulted in the east-west option requiring at least an estimated \$1 billion more government-guaranteed financing than ConRail I. The amount would depend upon ability to raise nonguaranteed private sector equipment financing.

The costs mentioned above, plus interest on the additional borrowings, restrained the east-west option from a break-even combined net income before 1985. The east portion remained a large loss operation throughout the ten-year forecast period. West was profitable, but its profits were less than those of ConRail I.



## FINANCIAL ANALYSIS OF THE NORTH-SOUTH ALTERNATIVE

- The financial and operational analysis of the north-south solution disclosed that the two companies combined, in relation to ConRail I, would require 5,000 more freight cars costing \$95 million, 1,900 to 3,500 more employees and approximately two percent more road and track miles.

- Costs would increase by \$49 million per year in the transportation, car hire and general and administrative expense categories combined.

- An additional estimated \$132 million in transportation expense would be incurred during the first five years while the system was being split into two separate companies.

- N&W operation of the present EL from Buffalo into Newark, N.J., via Binghamton, New York. This operation can be accomplished either through direct transfer to N&W or an N&W subsidiary. The system would result in N&W, D&H and B&M offering a competitive alternative to ConRail across the northern tier of the Region. Certain other adjustments in routes and traffic are possible around this concept.

- Extension of Chessie via the present RDG line through Harrisburg to the Philadelphia and Allentown markets. Chessie should assume direct responsibility for handling the present RDG traffic in Philadelphia; Allentown would be open to Chessie and ConRail. As the present RDG route from Harrisburg to Allentown would also be a main ConRail route, it is anticipated that Chessie's access would be over trackage rights, with ConRail performing the switching services at intermediate points. To Philadelphia, Chessie can also access the Reading using its route from Baltimore. Thus structured, the Chessie system would provide competition along the southern tier.

- D&H acquires LV trackage rights from Wilkes-Barre to Allentown. This would protect D&H's present north-south traffic and would reestablish a "friendly" connection (Chessie) for movements west to Pittsburgh, a connection lost in the Penn Central merger. The same trackage rights also would provide a friendly connection to the Potomac yard via D&H and Chessie.

- Boston & Maine, Maine Central, Bangor & Aroostook, Detroit, Toledo & Ironton, Pittsburgh & Lake Erie and Grand Trunk Western retain their present independent status. Many proposals have been made to merge these properties into other carriers.<sup>4</sup> Subsequent mergers should be undertaken, but the first priority is to resolve the fundamental problem of restructuring the bankrupt system and continuing effective competition in the major markets on the eastern seaboard.

- These factors resulted in the north-south option requiring more than \$1.0 billion in government-guaranteed financing in excess of ConRail I. The exact amount would depend on the ability of the companies to secure non-guaranteed private sector equipment financing.

The costs mentioned above, plus interest on the additional borrowings, restrained the north-south option from reaching a combined net income in the ten-year forecast period. Although north had a small profit in 1985, it was more than offset by south's loss.

The recommended structure is basically a concept. Discussions are under way with solvent carriers to ascertain their interest in helping to solve the critical problems in the Region and to determine what is required to allow their participation without impairing their financial integrity.

USRA recognizes that significant government expenditures will be required to solve the bankrupt carrier problem; this has been a basic factor in the present reorganization process. The board believes that, with the proper level of federal support, the major solvent carriers could assume an important role in resolving the service problems of the Region. This extension of solvent carriers could result in a solution which is less costly in terms of the taxpayer funds than creation of separate entities designed primarily to feed these carriers.

### Alternatives to the Three-Carrier System Solution

Implementation of the Three-Carrier System solution depends on the successful conclusion of complex discussions with N&W and Chessie. One or both of the solvent carriers well may decide that it is not in their best interest to participate in the proposed restructuring. Discussions to date, therefore, have not locked on a single solution but have rather explored alternate possibilities. In these discussions, N&W has indicated its doubts that the EL lines east of Buffalo could be made financially self-sustaining as a part of its system without substantial and probably continuing federal financial aid.

Should one of the solvents not participate, the Association's preferred alternative would be a Two-Carrier System solution.

Specifically, if Chessie is not interested in serving Allentown and Philadelphia as contemplated, N&W could serve these markets. This could be accomplished if N&W were extended southward from the EL main line into both Allentown and Philadelphia and northward from its present Hagerstown terminus into Har-

<sup>4</sup> Appendix D lists these proposals.



risburg and thence eastward into these markets. To deal with the problem that both these routes are somewhat circuitous, USRA contemplates that N&W also could acquire, either through trackage rights or joint operations, the capability to operate directly from central Ohio to Harrisburg over present PC routes.

Similarly, if N&W decided not to participate, then a Two-Carrier System concept could be developed through expansion of the Chessie eastward over present RDG lines as previously discussed and the acquisition by Chessie of the EL from the central Ohio area into Newark and the Binghamton connection with D&H. The present EL main line intercepts the high-capacity Baltimore & Ohio line in the vicinity of Akron and would provide a very competitive route to ConRail while still allowing downgrading of duplicate main lines in the Midwest.

If either of these Two-Carrier System alternatives were developed in lieu of USRA's primary choice, the Three-Carrier System, additional operating rights and transfers might be necessary to create the most efficient participating solvent network.

USRA recognizes that any solvent carrier must be extremely careful in using its private capital to avoid unreasonable financial risk to its owners. Considerable federal financial assistance is available under the Act to minimize that risk, including monies for rehabilitation. Obviously, no solution is totally without risk; inaction could also affect the operations of the solvent carriers.

If a satisfactory solution can be reached with one or more of the solvent carriers, USRA believes the structure envisioned has significant benefits for the Region and goes a long way toward a permanent solution. To reiterate some of the advantages, the proposed structure would:

- Maintain competition in major east coast markets by line haul carriers, thereby avoiding the haphazard division of carrier responsibility which often affects service quality.
- Minimize track and terminal duplication, thereby achieving a competitive system at the lowest possible federal cost.
- Create no new operating institutions such as neutral terminal companies, a Middle Atlantic Rail Corporation<sup>5</sup> or ConRail East (which, if established first and found unsuccessful, would be extremely difficult to undo).
- Merge smaller properties with larger roads; historically the easiest way to effect a merger.
- Maintain the existing major traffic flows and minimize the possible disruption of service which could occur with more radical restructuring programs.

<sup>5</sup>The Middle Atlantic Rail Corporation envisions a merger of CNJ, RDG and LV.

#### If Neither Chessie nor N&W Participates

If both Chessie and N&W do not participate in the restructuring process on the eastern seaboard, even with major federal financial assistance, the whole concept of competitive railroading in the Region will be affected seriously. If the two solvents both opt not to expand eastward, that indicates they feel the cost to do so is greater than the benefits they may receive. If neither solvent participates, the options then available include:

- Creating two separate operating entities supported by federal funding with the explicit purpose of providing competition, or
- Organizing ConRail I as a monopolistic carrier on the eastern seaboard.

Of these alternatives, USRA believes the best solution would be to form MARC-EL, a second trunk line east-west carrier based on the merger of EL with the key properties of CNJ, LV and RDG (essentially the Middle Atlantic Corporation). To improve competitive balance in the midwest, it is contemplated that MARC-EL would be given access, through joint ownership of trackage rights, of ConRail lines to such gateway points as Cincinnati and St. Louis. To complete the development of an effective competitor, consideration should be given to including DT&I and P&LE. Any opportunities for plant rationalization would be carried out, such as paired track arrangements between MARC-EL and ConRail between Mansfield, Ohio, and Chicago.

Realistically, this alternative is a second choice in terms of both effective competition and rail efficiency within the Region. It is, however, superior to a break up of the Penn Central System into a ConRail North and South simply because it can be implemented in a relatively short period of time, and the EL and its connecting lines has had a history of vigorous competition on the eastern seaboard. It also is more effective than the creation of an eastern terminal feeder system, such as MARC alone. To be effective competition, such a system would depend on the willingness of the major solvents to participate. The deficiency of MARC-EL is that it used federal dollars to sustain a competitive rail system for the eastern seaboard. No financial projections have been made for the MARC-EL system, but it is anticipated that ConRail (essentially PC under this concept) and MARC-EL (with added midwestern routes) would be less economically self-sustaining than ConRail alone in the Three-Carrier System.

A more definitive answer must await detailed financial projections being developed by USRA. The fundamental policy issue is whether, after failing to achieve competition through expansion of either both or one of the existing major solvent carriers, the federal government should spend money to insure that rail/rail competition is maintained along the eastern seaboard.

The preceding discussion leads USRA to conclude that the Three-Carrier System must be pursued vigorously. If only one solvent carrier is interested, restructuring should be pursued under that alternative. Other possible solutions simply are not as promising. For that reason, USRA plans extensive efforts in the next several months to determine the exact dimensions of a solution involving both or at least one of the major solvents in the Region.

### Defining the ConRail System

Simply stated, the condition of the bankrupt railroads, and especially that of the Penn Central, represents a transportation disaster unparalleled in the nation's history. Most of the bankrupt properties, including key yards, major main lines and essential shops, are in a serious state of disrepair. Areas appearing in relatively good physical shape are that way largely due to cosmetic efforts—the track has been ballasted and smoothed, but the rail and ties are both well beyond their normal lives. The solution is going to be costly; just keeping the bankrupt carriers operating until ConRail begins operation could cost taxpayers more than \$400 million.

The conflicting goals of the Act, therefore, must be balanced as much against this harsh reality as against each other. Much discussion has centered on the fact that viability of the system may conflict with the provision of adequate and efficient service. This issue, not unimportant in the design of ConRail, must be considered in the context of the importance of the fundamental need to overcome 20 years of physical neglect. The necessity for rebuilding the system thus becomes the most critical constraint on the adequacy and efficiency of the service to be provided and *it is the magnitude (both physically and financially) of that rehabilitation requirement that must necessarily determine the ConRail configuration.*

That the physical condition of the plant is badly deteriorated is not debatable. What can and should be debated are the alternate strategies for rehabilitation. Specific questions include the following.

- What should be the *timing* of rehabilitation and what are the implications of such strategy?
- In what sequence should the system be rehabilitated, e.g., should main yards and main lines be brought up to high operating standards while the rest of the system is held at minimum maintenance levels, or should main lines be held to a minimum standard (30 m.p.h.) while repairing the very worst of the secondary and branch lines?
- What level of public funding, in the form of loans or grants, can be committed to the rehabilitation program?
- What are the implications of the above three decisions on the route structure and services to be provided by ConRail?

The Association's conclusion on each of these issues follows. They are a significant factor in the future business strategy and government control aspects of ConRail.

- The timing for the program should be about 14 years, providing maximum flexibility in use of funds.
- Funds should be spent in the initial years, recognizing material constraints, on the major core system and yards and terminals. This will improve service, increase dollar returns and sustain flexibility.
- As the financial projections in Chapter 14 demonstrate, the costs of rehabilitation, when combined with operating losses in early years, exceed the funds allocated by the Act. Rather than reducing the system size *now* to meet an arbitrarily set figure, however, operations should continue over the system size set forth. It would be unwise not to rebuild this transportation system *properly*, but both timing and location of expenditures will be reviewable in future years, clearly a way to reduce potential government financing.

USRA recommends setting priorities after an analysis that measures benefits from rehabilitating a line segment (reduced transit time) against the cost of accomplishing that rehabilitation. This results in a ranking of line segments where rehabilitation will provide the maximum benefits in terms of reduced transit time for each rehabilitation dollar spent. This process, described in greater detail in Chapter 6, tends to concentrate the rehabilitation program on the heavy density lines—especially those in the western end of the Region where the plant is most deteriorated. Under this strategy, the main lines will be brought up to adequate freight service standards (50–60 m.p.h.) over a three- to seven-year period.

This means that many secondary and branch lines must necessarily be held in a "patch" maintenance condition during this period. If the use of available resources is not concentrated on main lines, the through routes will continue to deteriorate. Train speeds already unacceptable will decrease and ConRail will not have the capability to offer piggyback or any other time-sensitive service. Additionally, as track conditions continue to deteriorate, so also would the speeds of passenger trains, resulting in further substantial lengthening of many already slow Amtrak schedules.

Another critical element in the rebuilding program is the amount and availability of federal funding, either in the form of loans or grants. The \$500 million to \$1 billion for rehabilitation and modernization provided in the Act will be adequate to rebuild not more than approximately 5,000 miles of railroad and attendant yards and shops. Obtaining private financing sources for the remaining mileage is considered impossible; thus, the result of staying within the financial limitations of the Act would be abandonment of all but the heaviest routes.

Specifically, staying within the Act's funding limita-

tions means that services would be terminated between Montreal and Syracuse; all of Southern New England including Providence, Hartford and New Haven; virtually the entire Central Pennsylvania coal region lines except those into the very highest production areas; all of Michigan north of the main line between Detroit and Chicago; and virtually all of the gathering network in Ohio, Indiana and Illinois. Clearly this does not meet the Act's requirements for adequate rail service in the Region.

At the other end of the funding spectrum is the complete rebuilding of the entire plant as it now exists, at a cost of \$3.8 billion. This estimate is in constant dollars; inflation over the period required for implementation would more than double that amount. USRA believes this level of public funding is poor public policy, inasmuch as the benefit from expenditures of this magnitude on these light density lines is questionable. Specifically, some \$1 billion in rehabilitation funds would be required over time to bring light-density lines, recommended for exclusion from the ConRail system, up to normal maintenance standards for such lines. These lines produce revenue of only \$72 million, making rehabilitation a questionable public investment.

USRA recommends a funding level for rehabilitation purposes of about \$2 billion (in constant dollars). Failure to commit this amount would result in incomplete rehabilitation jobs on the principal main and secondary routes; and would not halt the continued deterioration of plant, recycling the principal cause of the present failure of the system.

If recommended expenditures could not be justified, the best policy decision would be to cut the system size accordingly. Expenditures beyond about \$2 billion cannot be programmed adequately now; funds may or may not be required, depending on how ConRail develops over the next decade. In essence, funding above that amount is for rehabilitation projects to be accomplished beyond the planning term.

These projects may or may not be required, depending both on the trends in the national and regional economy and in railroads as a transportation mode. As noted earlier, the recommended strategy is to concentrate available money in terms of material and manpower on those projects where the need is greatest and where both service and financial returns are highest, while holding the remainder of the system at a safe operating level.

In the decade and beyond required for rehabilitation there inevitably will be significant changes in the rail marketplace. USRA has attempted to predict the changes which will occur; its assessment of the rail potential is reflected in its traffic growth projections. As with any forecast, these projections are subject to variables; for example, a change in federal energy policies might divert more traffic to the railroads but it

might also lower industrial production, resulting in less total traffic for the rail mode. The ultimate industry structure evolving in the next decade probably will depend on overall trends in the national economy, specific trends in the regional economy, the direction of such specific matters as federal energy policy and, perhaps most significantly, the direction of national transportation policy.

The convergence of two critical factors—the dynamics of the marketplace for rail transportation and the relatively long time required to rebuild the railroad—leads USRA to this conclusion:

*The route and operating configuration of the ConRail system represents an interim step between that which exists today and that which necessarily must evolve in the next decade. The initial ConRail operating and route structure represents estimates of how best to reverse the fortunes of the bankrupt carriers so they can once again perform adequate and efficient rail transportation. The plan, however, is not carved in stone and it will be subject to many modifications in the next decade.*

The nature of the rebuilding process allows for considerable flexibility in the future. The system cannot be rebuilt overnight, and it is therefore not necessary to have absolute precision in all elements of the route and operating structure. The plan as outlined in the following section represents a starting point in what, by necessity, must be an evolutionary process.

#### ConRail Route and Terminal Plan

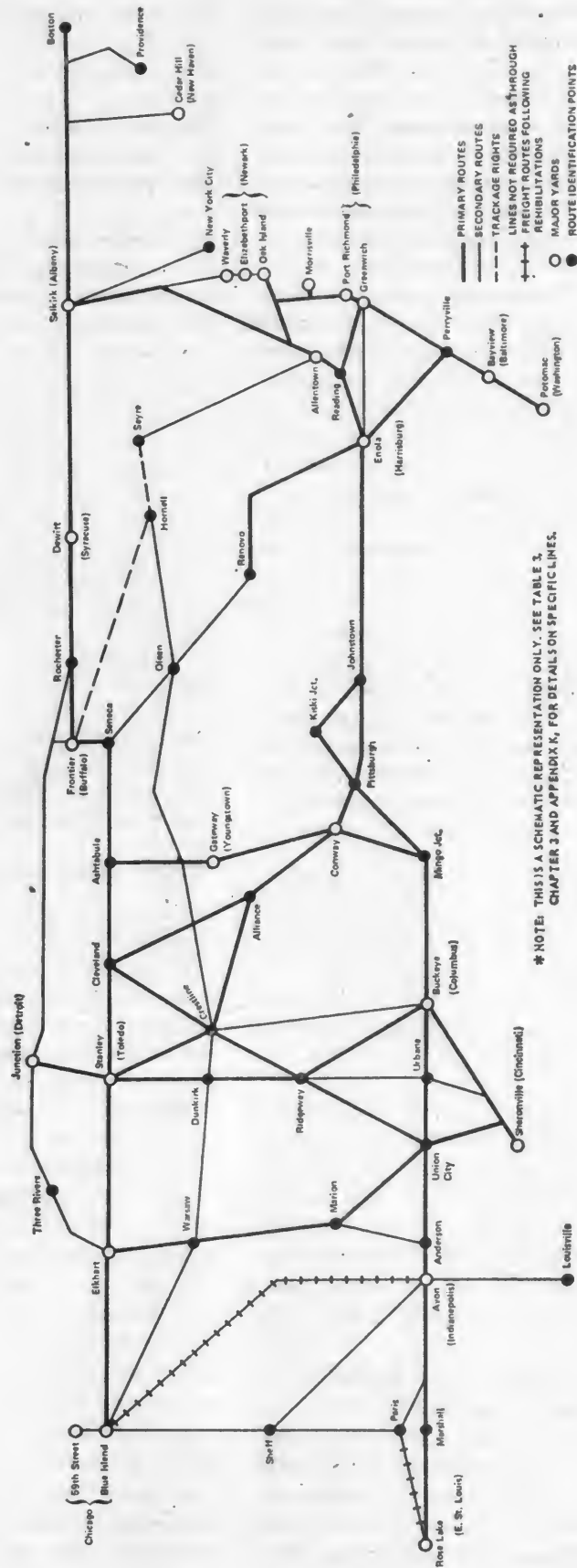
The preceding section discussed the major considerations leading to the development of the ConRail operating plan. This section discusses in detail the main line route structure, the major yard facilities planned and the implication of the described rehabilitation strategy on routes and terminals. The major freight routes and major yards are displayed in Figure 2; all routes with planned densities of 5 million gross tons per year or more are shown in Table 3.

Five specific areas are examined: principal through freight routes, secondary through freight routes, principal feeder routes, secondary feeder routes, and principal yards for ConRail.

Under the preferred regional structure (Three-Carrier System), the present PC will form the nucleus of the ConRail route configuration, supplemented by CNJ, LV, RDG, LHR and AA. Certain important lines and markets on the latter carriers will be transferred or made available to other carriers for use under trackage rights agreements, e.g., the LV mainline from Wilkes-Barre to Allentown (trackage rights to D&H) and the present RDG from Lurgan to Allentown and Philadelphia (trackage rights to Chessie). In addition, there may be changes in the precise markets served as a result



**FIGURE 2**  
**THE CONRAIL SYSTEM PLAN: \***  
**PRINCIPAL FREIGHT ROUTES AND MAJOR CLASSIFICATION YARDS**



\* NOTE: THIS IS A SCHEMATIC REPRESENTATION ONLY. SEE TABLE 3, CHAPTER 3 AND APPENDIX K, FOR DETAILS ON SPECIFIC LINES.



of negotiations with the solvent carriers. Under the alternative Two-Carrier-System the ConRail routes would be essentially the same; MARC-EL, however, would result in significant route changes.

Notwithstanding these possible changes, and the verities of the rehabilitation program previously discussed, the primary through freight routes for ConRail can be defined at this time with virtual certainty. These are the routes which connect primary load centers and major terminals on the system and which are properly classified as the main line system for ConRail. The bulk of the system's ton miles will be produced on these routes and, consistent with the prior discussion on rehabilitation, they will receive most of the near-term (first 5 years) rebuilding efforts.

Regardless of how ConRail evolves over time, these routes probably will have heavy traffic density. The high

TABLE 3.—Projected traffic density on ConRail routes after rehabilitation

From—	To—	Via—
<b>More than 40,000,000 gross tons per year:</b>		
Chicago, Ill.....	Cleveland, Ohio.....	Toledo, Ohio.
Cleveland, Ohio.....	Albany, N.Y.....	Buffalo, N.Y.
Harrisburg, Pa.....	Phillipsburg, N.J.....	Allentown, Pa. <sup>1</sup>
Johnstown, Pa.....	Harrisburg, Pa.....	Altoona, Pa. <sup>2</sup>
Pittsburgh, Pa.....	Cleveland, Ohio.....	Alliance, Ohio. <sup>2</sup>
Pittsburgh, Pa.....	Johnstown, Pa.....	Kiski Junction, Pa. <sup>3</sup>
Pittsburgh, Pa.....	Johnstown, Pa.....	Greensburg, Pa. <sup>3</sup>
Reading, Pa.....	Philadelphia, Pa.....	Pottstown, Pa. <sup>1</sup>
Toledo, Ohio.....	Detroit, Mich.....	Monroe, Mich.
<b>20,000,000 to 40,000,000 gross tons per year:</b>		
Albany, N.Y.....	Springfield, Mass.....	Pittsfield, Mass.
Bucyrus, Ohio.....	Alliance, Ohio.....	Mansfield, Ohio. <sup>2</sup>
Cincinnati, Ohio.....	Columbus, Ohio.....	Dayton, Ohio and Xenia, Ohio.
Clearfield, Pa.....	Harrisburg, Pa.....	Newberry, Pa.
Columbus, Ohio.....	Toledo, Ohio.....	Findlay, Ohio.
Conway, Pa.....	Alliance, Ohio.....	Bayard, Ohio.
Conway, Pa.....	Columbus, Ohio.....	Mingo Junction, Ohio
East St. Louis, Ill.....	Indianapolis, Ind.....	Eflingham, Ill.
Harrisburg, Pa.....	Perryville, Md.....	Safe Harbor, Md.
Harrisburg, Pa.....	Philadelphia, Pa.....	Columbia and Coatesville, Pa.
Indianapolis, Ind.....	Cleveland, Ohio.....	Union City, Ohio.
Indianapolis, Ind.....	Columbus, Ohio.....	Union City, Ohio.
Jackson, Mich.....	Detroit, Mich.....	Ann Arbor, Mich.
Mingo Junction, Ohio.....	Pittsburgh, Pa.....	Carnegie, Pa.
Philadelphia, Pa.....	Newark, N.J.....	W. Trenton, N.J. and Boundbrook, N.J. (via LV).
Phillipsburg, N.J.....	Newark, N.J.....	Flemington Junction (via LV). <sup>2</sup>
Pittsburgh, Pa.....	Ashtabula, Ohio.....	Youngstown, and Dorset, Ohio.
Pittsburgh, Pa.....	Youngstown, Ohio.....	New Castle, Pa.
<b>10,000,000 to 20,000,000 gross tons per year:</b>		
Albany, N.Y.....	New York, N.Y.....	Poughkeepsie, N.Y.
Bucyrus, Ohio.....	Chicago, Ill.....	Fort Wayne, Ind.
Bucyrus, Ohio.....	Toledo, Ohio.....	Tiffin, Ohio.
Columbus, Ohio.....	Crestline, Ohio.....	Ashley, Ohio.
Dayton, Ohio.....	Bellefontaine, Ohio.....	Springfield, Ohio.
Elkhart, Ind.....	Jackson, Mich.....	Union City, Mich.
Elkhart, Ind.....	Kalamazoo, Mich.....	Three Rivers, Mich.
Indianapolis, Ind.....	Elkhart, Ind.....	Marion, Ind.
Marion, Ind.....	Cincinnati, Ohio.....	Union City, Ohio.
Newberry, Pa.....	Lyons, N.Y.....	Corning, N.Y.
Phillipsburg, N.J.....	Albany, N.Y.....	Warwick, N.J.
Sheff, Ind.....	Chicago, Ill.....	Schneider, Ind.
Springfield, Mass.....	Boston, Mass.....	Worcester, Mass. <sup>3</sup>
Wilkes-Barre, Pa.....	Allentown, Pa.....	Lehighton, Pa. <sup>1</sup>

TABLE 3.—Projected traffic density on ConRail routes after rehabilitation—Continued

From—	To—	Via—
<b>5,000,000 to 10,000,000 gross tons per year:</b>		
Ashby, Ind.....	Indianapolis, Ind.....	Rincon Junction, Ind.
Columbus, Ohio.....	Charleston, W. Va.....	Point Pleasant, W. Va. <sup>3</sup>
Detroit, Mich.....	Buffalo, N.Y.....	St. Thomas, Ontario.
Efner, Ind.....	Marion, Ind.....	Logansport, Ind.
Elkhart, Ind.....	Kankakee, Ill.....	Schneider, Ind.
Framingham, Mass.....	Providence, R.I.....	Walpole, Mass.
Harrisburg, Pa.....	Hagerstown, Md.....	Chambersburg, Pa. <sup>1</sup>
Indianapolis, Ind.....	Sheff, Ind.....	Lafayette, Ind.
Jackson, Mich.....	Saginaw, Mich.....	Lansing, Mich. <sup>2</sup>
Kalamazoo, Mich.....	Jackson, Mich.....	Battle Creek, Mich.
Louisville, Ky.....	Indianapolis, Ind.....	Columbus, Ind.
Marion, Ohio.....	Hornell, N.Y.....	Jamestown, N.Y. <sup>2</sup>
Morrisville, N.J.....	Newark, N.J.....	New Brunswick, N.J.
Marshall, Ill.....	Sheff, Ind.....	Danville, Ill. <sup>2</sup>
Newark, N.J.....	Kingston, N.Y.....	Haverstraw, N.Y.
Niagara Falls, N.Y.....	Rochester, N.Y.....	Middleport, N.Y.
Renovo, Pa.....	Buffalo, N.Y.....	Olean, N.Y.
Salisbury, Md.....	Wilmington, Del.....	Dover, Del.
Springfield, Mass.....	New Haven, Conn.....	Hartford, Conn.
Syracuse, N.Y.....	Montreal, Quebec.....	Watertown, N.Y.

<sup>1</sup> Recommended joint operation with solvent on all or part of line; see discussion on recommended regional structure.

<sup>2</sup> Possible joint operation with solvent over all or part of route, see discussion of recommended regional structure.

<sup>3</sup> Coordination projects may shift all through traffic from all or part of this line; densities do not reflect this possible shift (see app. D-1).

degree of certainty about the future of these routes justifies early commitment of rehabilitation material, manpower and money. Once they are overhauled, the level of investment in tracks, structures and signalling probably will keep them as the main arteries of the system.

The rehabilitation commitment to these principal through freight routes makes the decision as to what routes should be used vitally important. The following approach was used in designating the routes.

- All traffic of the candidate carriers was analyzed.
- Forecasts of future traffic flows were made.
- Terminal capabilities were assessed.
- Based on the above three factors, train formation planning was undertaken as part of the blocking project. (See Chapter 5.)
- Existing and projected train movements from this exercise were simulated over the potential ConRail network. Total train movements over link segments were compared to line capacities. Route adjustments were made where capacity constraints were encountered.
- Line capacity with and without slow orders was defined through use of a computerized train dispatch simulation model.
- Line capacities were adjusted to reflect the effects of rehabilitation projects and where problems were encountered, alternative routings were established for use during the rehabilitation program.

Rehabilitating these lines deserves special attention. Given the projected availability of rail, ties and maintenance of way (M of W) forces, rehabilitation of each

main-line segment was programmed in priority order to provide the maximum benefits in the shortest amount of time. (See Table 4.) With this method, more than 40 percent of the operational benefits from main-line improvement are anticipated in the first three years of the 14-year rehabilitation program; more than 60 percent can be realized in the first five years (see Table 4).

During the latter stages of the rehabilitation program, most of the line segments being rehabilitated will not yield significant operating benefits in terms of reduced transit time. Through rehabilitation, however, normal maintenance and the potential for future slow orders are reduced significantly on these line segments.

In programming the rehabilitation projects year by year, it was necessary to consider the time that could be made available to the M of W forces on each of the line segments being rehabilitated. To measure the impact of M of W interference on line capacity, a train dispatching simulation model was used. With the following exceptions, it appears that M of W forces will be able to carry out the presently anticipated rehabilitation program on principal through line segments without exceeding practical line capacity. Principal line segments which have sufficient density and capacity limitations to require alternate routings and detour routes during rehabilitation include:

<i>Main-line segment</i>	<i>Alternate routing</i>
E. St. Louis, Ill.-Terre Haute, Ind. (via Effingham)	E. St. Louis, Ill.-Terre Haute, Ind. (via Mattoon)
Chicago-Cleveland-Alliance, Ohio	Chicago-Ft. Wayne-Alliance, Ohio
Harrisburg, Pa.-Phillipsburg, N.J.-Pt. Reading Jct., N.J.	Harrisburg, Pa.-West Trenton, N.J.-Pt. Reading Jct., N.J.
Columbus, Ohio-Toledo, Ohio (via Findlay)	Columbus, Ohio-Toledo, Ohio (via Bucyrus)
Harrisburg, Pa.-Perryville, Md.	Harrisburg, Pa.-Philadelphia, Pa.-Perryville, Md.
Indianapolis, Ind.-Chicago, Ill. (via Sheff)	Indianapolis, Ind.-Logansport, Ind.-Chicago, Ill.

#### ConRail Secondary Through Freight Routes

Secondary through freight routes are required for: an integrated system, future traffic growth and through services pending completion of the rehabilitation program on the principal through routes.

Whereas the designation of principal through routes has a measure of certainty over the long term, the same is not true for secondary through lines. Some may have increasing or decreasing traffic; some may be reduced to local services status or abandoned altogether. For example, the Canada Southern between Detroit and Buffalo via St. Thomas, Ontario, is now a double track railroad with modest traffic density. In the future it will provide a direct route for certain flows between Buffalo and Detroit and a valuable "safety valve" should traffic densities overload the main trunk line from Chicago to Buffalo through Cleveland.

This situation does not justify continuation of double

TABLE 4.—Mainline rehabilitation priorities, top 20 segments ranked in terms of train hours saved/million dollars of track-related rehabilitation costs<sup>1</sup>

From—	To—
Alliance, Ohio.....	Cleveland, Ohio.....
St. Louis, Mo.....	Indianapolis, Ind (via Marshall).....
Jamestown, Pa.....	Ashtabula, Ohio.....
Cincinnati, Ohio.....	Springfield, Ohio.....
Syracuse, N. Y.....	Buffalo, N. Y.....
Columbus, Ohio.....	Crestline, Ohio.....
Indianapolis, Ind.....	Anderson, Ind.....
Fairlane, Ohio.....	Cleveland, Ohio.....
Indianapolis, Ind.....	Sheff, Ind.....
Kentland, Ind.....	Schneider, Ind.....
Columbus, Ohio.....	Trinway, Ohio.....
Marion, Ind.....	Warsaw, Ind.....
Union City, Ohio.....	Cleveland, Ohio.....
Erie, Pa.....	Buffalo, N. Y.....
Springfield, Mass.....	Worcester, Mass.....
Syracuse, N. Y.....	Utica, N. Y.....
Columbus, Ohio.....	Union City, Ohio.....
Columbus, Ohio.....	Ridgeway, Ohio.....
Elkhart, Ind.....	Toledo, Ohio.....
Shire Oaks, Pa.....	Pitcairn, Pa.....

<sup>1</sup> Order of priority adjusted in some cases to recognize rail availability.

track, however, and the line is programmed for single track centralized traffic control (CTC) status. This will free track material for use on principal through routes. Unlike principal through routes, traffic density on these secondary through routes is (or will be) such that possibilities exist for coordination projects with other carriers. Most of these secondary through routes will not receive immediate or major rehabilitation; for example, those necessary to handle overflow traffic will not be rehabilitated until traffic growth occurs.

#### Principal Feeder Routes

In essence, primary feeder routes are major branch lines to gather local traffic and move it into the key yards for transportation on the through route system. In this category are such lines as Springfield, Mass. to Hartford and New Haven, Conn.; Jackson to Lansing, Saginaw and Bay City, Michigan; Columbus, Ohio to Charleston, West Virginia, and Marshall to Cairo, Illinois. These lines generate substantial traffic and all of the major traffic generating points on these lines appear to justify continued rail service.

In some cases, however, the critical need for rehabilitation material on other routes may make it necessary to utilize other carriers' track to reach these markets or in some instances to "trade" these markets to solvent railroads. Because the traffic generated is substantial on these lines and because many are badly debilitated, they will require early upgrading if there is to be any improvement in service quality. Inasmuch as this will take materials from the critical main line programs, efforts to determine where traffic might be rerouted around the most deteriorated lines are being explored. The candidate lines for possible rerouting because of rehabilitation problems include:

- Columbus, Ohio to Nitro, West Virginia,
- Lansing to Saginaw, Bay City and Midland, Michigan,
- Cairo to Marshall, Illinois.

The options on most other primary feeder lines are more limited. For example, there is no alternative route on such heavy feeders as Springfield, Massachusetts, to New Haven, Connecticut; Montreal, P. Q., to Syracuse, New York (this line is primarily a gathering route although through service does exist to Montreal); the Central Pennsylvania coal lines (e.g., Keating to Cherrytree, Pennsylvania); Wilmington, Delaware, to Salisbury, Maryland, and Mingo Junction to Omah, Ohio.

There are no coordination possibilities for these lines and they will be retained only on the basis of local study analysis. Programs will be developed to keep them in safe operating condition, but major rehabilitation for the most part will come after the primary through routes have been upgraded. Many primary feeder routes therefore will receive no more than a "holding action" maintenance program for the next three to six years.

#### Secondary Feeder System

This is the final classification of lines, consisting basically of short local service lines used to gather traffic for the primary feeder system or the main line itself. As discussed in greater detail in Chapter 7, virtually all these lines have been intensely studied. The continued operation of many of these lines is dependent on the rail continuation subsidy program. Those lines found to provide financially self-sustaining feeder service have been included in ConRail but, because of material and manpower constraints, they can be maintained only to the minimum level for safe operations in the foreseeable future. (The analytical process reflects the cost of minimum maintenance and does not charge these lines with major upgrading expense.)

#### ConRail Yard Requirements

Yard requirements were developed on the basis of blocking simulations and yard studies as reflected in Chapter 5.

The preliminary operating plan for ConRail used principal classification yards as shown in Table 5. Generally, yards on the perimeter of the ConRail system were used more extensively than yards in the interior. Given existing and projected traffic flows, it is not now anticipated that many of the existing major yards operated by the bankrupt railroads will be closed. On the other hand, under the single system ConRail option, no new major classification yards are expected to be required. There is a need to expand or significantly rehabilitate yards at the following locations to handle the projected ConRail requirements:

Yard	Location
Allentown	Allentown, Pennsylvania
Avon	Indianapolis, Indiana
Blue Island	Chicago, Illinois
Buckeye	Columbus, Ohio
Elkhart	Elkhart, Indiana
Greenwich	Philadelphia, Pennsylvania
Oak Island	Newark, New Jersey
Stanley	Toledo, Ohio

TABLE 5.—ConRail system yards

Yard name	Location	Existing classification capacity (Cars per day)	Presently operated by
Allentown.....	Allentown, Pa.....	2,100	LV/RD G
Avon.....	Indianapolis, Ind.....	2,700	PC
Bayview.....	Baltimore, Md.....	1,400	PC
Blue Island.....	Chicago, Ill.....	2,700	IHB
Buckeye.....	Columbus, Ohio.....	2,700	PC
Cedar Hill.....	New Haven, Conn.....	1,200	PC
Conway.....	Conway, Pa.....	6,000	PC
DeWitt.....	Syracuse, N. Y.....	1,600	PC
Elizabethport.....	Elizabeth, N. J.....	900	CNJ
Elkhart.....	Elkhart, Ind.....	3,000	PC
Enola.....	Harrisburg, Pa.....	5,000	PC
59th Street.....	Chicago, Ill.....	1,200	PC
Frontier.....	Buffalo, N. Y.....	2,600	PC
Gateway.....	Youngstown, Ohio.....	1,800	PLE
Greenwich.....	Philadelphia, Pa.....	600	PC
Junction.....	Detroit, Mich.....	1,800	PC
Morrisville.....	Trenton, N. J.....	1,800	PC
Oak Island.....	Jersey City, N. J.....	1,500	LV
Port Richmond.....	Philadelphia, Pa.....	1,000	RD G
Potomac Yard.....	Alexandria, Va.....	3,200	( <sup>1</sup> )
Rose Lake.....	St. Louis, Ill.....	600	PC
Selkirk.....	Albany, N. Y.....	3,000	PC
Sharonville.....	Cincinnati, Ohio.....	1,800	PC
Stanley.....	Toledo, Ohio.....	1,800	PC
Waverly.....	Newark, N. J.....	900	PC

<sup>1</sup>Jointly operated by the Penn Central, Chessie, Southern and the Richmond, Fredericksburg & Potomac RR.

The route and terminal plan discussed above for the ConRail system must be viewed as an interim step between what exists now and the ultimate system configuration which may exist in ten years. By the time major rehabilitation has reached the primary and secondary feeder lines, there could be significant changes in the traffic flows; many may be upgraded far more extensively while others may be downgraded or abandoned. A fundamental difficulty of the bankrupt rail systems has been their inability to respond to changes in transportation demand. For that reason, a major USRA objective has been to create a more dynamic system and doing this necessarily precludes absolute certainty about what will happen on many of the line segments.

#### Special Issues

Three questions arise from the need to minimize long-term financial commitments to ConRail's rehabilitation and the need for flexibility in ConRail's management to avoid new sunk costs without continued review:



- Would an immediate reduction in the planned size of ConRail not only reduce government capital requirements but be inherently more profitable and less of a risk?

- Could the facilities and services of the bankrupt railroads be liquidated, transferring service responsibility to solvent railroads in or out of the Region?

- What anticipated changes at the extreme edge of the Association's planning horizon should be taken into consideration in this planning process?

#### Reduced ConRail System

In developing the ConRail concept attention was given to maintaining present rail service and sustaining rail-rail competition in key markets. As has been indicated, the size of the resultant system and the overall costs of rehabilitation result in a cost far exceeding allocations set forth in the Act.

In the limited time available to prepare the Preliminary System Plan, USRA was unable to complete detailed analyses of the requirements for and results of a system reduced in size. A reduced system was hypothesized and certain tentative conclusions can be stated, however.

- The system studied contemplated a reduction of approximately 4,000 miles compared to the recommended ConRail system, or 11,000 miles vs. 15,000 miles.

- Service would be eliminated over numerous routes and to many points.

- Operating results, excluding maintenance, are *not* changed measurably, and this system size, compared to ConRail, does not appear to offer any more potential for success *in the near term*.

- Initial estimates of the reduction in rehabilitation expense total \$380 million, virtually all of which results from the drop in track mileage.

- The overall capital requirements, including equipment acquisition, within the ten-year planning cycle are estimated to be \$2.6 billion (versus \$3.4 billion for the recommended structure).

These tentative conclusions suggest that immediately shrinking ConRail may not provide it with financial self-sufficiency. The abrupt curtailment of the level outlined would reduce rail services in the Region below the level contemplated in the Act. Furthermore, these changes could increase the amount required for the manpower protection provisions of Title V of the Act.

Finally, achieving a significantly reduced system depends heavily on the actions of the solvent carriers. If they participate, major traffic flows such as those on EL in the Midwest can be consolidated with their existing traffic. If MARC-EL is formed, additional mainline and yard capacity must be kept and rehabilitated if it is to be an effective competitor. Further potentials exist from coordination with solvents.

These initial findings indicate that the smaller system does not represent an adequate alternative to the proposed Three-Carrier-System. Because rehabilitation savings from shrinkage would involve funds to be spent after 1980, shrinkage through programmed coordination efforts appears preferable to an abrupt reduction in system size.

#### Controlled Liquidation

Among the possibilities considered by USRA was that there would be no ConRail. The assets of the present bankrupts would be distributed to solvent carriers either within or outside the Region. Initially, this alternative did not receive detailed consideration, because the solvent carriers indicated no interest in acquiring substantial portions of the bankrupt lines, especially those of the Penn Central. Subsequently, however, it was decided to study this alternative in some detail due to the tremendous amount of financial aid believed necessary to develop a restructured system.

As an initial step a consultant was asked to report on the possibilities of liquidation and to recommend how such a process might be accomplished. Concurrently, Penn Central trustees contacted all major carriers regarding their interest in the possibility of transferring significant portions of Penn Central properties. The consultant's report defined a number of possible benefits from a controlled liquidation process as well as major liabilities.

USRA determined that controlled liquidation could represent an attractive long-term solution, but that the immediate difficulties involved made it an impractical short-term strategy.

First, major acquisitions by extra regional carriers would involve a massive restructuring of the Region's (and the nation's) rail transportation system, would be extremely time consuming and would have a negative impact upon solvent carriers in the Region.

Second, a USRA request that solvent carriers identify the lines they might want to purchase revealed that no carrier wants to acquire Penn Central lines east of Pittsburgh and Buffalo. Thus, under a simple liquidation process, major eastern market centers such as New York, Philadelphia and Allentown/Bethlehem would be deprived of competitive rail service. To preserve service, a concept such as ConRail East would have to be implemented.

#### Future Railroad System

Even though reducing ConRail system size immediately does not appear to be an adequate alternative, it does underscore future issues and the need to evaluate this type of investment.

If unconstrained by regulations or past rules and practices, the railroads could, over time, focus their energies and investments on those elements of transportation in which the railroads are or could be the most economically efficient mode. Simultaneously, the



railroads would avoid and disinvest from those activities in which other modes have or could have an inherent economic advantage.

A possible concept is a high-density core network linking all major rail traffic generating centers and market areas in the Region. Service would be provided by a combination of unit trains and intermodal trains, supplemented with a highway gathering service and a network of rail-highway transfer terminals.

Shippers accumulating train-load quantities of merchandise and bulk commodity freight would be served by dedicated shipper trains operating between fixed origins and destinations. Shippers not located directly on rail lines and shipping goods in smaller volumes or to customers not conveniently served by rail would use trucks to collect and distribute freight through regional transfer terminals. The ubiquity of the highway net-

work and flexibility of the truck will facilitate the handling of these smaller traffic flows, aggregating them into trainloads for the longer inter-city haul.

The net result would be to provide the public with efficient, low-cost services in those markets where rail has an inherent advantage. It also would enable both the rail and highway modes to forego excessive and probably duplicative reinvestment.

With greater freedom to select markets to be served, a cost-based pricing system and an efficient, coordinated highway service, this concept could evolve as a healthy, dynamic element of the Region's economy.

Prior to any related commitment, however, this concept's feasibility must be further studied and estimates of the transitional impacts must be considered. In addition, of course, overall public policy implications must be defined further.

## SEPARATE CORPORATE OWNERSHIP OF RIGHT-OF-WAY AND STRUCTURES USED BY CONRAIL

Because of the magnitude of projected government-guaranteed borrowing, it is appropriate to consider various means of providing both the funds and the security for government obligations.

One method is a separate ownership and financing of the right-of-way and structures, as well as of their rehabilitation.

### Consolidated Facilities Corporation

A possible method for separation of right-of-way and operations would be through the creation of a separate corporation, referred to as the Consolidated Facilities Corporation (ConFac), which would acquire the right-of-way and structures after those assets have been conveyed to ConRail. ConFac would use government provided or guaranteed funds to rehabilitate its right-of-way and structures and then make them available to ConRail for operation as a transportation system.

This form of financing would identify the federal government with the activity absorbing most of the federally guaranteed funds and potentially reduce government managerial involvement in the operation of the railroad.

ConFac can be structured in one of three ways: as a private corporation using appropriately safeguarded government guarantees to fund rehabilitation of track; a wholly-owned government corporation; or a mixed-ownership corporation owned jointly by the using railroad and the federal government. For each option it may be assumed that appropriate charges would be paid reflecting either (a) interest only, (b) retirement of principal or (c) a formula reflecting total financing and variable user charges.

ConRail's management of transportation operations need not be changed if ConFac financing is used, and

ConRail still could be responsible for track maintenance and the physical aspects of the rehabilitation program. In this respect, ConFac would perform the role of a financing source rather than a property owner.

### ConFac As A Private Corporation

ConFac would issue stock to be distributed ultimately to the bankrupt estates along with ConRail stock. Its initial assets would be the right-of-way and structures conveyed to ConRail by the bankrupt estates. All other assets of the railroad would be owned by ConRail. ConRail would bear the cost of rehabilitating the right-of-way and structures and then be reimbursed by ConFac with the proceeds of government-guaranteed borrowings.

### Government-owned ConFac

It is possible to establish a corporation owned by the federal government and charged with rehabilitation of the facilities. Precedents in the transportation area include the Saint Lawrence Seaway Development Corp. and the Pauama Canal Co. In both cases, users pay charges partially to defray the government costs involved.

A public corporation also lends itself to additional infusions of federal funds to advance national transportation policy or to assure that facilities meet the requirements of the operating railroads.

A number of problems are associated with a government corporation, however. Appropriate means would have to be found for ConFac to compensate ConRail for the assets transferred to ConFac ownership without causing a large increase in government funding required.

Some would argue that a ConFac would serve to encourage efforts by other railroads to transfer their right-of-way to the federal government and thus might lead to nationalization. ConFac might, as a result, delay public recognition of the need to develop a coherent transportation policy which allows all modes of transportation to compete freely and provide the nation with an efficient transportation system.

#### **Mixed-ownership ConFac**

An alternative to the private or government corporation would be ownership equally divided between ConRail and the federal government. Such a mixed-owner-

ship ConFac would have attributes of both private and government corporations.

Should the creation of ConRail and ConFac under this option lead to sufficiently profitable rail operations, provision could be made for the private purchase of the government stock in order to return the right-of-way to private ownership.

#### **Questions of Public Policy, Law, Taxation and Accounting**

A number of public policy, legal, tax and accounting questions remain to be resolved before the Association can present any type of recommendation regarding the ConFac concept.

# 4

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## Coordination with Solvent Railroads

*Over-expansion, technical innovation and external market factors have led to excess capacity in the fixed facilities of the Region's railroads. The consequent under-utilization of assets has been a continuing drain on the industry's financial resources, a situation well recognized by Congress in the Act. If two or more railroads can coordinate their operations over one facility, substantial cost savings might result. The concept of coordination has been endorsed by the Department of Transportation and the Rail Services Planning Office.*

*This chapter outlines the benefits resulting from reduction or elimination of excess capacity. Three approaches are outlined—joint facilities, pooling and market exchanges or sales—and the advantages and disadvantages of each are explored. The chapter discusses USRA coordination activities and Appendix D lists coordination projects under consideration.*

*The Association concludes that the coordination process provides significant potential benefits for both the public and the railroads and should be continued in the future.*

Section 202(b) (5) of the Act directs the Association to "consider methods of achieving economies in the cost of rail system operations in the Region including consolidation, pooling, and joint use or operation of lines, facilities, and operating equipment. . . ." Since implementation of such methods would involve the transfer of rights or property, the provisions of Section 206(d) (3) direct USRA to determine whether specific acquisitions by profitable railroads will materially impair the profitability of any railroad in the Region including ConRail. These determinations are the first step in providing for possible consummation of such acquisitions in the Final System Plan.

Both the Department of Transportation and the Rail Services Planning Office of the Interstate Commerce Commission have recognized and endorsed the Congressional directive regarding coordination. The Department of Transportation, in its report on "Rail Service in the Midwest and Northeast Region," recommended that duplicative lines and facilities be downgraded or eliminated. The Rail Service Planning Office suggested in its evaluation of the DOT report that the Association "accept and implement" the DOT recommendation.

As used in this chapter, coordination is the process of integrating the facilities or services of two or more railroads, with no major change in the markets served by each.<sup>1</sup> Coordination offers the opportunity to achieve the economies involved in consolidation and rationalization of facilities without merger of corporate structures. Two railroads, for example, may coordinate their operations in one market and at the same time continue to compete vigorously in that and other markets.

Coordinations generally become possible through the existence and creation of excess track capacity that stems from technological innovation and changing traffic patterns. Since 1929, the size of the average freight train moved in the Eastern District has increased 93 percent while during the same period freight train miles have declined 52 percent. This, coupled with the sharp reduction in passenger train volume, has resulted in a large amount of surplus track capacity in the Eastern District. In addition to these causes of overcapacity, other factors such as the changing pattern of manufacturing activity and consumer demand have had a major impact on track capacity.

There are two general causes of excess capacity in the rail industry—duplication of facilities which are not fully utilized and duplication of services which are economically marginal or not justified. Duplication of facilities is the maintenance by two or more railroads of similar fixed facilities in a specified area, with

neither being utilized to capacity. Maintaining a railroad line not specifically needed to generate or handle traffic is a misallocation of scarce resources which could be used more productively at other locations. Manpower can also be saved and land made available for more productive uses. Coordinations will also result in a reduction of related administrative expenses.

Duplication of services occurs where two or more railroads serve a specific geographic area which does not generate sufficient rail traffic to justify service by that many railroads. In such cases, service by fewer railroads at a specific point would result in a total savings to the industry in addition to improving the quality of service or arresting its deterioration.

### Types of Coordination Agreements

The most common method of reducing duplication of facilities is the use of the joint facility agreement whereby two or more railroads use a single fixed facility such as a main line, service facility or yard. The typical agreement calls for the tenant railroad to share the investment cost of the owning railroad as well as the maintenance expense.

A second method of coordination is pooling, which is useful in dealing with both service and facility duplication. Pooling is an arrangement whereby two railroads use one railroad's train to haul the cars of both. Each railroad retains the revenue from its own cars, but the cost of hauling them is shared.

Pooling, in some instances, can lead to a reduction in competition and the net effect on the quality of service must be taken into consideration. Service quality should not be significantly affected since pooling involves a mixing of traffic, and unsatisfactory service by one railroad not only will affect its competitor's service but its own as well.

Agreements to exchange routes or transfer them to another railroad represent another form of coordination useful in reducing overcapacity by withdrawing unrequired or nonviable lines from multiple-railroad markets. For example, a railroad operating a 30-mile branch line to reach a market located on or near the main line of a competing railroad may wish to withdraw and sell or lease its industrial trackage in the market to its competitor. With the market located on or near a main line, the remaining railroad can offer customers better service at lower cost. Effects on scope and level of competition brought on by such exchanges must be analyzed.

### USRA Coordination Efforts

The Association has actively suggested and encouraged coordination under Section 202(b) (5) of the Act. Meetings have been held with all railroads in the Region to explain the goals and functions of the process to them and to request that they prepare lists of possible

<sup>1</sup> The concept of major market extensions is discussed in Chapter 3 since their potential impact on the profitability of the Region's railroads can vary significantly under different industry structures. The specific projects are listed in Appendix D-3 with the USRA determination under Section 206(d) (3).



coordination projects which they would like to pursue. After the lists were received and studied, projects which the railroads deemed unworkable were eliminated and those which appear feasible are being given further consideration. Data exchanges with railroads were arranged where possible, and in many cases Association staff inspected the facilities involved. The economic evaluation of each project was left to the individual railroads so they could decide which coordinations to pursue. The Association acted as a catalyst, encouraging the speedy exploration of possibilities.

As part of the process, the Association studied joint facility agreements in the West, which have generally been more extensive than those in the East. These were with few exceptions found to be successful, largely due to a desire on the part of senior management to make joint operations work. There had to be mutual benefits, of course, with cooperation in the dispatching of trains and specific responsibility for maintenance and other operational activities. The Association will continue to encourage joint operations as a method to reduce duplication of facilities and better utilization of capacity. It is anticipated that the entire coordination process will continue through and beyond development of the Final System Plan. Implementation of some of the larger and more complex projects will take several years. In the meantime, the Association continues to meet with the railroads to look for possible additions to the lists of coordinations and to evaluate them from a regional viewpoint.

### **Coordination and Minor Market Change Projects**

Appendix D-1 details trackage coordination and minor market extension projects. These are under active study for possible inclusion in the Final System Plan.

Appendix D-2 lists the studied light-density lines which, having been analyzed, are not recommended for inclusion in the ConRail System, and which are crossed by or connected to one or more solvent railroads. Although these lines may not be included in ConRail, some may be profitable to an acquiring railroad and for that reason have been offered to such railroads for potential acquisition. Such acquisitions are for the sole purpose of continuation of services on light-density lines and cannot be used as a device to create additional competitive routes. It is uncertain at this time as to the extent of interest the solvents will display in acquiring these lines.

Since trackage coordination projects, minor market changes (both of which are listed in Appendix D-1) and the transfer of light-density lines (cited in Appendix D-2) to be implemented under the Final System Plan involve the transfer of rights or property to a profitable railroad, they are subject to the provisions of Section 206(d)(3) of the Act. In fulfilling these provisions, the Association has found that the projects in

these appendixes will not materially impair the profitability, either singly or cumulatively, of any railroad in the Region or of ConRail. This finding is based on the fact that implementation will be by mutual consent of the parties involved, will produce cost savings for them, or in the case of light-density lines, will involve insignificant traffic shifts which will have a minimal effect on connecting carriers.

Therefore, all the projects listed in these appendixes will be eligible for implementation under the Final System Plan, but it is emphasized that financial terms and other conditions essential to ultimate consummation of these projects have not as yet been determined nor accepted by the parties involved. It would thus be premature to conclude that all will be in the Final System Plan. Not only do they require the consent of the parties to be transacted, but there are also conflicts between the various projects that will be resolved prior to the Final System Plan. Under further analysis, some may prove desirable while others may be dropped from the Final System Plan when the ConRail operating plan is further refined. Because of the tentative nature of the projects, anticipated benefits are not included in the pro formas in Chapter 14.

These projects are presented here to elicit public discussion and afford an opportunity to comment at the Rail Services Planning Office hearings. Also they are designed to facilitate the findings to be made by the Interstate Commerce Commission under provisions of Section 206(d)(3) of the Act. Additional projects will be developed between publication of the Preliminary and Final System Plans. Such projects will fall under the provisions of Section 206(g) of the Act to the extent that they are within the scope of that section. Under those provisions, these projects will be ineligible for implementation and inclusion under the Final System Plan but may be recommended in it. Where applicable they will be subject to normal hearing procedures of the Interstate Commerce Commission under Section 5 of the Interstate Commerce Act.

### **Major Market Extensions**

Appendix D-3 lists the major market extensions which have been proposed by the railroads and USRA. This appendix is divided into two sections, the first of which lists those projects as to which the Association is unable to determine pursuant to Section 206(d)(3) that such extensions would not materially impair the profitability of railroads in the Region or of ConRail. The second part of Appendix D-3 lists those major market extensions which the Association, based on currently available information, believes would not materially impair the profitability of other railroads in the Region or of ConRail. In certain instances, in order to qualify for the latter finding, the Association has modified the projects as originally proposed.

**Other Coordination and Market Extensions**

Appendix D-4 lists proposed coordination projects and market extensions which do not require the Association to make a finding under Section 206(d) (3). These projects involve acquisitions of portions of solvent railroads by the ConRail system to be established under the Act.

**Conclusion**

The Association concludes that coordination activities should be pursued as much as possible during and

beyond the planning period. Successful implementation of coordination projects can result in significant economic benefits for many of the Region's railroads. Potential positive impacts also include improvement and preservation of service.

The Association will continue actively to identify, study and implement coordination opportunities among the railroads in keeping with its mandate under the Act. The structure of ConRail and other railroads must change in response to market forces. Coordination will be a vital tool in this evolutionary process.

# 5

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## Operating the Restructured Rail System

*The cost of moving trains and related expenses consumes about half the revenues of the bankrupt railroads in the Region. Improved efficiency in operating trains significantly influences requirements for equipment and facilities and directly affects the future economic self-sufficiency of ConRail.*

*An indication of the complexity of existing transportation operations is that the bankrupt carriers receive for movement 42,000 cars daily. In preparing its preliminary operating plan, USRA made detailed analyses of the more critical operating factors. These studies identified both potential cost reductions and future equipment and facilities requirements.*

*Studies completed to date indicate that, as ConRail's volume increases between 1976 and 1985, the potential improvement in transportation expenses for the proposed ConRail System could produce annual cost savings of almost \$80 million compared to 1973 levels. Anticipated savings in the amount bankrupts spend to use or hold the cars of other lines are \$30 million annually, calculated on the same basis.*

*A more detailed discussion of analytic methods for improving train operations is contained in Appendix E.*

The operations planning process described in this chapter is fundamental to the design of the ConRail system. Several operating plans were developed to measure the impact of various alternatives. To permit analysis of a wide variety of operating plans, the Association used operations simulation techniques, employing several computer models developed specifically for this planning project. The models utilize the Association's integrated traffic flow data base which is described in Appendix E.

The magnitude and complexity of the various combinations of operations of the bankrupt railroads precluded using conventional techniques of analysis. Each 1 percent change in the combined transportation ratio (transportation expenses divided by transportation revenues) of these railroads results in a \$25 million change in their combined net income or loss.<sup>1</sup> In 1973, the combined transportation ratio of the bankrupt railroads was 47.0 percent, or 6.6 percentage points higher than the average for all Class I railroads. Reducing the bankrupt carriers' transportation expenses to the Class I average would imply reduction in transportation expenses of \$165 million annually. Over a 10-year period, compounded at 10 percent, such a cost reduction would have a cumulative effect of improving earnings by \$2.6 billion.

Although substantial improvements are possible, they cannot be identified through analysis of comparative industry statistics. The Association therefore studied the operations of the bankrupt railroads in detail to identify and measure specific improvement opportunities.

The operations analysis task was made more difficult by the complexity of the railroads' operations. The combined railroads move more than 42,000 cars per day among more than 8,000 stations and interchange junctions. To reduce the potential 64 million origin-destination station pairs to a manageable number, the stations were grouped into 517 normal "gathering areas" or nodes (267,000 potential pairs). These were then combined into 147 "supernodes" for preliminary planning purposes. A map of this network is included in Appendix E.

The 147 supernode network involved 21,600 active flows and potential blocks. By comparison, a similar study on a major railroad handling about 20 percent of the volume of the combined ConRail carriers involved less than 5 percent of the active flows to be analyzed. The complexity of the system appears to increase approximately as the square of the volume.

Even with the 8,000 stations and interchange junctions compressed into 147 supernodes, carrying out the operating simulations in a single pass approached the capacity of a large computer. Earlier manual efforts to

balance the system operations proved too complex for iterative analysis.

However, even the 147 supernode network was too general for some analyses. Multi-stage analyses were required, so that the analysis was on the one hand sufficiently detailed, and on the other hand, within the capacity of the computer and the capabilities of the analyst. To assure that the operations simulation techniques were realistic, the programs were calibrated to the existing operation and were designed to facilitate subsequent detailed implementation planning.

### Critical Leverage Factors

There is considerable leverage in railroad freight operations. Transportation expenses (which do not include maintenance) of the bankrupt railroads exceeded \$1 billion in 1973, consuming nearly half the system revenues. The operating and maintenance departments of the bankrupts employ 92 percent of the total of 105,000 employees. Train and engine service employees account for 36 percent of all employees of the bankrupt railroads. In addition to directly influencing employment and transportation costs, the operating plan also has significant effects on car use and net car hire and ownership costs. In 1973, net car hire alone cost the bankrupt roads \$283 million.

### Operating Ratios

It is useful to consider the performance of Penn Central and the other bankrupts relative to industry norms. The critical statistics of these railroads, shown in Table 1 and summarized below, gives some measure of their relative performance and helps to identify key problem areas.

Operating Ratios, 1973

	[In percent]	
	Bankrupts	Class I railroads
Transportation ratio.....	47.0	40.4
Maintenance of equipment ratio.....	14.0	13.1
Maintenance of way ratio.....	11.5	12.5
Operating ratio.....	83.3	79.4
"Breakeven" operating ratio.....	73.7	82.1
Equipment net debit ratio.....	11.4	5.9

The bankrupts' operations were more costly per revenue dollar than the average for Class I railroads, with higher transportation costs accounting for the difference. The seeming "efficiency" of the bankrupts in maintenance of way actually reflects a greater deferral of maintenance in the bankrupts than the average. The operating ratio required for the bankrupts to break even in terms of ordinary net income is considerably lower than the operating ratio required by the rest of the industry. This reflects the bankrupts' high level of costs, not included in calculating the operating ratios,

<sup>1</sup> Unless otherwise indicated, all statistical analyses include the Erie Lackawanna Railroad as well as the bankrupt railroads covered by the Act.



especially equipment rents and leases. In order to break even in 1973, the bankrupts required an operating ratio 8 percentage points lower than the industry norm, yet their operating ratio was 4 percentage points higher.

Thus, operating ratio analysis indicates that, in operating their railroads and in utilizing their equipment, the bankrupts are significantly less efficient in relation to revenues than other railroads.

TABLE 1.—Operating ratios (including EL operations), 1973

	Bankrupts weighted average	PC	EL	RDG	CNJ	LV	AA	Average Class I	Average Southern District	Average Western District
Operating ratio <sup>1</sup> .....	83.3	82.7	83.4	87.2	89.7	87.5	97.9	79.4	74.3	77.8
Transportation Ratio <sup>2</sup> .....	47.0	47.0	47.1	48.6	51.2	44.4	49.2	40.4	35.6	39.2
Maintenance of equipment ratio (excluding depreciation <sup>3</sup> ).....	14.0	13.9	14.3	14.1	13.4	17.4	19.9	13.1	12.3	12.6
Maintenance of way ratio (excluding depreciation <sup>4</sup> ).....	11.5	11.5	11.4	12.4	8.7	11.5	14.3	12.5	13.4	13.0
Traffic ratio <sup>5</sup> .....	1.3	1.0	2.0	2.3	1.6	3.0	1.7	2.2	2.1	2.3
Breakeven operating ratio <sup>6</sup> .....	73.7	73.1	77.0	77.1	75.6	70.4	70.7	82.1	83.2	84.4
Equipment net debit ratio <sup>7</sup> .....	11.4	11.7	9.7	7.5	11.7	15.9	12.0	5.9	5.8	4.9

<sup>1</sup> Railway operating expenses/railway operating revenues.

<sup>2</sup> Transportation—Rail line—Total/railway operating revenues.

<sup>3</sup> Maintenance of equipment total less depreciation (accounts 305 and 331)/railway operating revenues.

<sup>4</sup> Maintenance of way and structures total less depreciation (account 266)/railway operating revenues.

<sup>5</sup> Traffic total/railway operating revenue.

<sup>6</sup> Railway operating expenses less net income/railway operating revenues.

<sup>7</sup> Hire of freight cars and highway revenue equipment (debit balance accounts 122 less credit balance accounts 115)/railway operating revenue.

### Transportation Expenses

A comparison of freight expenses per 1,000 gross ton miles (GTM) is shown in Table 2. The bankrupts' combined freight expenses per 1,000 GTM is about \$1.50 higher than the average Class I railroad, with higher transportation costs accounting for the entire difference. Analysis of the bankrupts' labor productivity explains in part why the transportation function is out of line compared with that of the rest of the industry; the

bankrupts generated only 78 percent of the gross ton miles per crew hour generated by Class I railroads as a whole.

Further analysis reveals that the bankrupts' operations, in terms of total crew hours, are 12 percent more yard intensive than the average. Thus, the bankrupts require more crew hours per unit of production than their competition, and a higher proportion of these crew hours are used for yard switching, indicating a more

TABLE 2.—Comparative freight expenses per 1,000 gross ton-miles

Dollars per 1,000 gross ton-miles	Bankrupts weighted average	PC	EL	RDG	CNJ	LV	AA	Average Class I	Average Southern District	Average Western District
Freight expenses:										
1973.....	7.52	7.35	6.53	12.08	21.99	8.66	10.10	5.98	5.50	5.45
Freight transportation expenses:										
1973.....	4.77	4.70	4.07	8.32	17.73	4.39	5.08	3.19	2.72	2.79
Maintenance of equipment (freight) expenses (including depreciation):										
1973.....	1.72	1.67	1.46	3.18	5.39	1.96	2.66	1.37	1.32	1.21
Maintenance of way (freight) expenses (including depreciation):										
1973.....	1.32	1.30	1.07	2.54	3.66	1.31	1.57	1.10	1.13	1.00

### Direct Labor Productivity

1,000 gross ton-miles per crew hour:										
1973.....	22.83	23.55	28.27	11.85	4.16	21.72	20.86	29.18	25.29	35.52
Dollar revenues per crew hour:										
1973.....	200.46	203.86	216.76	169.48	91.44	208.07	208.92	217.41	183.86	241.05
Percent crew hours yard switching:										
1973.....	58.58	59.66	57.47	53.45	55.48	48.15	40.82	52.30	47.63	49.59

### PC role in railroad industry

1973	Revenues	Gross ton-miles	Total crew hours	Train hours	Train Sw hours	Yard Sw hours
PC percent all Class I.....	12.37	10.64	13.19	12.44	6.10	15.04
Bankrupt percent all Class I.....	15.64	13.27	16.96	15.81	10.46	19.00

labor-intensive, yard-oriented railroad operation than the average. For this type of operation, the bankrupts received only 92 percent of the average rail revenue per gross ton mile.

**Equipment Ownership Costs**

Statistics on carloading cycles were developed by Keebie Associates for the Federal Railroad Administration's Demurrage Study. This study, based on a 15,600-car nationwide sample, indicated that railroad cars spend an inordinate amount of time in yards instead of moving.

As shown in Figure 1, loaded and empty cars in this sample consumed approximately 62 percent of their load-to-load cycle time in yards. This represents 15.8 days of the average cycle of 25.6 days. The customers

with 11 percent moving and 20 percent in shipper hands.

**Focus of Operations Analysis**

From statistical analyses, transportation operations and equipment utilization appear to be key leverage points in charting a course toward improved efficiency and financial viability for the bankrupts. In particular, it appears that operational improvements should be sought in yards.

The Penn Central and other bankrupt carriers are known to be yard intensive. Although the bankrupts' share of train hours is close to their share of the revenues of the industry as a whole, both of these exceed the proportion of GTM produced. These figures and other statistics, along with field observations, focused the operations planning process on yard and train operations.

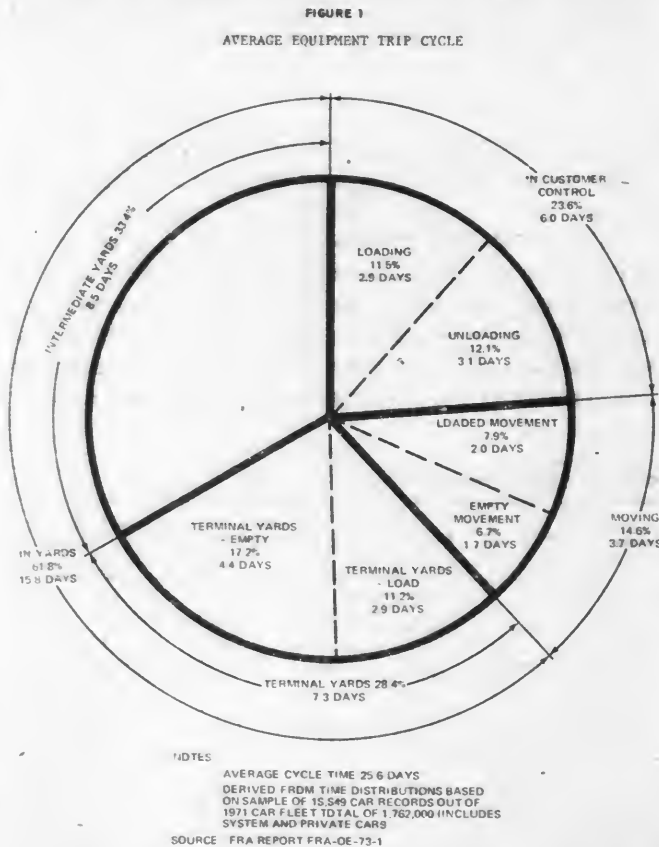
Productivity of yard and train operations was analyzed to determine the extent to which productivity could be improved through better management and improved facilities. Direct labor cost for crews represents about 21 percent of the combined gross revenues of the bankrupts compared with only 17 percent of the revenues for railroads on the average. USRA also analyzed the indirect labor and other costs associated with operations. These studies reviewed potential manpower requirements resulting from a merger of the bankrupt railroads, improvements in the work processes used by bankrupt carriers and in the quality of the work being performed.

**Improving Service**

Shippers have placed great emphasis on the need for railroads to provide a fast, reliable service. The railroads' failure to match motor carriers in this respect over the years in potentially competitive markets has resulted in an inherent discounting of rail rates. Only in selective cases have railroads reversed this trend. On the other hand, as shippers choose among available rail routes, improvements in service in terms of reliability and transit time by one railroad or route can have a significant competitive impact.

Making rail transit time competitive with that of motor carriers is, of course, quite difficult since the difference between the two is normally very great. As shown in Figure 1, however, there is much room for improvement through the reduction of time in yards. The railroads' transit time problems are primarily the result of the queuing time involved in sorting and re-grouping traffic in successive yards; slow orders on the road only compound the problem.

A recent study by MIT for the Federal Railroad Administration suggested that the single most important deterrent to reliable rail service is the frequent rehandling of cars at yards enroute from origin to destina-



themselves had the cars under their control less than 24 percent of the cycle time, or 6.0 days. Loaded and empty cars actually moved less than 15 percent of the time, representing 3.7 days.

A similar analysis was made for car movements in the "Eastern District" where the bankrupt railroads dominate. This study found that, compared with the national sample, cars in the Eastern District spend somewhat more time in terminal yards and somewhat less time in intermediate yards. On an overall basis, 69 percent of the total cycle time is spent in yards, compared

tion.<sup>2</sup> The statistics on car cycles cited above confirm that transit times can be improved significantly by reducing the number of days that cars spend in yards enroute from origin to destination. This would also significantly reduce equipment fleet requirements and yard crew and clerical work loads and eventually reduce pressures to discount rates to offset service deficiencies.

### Improving Operations

Changing railroad operations requires challenging the implicit assumption of many railroad planners and executives that further improvements to their operations in competitive markets, though desirable, are precluded by labor, marketing, financial or other constraints beyond their control. As the bankrupt roads, however, spend over one billion dollars (not including car hire) for transportation each year, this activity should be subject to careful planning and control. Unfortunately, like most railroads, the bankrupts have neither sufficient information to plan nor satisfactory systems to control their operations.

For example, the bankrupt railroads did not have a current origin-destination traffic flow analysis, which is as basic to transportation planning as production statistics and projections are to manufacturing. Such data can be obtained from the car movement and interline abstract records already available in the bankrupts' data bases. Engineered performance standards and controls for men and equipment are virtually nonexistent on these railroads. A few railroads, notably the most profitable ones, have recently invested in equipment control systems; on the bankrupts, however, equipment control is still nominal.

These and other railroads remain perhaps the largest businesses in the United States in which, with a few exceptions, the primary production functions and assets are not yet regularly planned and controlled. Fortunately, it appears that efforts to plan operations have begun in recent years, as opportunities to lower costs by reduced maintenance of the plant have disappeared. As a result of their worsening situation, railroads generally are beginning to become alert to opportunities to improve their operations and service through integrated planning and control. Much remains to be done and most of it is within the control of management.

### Rail Operations Alternatives

The movement of a carload of freight from one point to another on a railroad system is surrounded by a mystique that tends to discourage those who have not grown up in railroad operations from taking the time required to understand it. Actually, rail operations are

relatively straightforward in concept. It is the number and variety of combinations of flows which complicate the process. There are two basic functions in handling carload freight: movement and sorting.

The movement function is usually defined by the origin, destination and the route designated by the shipper on the bill of lading. Normally the shipper specifies a preferred "service route." If the shipper does not designate the route the originating railroad's agent designates the most "favorable" route (called the "long-haul" route) for the originating railroad. It should be noted that, due to the generalized nature of railroad costing, the most "favorable" or long-haul route may or may not be the most profitable route. Beyond the "long-haul" route, the agent may have some discretion in the selection of carriers to destination as long as the lowest rate applies. The routing choice is discussed in greater detail in Chapter 9.

The route shown on the waybill designates only the origin and destination of the movement on a given railroad. Normally, the routing of the car over that railroad from its origin (or on-line junction) to destination (or off-line junction) is at the discretion of the railroad.

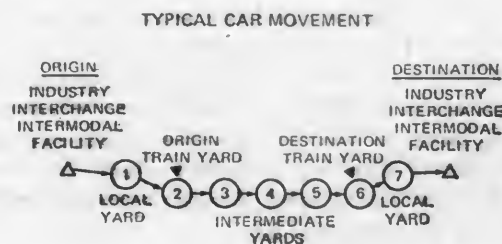
Generally a railroad has only one practical route via its own lines between a given origin and destination. In the case of the bankrupt railroads, several alternate routes exist, although one typically would be preferred.

Where there is a choice of route, the choice is usually made on the basis of distance, capacity, speed, grades, condition of track and intermediate points served. The selected line normally gets the investment, maintenance and service to become and remain dominant.

For ConRail, the cost of acquiring and rehabilitating lines is not a sunk cost. The long term choice of routes therefore can be reevaluated. Once that choice (and investment) has been made, the routing for a given movement will become virtually automatic. Given the origin and destination of a carload movement, its normal route (and the work load and cost involved in moving the car) will be easily ascertained.

It is in the sorting (or classification) function that management often has many options. Classification policies tend to be relatively rigid, but there is normally more flexibility in setting these policies than in the choice of routes for movement. A typical movement is illustrated in Figure 2.

FIGURE 2



<sup>2</sup>Transportation Systems Division, Department of Civil Engineering, Massachusetts Institute of Technology, *Rail Trip Time Reliability: Evaluation of Performance Measures and Analysis of Trip Time Data*, Studies in Railroad Operations and Economics, Cambridge, Mass., 02139, June 1972.



Typically, a car released by a shipper is moved by a switch engine from the shipper's siding to a local yard. From there it will be grouped with other outbound cars and transferred to the main classification yard by a transfer or road crew. At the main classification yard, the inbound cars will be classified (flat-switched or gravity-humped) into blocks according to outbound destination. At this point, there are usually several potential choices, although classification policies generally prescribe a specific block for each destination.

To understand existing blocking policies, it is necessary to consider how they evolved. Before railroads had effective competition, most railroad managers believed that the way to maximize overall profits was to obtain the maximum productivity from each individual yard and road crew. Utilization of assets was ignored. It was implicitly assumed that, if each yard's productivity was maximized, system productivity also would be maximized.

For this, two standards have been widely used in the railroad industry: cars handled per yard engine hour and gross ton miles per train hour. Though somewhat less in favor today, these two standards still have a latent influence on management thinking in rail operations, and both are counter-productive to systemwide operating efficiency as well as service.

Carried to extremes, these standards encourage the "cascading" of cars from yard to yard in long tonnage trains, with rehandling several times enroute. Since movement in this way adds about a day's delay for each yarding, intolerable delays (as well as excessive overall switching cost) are the consequence.

Recognizing the effect of this type of operation, many railroads have established "through blocking" policies to bypass intermediate yards. Generally, these blocking plans move cars between major classification yards and major interchanges. Also, interchange cars are often now handled by "run-through" trains moving directly to or from major classification yards of principal connections.

Unfortunately, some of the benefits of bypass blocking plans have been lost because of a tendency to concentrate classification capacity on the expedited movement of some rather than all cars. Shippers with leverage often are favored instead of making the optimum blocks from the standpoint of all traffic. This is a natural occurrence in an industry where planning generally has been implicitly defined as responding on an ad hoc basis to specific pressures by key customers or meeting competition by another railroad in an important market.

Because the rates are normally identical among rail competitors, improved service through bypassing intermediate yards is often a railroad's most effective competitive lever. It was through this ad hoc process that most railroad blocking policies evolved. In few cases have they been developed through systems analysis or on any other integrated basis.

USRA analyzed the traffic flows and the blocking and scheduling policies of the bankrupt railroads. It appears that the basic blocking plan of the Penn Central is relatively efficient, especially with respect to intermediate yards. On the other hand, PC appears to have congestion problems in the origin and destination terminals. Revised blocking policies might relieve the congestion and reduce the work load at these points.

Moving the sorting function could thus affect not only the location but also the magnitude of ConRail's capital investment. Investment in acquisition and rehabilitation of facilities, as well as closing or downgrading yards, will be determined in part by blocking policies. The main lines connecting these facilities also are influenced by the blocking plan.

### Operations Planning Process

The operations planning process focused on the critical factors previously discussed. USRA used an iterative planning process which began with broad overview studies. These were followed by increasingly detailed studies focusing on problems identified in the broader studies.

### Overview Studies

The overview approach is based on field observations and analysis, using comparisons with other railroads and authoritative estimates of the impact of potential changes. Included in the overview phase was an intensive 30-day study of the bankrupts by five railroad vice presidents with operating experience outside the Region.

To develop an operating plan, it is necessary to have some concept of the plan's results. The overview studies initially were used to provide preliminary assumptions for USRA's Office of Financial Planning. This enabled Financial Planning to make order-of-magnitude estimates of the viability of the various strategic options. The overview analyses were also used for estimating the sensitivity of viability to changes in basic assumptions such as traffic growth, network size, etc.

### Detailed Studies

The detailed studies used data on traffic flows within the system to develop an operating plan through simulation of current and projected traffic movements. The operating plans were then used to estimate the equipment, facility and manpower changes that may be anticipated under a given option. Ultimately, these were translated into an effect on pro forma income and cash flow statements and balance sheets.

The detailed studies are more time consuming than overview studies but they yield significant differentiations between the strategic options under consideration. They also provide a basis for the analyses necessary for implementation of an operating plan.



Consideration of alternate systems by USRA gave an additional dimension to the planning effort. In addition to the strategic options discussed in Chapter 3, several other policy alternatives are being analyzed. These include:

- Variations in the railroad's pick up and delivery role,
- Variations in the extent and rate of rehabilitation and
- Inclusion or exclusion of light-density lines.

In addition, the following technical options have been analyzed:

- Various train sizes, crew consists and bases of pay,
- Addition of major new classification facilities and
- Various blocking strategies.

As these changes and variations are still being studied, no estimate of benefits resulting from them has been included in the Preliminary System Plan.

The detailed planning process used computer simulation to analyze these options. A flow chart, Figure 3, shows the relationship between the various efforts in operations planning and the output used by other USRA planning units. The most significant operations planning efforts, which are described in detail in Appendix E, are as follows:

*Traffic Flow Data Base.*—A merged nonduplicative origin and destination traffic flow data base was developed for the bankrupt roads containing, for each flow, actual origin and destination station, commodity, cars, tons and revenues. Revenue abstracts were used for loaded movements. Car movement "cycle close" records<sup>3</sup> were used for empties.

An alternative empty movement algorithm was also developed for the use when "cycle close" records were not available. High and expected traffic projections for 1980 and 1985, developed by Temple, Barker & Sloane, were used as one estimate of future requirements. Traffic projections incorporating a lower rate of growth during the next several years, in recognition of current economic conditions, were also used to estimate future requirements.

*Blocking Study.*—Stanford Research Institute and the USRA staff jointly developed a proposed blocking strategy for each option, using the traffic flow data base and analyses of yard capacity. The proposed blocking strategy was fed into a specially developed computer program which printed out the workloads at each yard node, the number of times each flow was handled and the loadings on principal lines. The computer also printed out an analysis of each flow so that

improvements could be made in the blocking strategy in successive iterations.

The output report showing yard and line loading then was used to test yard and line capacities. Train miles, car miles and gross ton miles also were generated by the computer for each option to assess the economic impact of operating decisions so costs and delays could be reduced in successive iterations.

*Yard and Terminal Studies.*—USRA's staff visited 60 yards and terminals on bankrupt roads, completing a 35-page questionnaire at each terminal. In 23 yards, this was supplemented by 3 consulting teams provided by R. L. Hines Associates, Inc. The teams, which included experienced railroad engineers, operating officers and cost analysts, estimated yard efficiency and costs as well as existing capacity and identified improvements needed in the physical plant and in management techniques.

*Line Capacity Analysis.*—Nearly 10,000 miles of the bankrupt mainlines were included in the various line capacity studies. FRA, RSPO and USRA cooperated to determine mainline capacities. The Train Performance Calculator (TPC) program of Thomas K. Dyer, Inc. has been used by all three agencies to relate profile, alignment, normal track speed and slow orders to train running time and fuel consumption. FRA also used the Train Dispatching Simulation model of Peat, Marwick, Mitchell & Co. to simulate the movement of trains over single, double and multiple track configurations, at various track speeds and with a variety of signal systems.

Analyses have been made of the effect of slow orders on train delays, train crew costs and locomotive fleet requirements. Analyses also were made of track and signal requirements, as well as various rehabilitation scenarios given a blocking and scheduling plan. FRA has made these data available to USRA.

*Intermodal Study.*—Opportunities to improve intermodal services were analyzed, including traffic, operating and cost studies. Reebie Associates, working with FRA on a related project, is assisting USRA in this effort. Intermodal operations are discussed in detail in Appendix F.

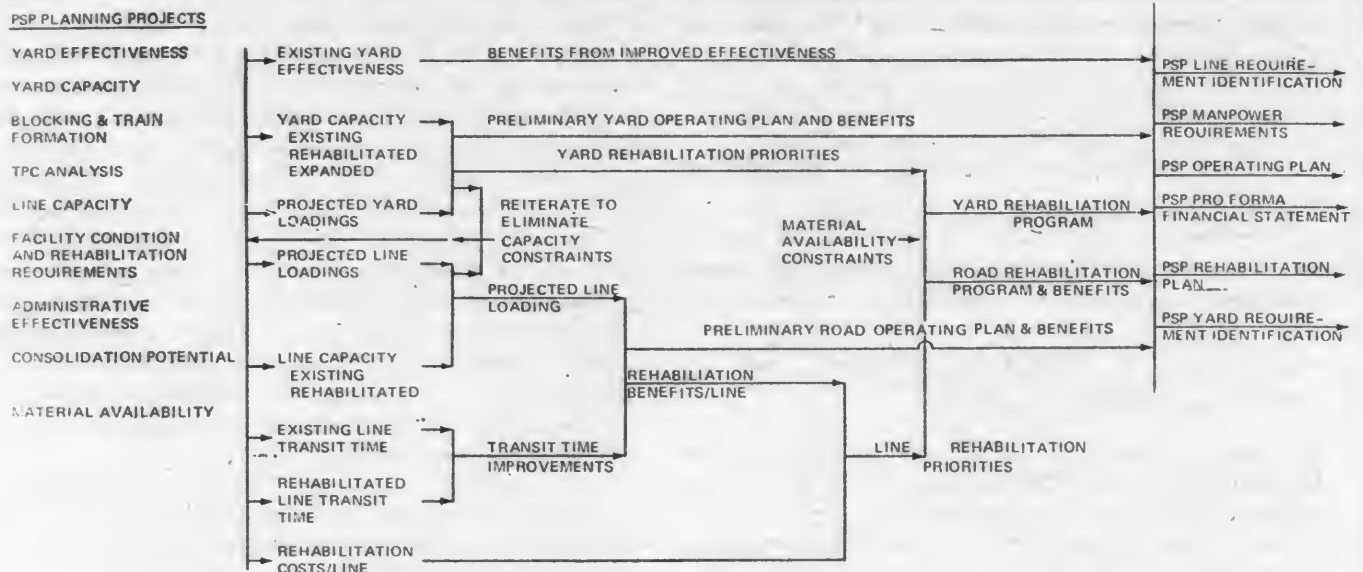
*Terminal Effectiveness Studies.*—USRA's Regional Managers, assisted by railroad personnel, are making detailed analyses of sample industrial switching and local operations. This study relates industry switching work performed to the revenue received and identifies profit improvement opportunities with conventional rail pick-up and delivery services.

*Equipment Utilization Study.*—Analysis of the potential for improving freight car utilization was carried out for USRA by Strong, Wishart & Associates. The three major tasks in this study were:

- A review of car distribution policies, techniques and information systems,

<sup>3</sup> An empty cycle close record contains as an origin the interchange point at which the empty was received or the location where the car changed from load to empty status; destination is the interchange delivery point or the point at which the empty is reloaded.

FIGURE 3  
UTILIZATION OF PRELIMINARY SYSTEM PLAN  
PLANNING PROJECT OUTPUTS



- A projection of future freight car needs and
- External and internal constraints on freight car utilization.

A study of locomotive requirements is being carried out by USRA staff. Electrification proposals for very heavy-volume mainlines are also being reviewed.

*Yard Offices and Agencies.*—A staff study was made of yard offices and agency functions to determine the potential for improving performance and cutting costs. Systems in use on bankrupts and other railroads were reviewed.

*Management Information Systems.*—The USRA staff is conducting an overall review of the management information systems of the bankrupt roads. This review will enable USRA to plan the initial integration of the information systems as well as plan long lead time/high payoff management information system requirements so that benefits can be realized as quickly as possible.

*Administrative Study.*—The staff reviewed the present management organization and function of each of the bankrupt roads to determine the organization requirements of the properties under various strategic options, taking into account the consolidated workload, decisionmaking requirements and organizational goals.

This study covered positions not included in other studies. It provided input to USRA's Office of Manpower Planning as well as projections of the general and administrative accounts.

### Basic Planning Assumptions

The following planning assumptions have been used in the planning process for evaluating strategic options:

- *Joint Operations.*—In comparing strategic options, a high degree of rationality has been assumed. While it is theoretically possible to operate a joint facility as efficiently as separate facilities, experience with joint facilities indicates that this is rarely achieved. However, it has been assumed that joint facilities would be utilized to the extent practicable, rather than constructing or rehabilitating separate yards for ConRail East and West or North and South. Frictional losses related to unmerging the systems were considered.
- *Traffic Base.*—For operations planning purposes, it was generally assumed that the bankrupts and solvent carriers would retain their existing traffic base with current routes open. Traffic shifts were analyzed on a specific basis where anticipated.
- *Traffic Routings.*—For those options involving a split of the bankrupt systems, traffic flows were assumed to move via the better service routes, unless the two routes are about equal in service, in which cases the traffic was split equally.
- *Abandoned Lines.*—Where lines or services are abandoned, it was assumed that all the traffic originating or terminating on those lines was lost. It generally was assumed, however, that sub-marginal light-density lines would be subsidized and retained for two years.
- *Customer Leverage.*—In developing the operations plan, emphasis was placed on improving service generally instead of providing special uneconomic service to key customers.

Minimizing the rehandling of cars on an overall basis results in minor flows "cascading" through several yards so that the available facilities can be allocated to pre-blocking the maximum number of

cars. It was found through simulation that, with an integrated operating plan, the majority of the customers should experience improved service.

- *Planning Instead of "Stand-By" Investment.*—Recognizing that money, men and materials will be limited, it was assumed that ConRail would be provided with a satisfactory plant and adequate equipment but not at "luxury" levels. Improved planning and control was assumed in lieu of underutilized standby plant and equipment. USRA's studies indicate there is a tendency to provide excessive standby switching service for key customers. Satisfactory but not excessive switching service has been assumed.

### Principal Operating Findings

The planning process described in Figure 3 was applied to the preferred three-system structure described in Chapter 3 as well as to the single-system ConRail, ConRail North/South, ConRail East/West, ConRail 1/2 and other strategic options, under varying assumptions relating to volume changes and management effectiveness. This process was used to identify mainlines and yards required by ConRail. It was also used to develop the manpower requirements, rehabilitation plan, and operating plan. Inputs to the pro forma financial statements were prepared on this basis for the Preliminary System Plan.

### Projected Operating Improvements

All financial analyses in this section are represented in 1973 dollars, without regard for inflation, but reflect 20 percent volume growth through 1985. The ratios and financial data discussed in this section do not include EL operations.

In 1973, the operating ratio (operating expense/railway operating revenue) of the Penn Central was 82.7 percent, with Penn Central accounting for 88.6 percent of the bankrupts' railway operating expenses. ConRail pro formas project that this ratio, after initially increasing to 89.6 percent in 1976, will decline to 71.7 percent in 1985.

Penn Central transportation expenses were 56.9 percent of operating expenses in 1973; more than 50 percent of the operating ratio improvement has been realized in this account. Maintenance of way expenses accounted for 29 percent of the improvement and all other expenses accounted for the remaining 21 percent.

The projected transportation ratio improvement from 48.1 percent in 1976 (transportation expenses/railway operating revenues) to 33.7 percent in 1985 resulted from projected improvements in yard operations and train operations.

Total projected improvements in freight transportation expenses for ConRail I (in millions of 1973 dollars) are as follows:

ConRail I

Category of expense	1973	1976	1985	Change in expenses 1976-85 <sup>1</sup>	
				Dollars	Percent
Yard-related.....	271	307	260	(38)	(12)
Train-related.....	437	436	379	(57)	(12)
Other.....	235	266	282	16	6
Total freight transportation.....	943	1,009	930	(79)	(8)
Net car hire.....	257	228	177	(51)	(22)
Total.....	1,200	1,237	1,107	(130)	(11)

<sup>1</sup> Net of the increased costs of moving the 20 percent additional tonnage expected to be added to the traffic base by 1985.

*Yard Improvements.*—Projected improvements in yard operations were based on the findings of the following studies:

- Blocking simulations—Stanford Research Institute (SRI).
- Yard operations and engineering study—R. L. Hines Associates, Inc. (RLH).
- USRA staff studies.

These studies are described in detail in Appendix E. The USRA staff was assisted in these studies by a railroad operations liaison team headed by PC's Director of Yards and Terminals.

Yard operating expenses accounted for 28.7 percent of ConRail's freight operating expenses in 1973. More than half the \$38 million projected decrease in yard operating expenses results from a 10 percent reduction in system classification requirements resulting from scale economies and an improved system blocking plan. The remaining improvements result from the physical rehabilitation of yards and related facilities. Additional cost reductions due to improvements in yard operating efficiencies have not been assumed, as such improvements would require more management attention than is expected to be available in the first several years.

*Train Operating Improvements.*—Train-related expenses totaled 46 percent of the bankrupts' 1973 transportation expenses. The principal reason for the \$57 million decline expected in these expenses is the \$2.0 billion plant rehabilitation program, 73 percent of which will be spent on track-related improvements. The net impact of this rehabilitation program is expected to be a 21 percent improvement in train running speeds, requiring fewer crews on local freight trains running over the rehabilitated line segments, virtual elimination of recrewing of trains enroute, a reduction of constructive allowance payments for delays associated with a debilitated physical plant and a decline in "loss and damage" and "wreck clearing" expenses to the norm of a well-maintained railroad.

*Other Expenses.*—Other expenses include freight station operating expenses, projected to decline slightly



from 1976 to 1985 due to the merger consolidation savings. Likewise, intermodal terminal costs are expected to decline, initially due to the deletion of existing unprofitable traffic, and subsequently to increase in accordance with projected intermodal traffic growth. Signal and communication expenses are expected to increase as the systems are expanded to permit more efficient operations.

**Net Car Hire Improvements.**—Estimates of changes in net car hire were developed in the study of equipment utilization, control and acquisition by Strong, Wishart & Associates, described in Appendix E. Net car hire payable is expected to decline from \$228 million in 1976 to \$177 million in 1985. Of this, \$30 million or 59 percent is due to the development and implementation of an improved equipment distribution and control system, as well as less car delay in yards resulting from reduced classification requirements, and faster train transit times due to plant rehabilitation. The remaining \$21 million improvement is due to a ConRail financial planning assumption that all new cars will be purchased rather than leased, reducing future lease payment expense (part of net car hire) and increasing interest expense.

#### Car Handling Requirements

As a result of the detailed blocking study carried out in preparing the Preliminary System Plan, it is estimated that system car switching requirements under ConRail I can be reduced by 10 percent compared to a simulation of existing operations. This reduction is possible because aggregated traffic flows in the merged ConRail system are greater than in the individual systems of the seven bankrupt railroads and also because the plan places emphasis on a strategy of making more refined ConRail destination blocks at origin classification yards, reducing the total amount of switching required system-wide.

By improving the quality of classification (making more beneficial car sorts with the existing traffic flows), this reduction can be made without increasing the number of classifications prepared or the number of cars switched per day in any of the significant ConRail yards. An additional two percent reduction in system switching can be made by assuming that selected yards prepare more classifications than they are presently making. In most cases, railroad liaison representatives agree that such classifications can be prepared. However, in some cases it is evident that an expansion in yard capacity may be required. To test the exact expansion required, and to define which portion of a yard's operation is actually constraining overall switching capacity, detailed yard simulations are being carried out in yards where significant changes are anticipated.

#### Facility Requirements

The general role that the bankrupts' system classification yards and main lines will have in the proposed ConRail operating plan is described in Chapter 3. Main-line rehabilitation priorities and constraints are also discussed in this chapter.

The specific role of the various yards will depend on the strategic option ultimately implemented. This is still under study.

#### Rolling Stock Requirements

ConRail's requirement for freight cars was developed in a special study by Strong, Wishart & Associates. This study estimated that overall freight car utilization could be improved on ConRail I by 31 percent, based on car-days on line per load originated. The estimated improvement by car type was as follows:

	<i>Improvement in percent</i>
Plain box.....	31
Equipped box.....	35
Gondolas.....	36
Open top hoppers.....	27
Covered hoppers.....	47

To achieve this improvement, the implementation of a computerized operating control system is required. Such a system would continuously monitor car movements; predict needs for empty cars as well as the location and quantity of empties being generated from loads, automatically fill some orders and assign destinations for some empties. This system should utilize a car distribution strategy which involves centralized control of the various steps of car distribution except for the local matching of individual cars to local car orders. Extremely accurate and complete "real time" car flow data are required for such a system.

Improving the utilization of the car fleet would reduce projected freight car acquisitions over the ten years from 1976 to 1985 by more than 40,000 cars for ConRail I, saving an estimated \$1.2 billion in freight car acquisition costs.

Breaking ConRail into two or more systems would materially reduce equipment utilization by disaggregating car pools and introducing additional interchanges. The effects on car requirements and expenditures were estimated to be:

	Additional cars	Additional freight car expenses (dollars in millions)
East/West.....	6,000	\$110
North/South.....	5,000	\$95
Neutral terminals.....	3,000	\$55

#### Locomotive Requirements

Locomotive use was studied to determine the required fleet; by types and quantities of locomotives, for



each of the several alternate ConRail systems. A major problem was obtaining accurate data. A further complication was that ConRail locomotive requirements will be appreciably affected by the upgrading of road and yard track, elimination of certain branch lines and wider pooling and centralized control of motive power. Identifying and measuring the quantity and timing of these modifications and improvements, and their translation into locomotive requirements, was crucial in determining future fleet size, year by year.

Penn Central has over 4,000 locomotive units, or 90 percent of the bankrupts' locomotive fleet (excluding EL); therefore, efforts were concentrated on evaluating PC utilization policies and practices. Visits were made to the "Blue Room" in Philadelphia, where motive power assignments are made for the Penn Central system. Visits were also made to selected yards and locomotive facilities. Methods of assigning and utilizing motive power were studied. Utilization of locomotive units was estimated on the basis of visual inspection, sampling of records and discussions with experienced personnel.

In addition, a computer model was constructed, using the "factor analysis" technique. Ten factors, each bearing on a railroad's locomotive fleet size and composition, were considered. Numerical coefficients were determined for each railroad for each of these factors.

An anticipated decrease in slow orders, for example, could be translated into a reduction in locomotive unit requirements. This model was run and the results compared with the "on the ground" approach discussed above, allowing a fine tuning of fleet requirements.

Train requirements and switching volumes in yards developed in the blocking project were reviewed for their effect on locomotive utilization and incorporated in fleet requirements for the several alternate ConRail system configurations.

Projected 1976-1985 traffic growth of 20 percent will require an 11 percent larger fleet or 468 more locomotive units. The most significant improvement in locomotive utilization will occur from track and yard rehabilitation, allowing more efficient use of locomotives. This is expected to reduce locomotive fleet requirements by 17 percent, or 722 units.

It appears that very little slack exists in PC locomotive distribution on those units centrally controlled. Most existing slack may be attributed to the lack of computerized reporting and control aids, since all location information and control is transmitted by telephone. It is estimated that installation of a sophisticated operating data system supplying reliable and complete "real time" utilization information to a centralized distribution point could improve utilization by an additional 2 percent.

Because of the unequal size of the merger partners, merger-related savings coupled with improved servic-

ing facilities should improve utilization by a further 2 percent.

*Electrification.*—In view of the uncertain energy situation and projected traffic densities, electrification may be economical for certain high-density ConRail routes. Because of the lead time for feasibility and engineering studies prior to a decision on electrification and the lead time for the implementation of an electrification program, no immediate effect on locomotive requirements has been anticipated.

### Rail Industry Productivity

Much has been written lately about the need to improve railroad productivity. The Final Report of the Task Force on Railroad Productivity to the National Commission on Productivity and the Council of Economic Advisors, *Improving Railroad Productivity* (November 1973), focused on this subject.

The preceding sections of this Chapter have dealt with productivity improvements possible within the discretion of ConRail management. Though additional productivity gains would reduce the government's role in ConRail, major productivity gains further than those previously described in this Chapter are beyond the sole discretion of ConRail's management. Achievement of these productivity improvements will require, in some cases, the cooperation of labor and other railroads—which also have much to gain.

### Capital Productivity

In developing the Preliminary System Plan, USRA has focused a substantial effort on improving the productivity of plant and equipment investment. In doing this, USRA recognized that the normally "sunk costs" in plant and equipment investment are essentially variable costs in establishing ConRail.

To improve capital productivity, USRA has identified opportunities to rationalize and rehabilitate plant, consistent with present and future needs. In addition, major studies have been made of freight car and locomotive utilization. As a result of the implementation of the recommendations contained in this report, equipment utilization is expected to be improved by 31 percent, with present car service rules. With this improvement in utilization and by fully rehabilitating only key lines, rather than all of the existing facilities, ConRail's capital requirements have been reduced by more than a billion dollars.

As discussed in Chapter 4, USRA is considering numerous joint-use projects that will improve capital productivity further. As with facilities, opportunities exist to reduce equipment requirements even further if more efficient yet equitable car service rules can be developed by the industry. Such rules would reduce empty car backhauls.

### Manpower Productivity

In addition to improvements in productivity, the financial projections in the Preliminary System Plan also reflect greater efficiencies in train and yard operations resulting from improved planning and control and plant rehabilitation. These financial projections are based on improvements that can be made within existing labor agreements, assuming that the implementing agreements required for ConRail under the Act permit normal integration of operations as the properties are merged. Savings resulting from possible changes in national and local labor agreements have not been included in the financial statements set forth in Chapter 14.

**Revenue Ton-Miles Per Employee.**—As noted in Chapter 12, railroad industry employment fell over 60 percent from 1947 to 1973. During that same period, revenue ton-miles (RTM) increased 30 percent, resulting in a 4.8 percent compounded annual improvement in revenue ton-miles per employee. It should be noted that during this period the railroads significantly reduced their role in passenger, less-than-carload freight services and rail car shops which had little effect on RTM but had a great effect on employment.

In the last five years, RTM have shown a 5.4 percent compound annual improvement, and between 1972 and 1973, RTM per employee improved by another 10.7 percent.

On the other hand, productivity gains measured by RTM per employee have been more than offset by the quadrupling of average annual earnings per employee (excluding fringes) since 1947, at a compound annual rate of 5.7 percent. With average revenues per net ton-mile increasing at a compound annual rate of only 1.6 percent during the same period, the RTM per dollar of employee compensation fell from 150 in 1947 to 120 in 1973. Most of this decline occurred in 1970 and 1971, when RTM per compensation dollar fell from 143 to 123. The rate of decline leveled out with volume growth in 1972 and 1973.

**Reasons for Past Gains.**—Several factors account for the productivity gains previously discussed. Reductions in passenger and less-than-carload (LCL) services were a major factor. Traffic growth was also important, and this tended to help the railroads as changes in overhead tended to lag changes in volume. Another major factor involved in improving productivity has been capital investment, including: dieselization, growing use of computers, automation and mechanization of maintenance activities.

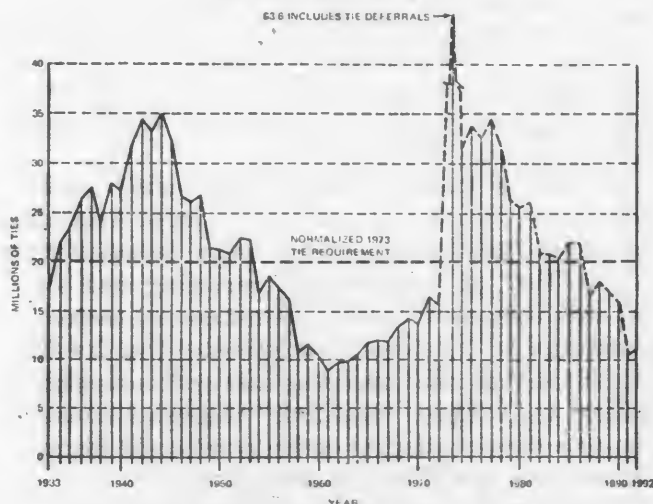
Management policies have played a significant role, too. Among the most important in terms of productivity have been operating heavier trains, encouraging heavier carloadings and operating fewer train miles. To some extent, these changes have resulted from better planning and control of operations, as suggested in earlier

sections of this chapter. Unless carefully planned, however, these management policies would, in effect, improve productivity by reducing the quality of service. Given the fact that average revenue per net ton-mile actually declined from 1959 to 1966, and only regained the 1959 level in 1970 (during which period the Association of American Railroads' combined wage and material price index rose 63 percent.), it is not surprising that rail managements have had a strong desire to make productivity gains, even at a sacrifice of service. Any reduction of service, of course, accentuates pressures to depress rail rates, creating a downward spiral.

**Urgent Need for Further Gains.**—It is stated often that dieselization in the 1940's and 1950's saved the railroad industry by increasing train size and reducing locomotive maintenance. The extraordinary installations of track materials from 1935 to 1950 (see Figure 4) may have had an equally profound effect on manpower requirements (with the resulting appearance of productivity gains) at least for the succeeding 30 years. Following this surge of track materials installations, relatively little maintenance was required for several years. When the bulk of materials installed reached maturity, controlling maintenance-of-way budgets became increasingly difficult. As the lives of materials were reached in the late 1960's and 1970's maintenance requirements became urgent, and deferrals of maintenance had a critical impact on operations and service. The operation of heavier cars and heavier trains compounded the problem.

Just as management was running out of ways to improve productivity, employee compensation rose sharply, and the RTM per dollar of employee compensation took a sharp drop. Rapid traffic growth in 1973 tended to relieve this problem in general; however, it compounded the declining track condition problem.

FIGURE 4  
25 CLASS I RAILROADS TIE INSTALLATIONS  
AND TIE REQUIREMENTS 1933-1992



SOURCE: THOMAS K. DYER, INC., LEXINGTON, MASS.  
SEPT. 1974

Track material replacement requirements are accelerating and will continue above normal through the mid 1980's. To survive this and other problems, the railroads must either raise rates substantially (and thereby possibly drive away more of their present traffic base) or significantly increase productivity.

#### **Constraints on Productivity Improvement**

When productivity is mentioned in the railroad industry, the discussion usually centers on constraints imposed by labor agreements. In the last few years, both management and labor have recognized their mutual need to come to grips with productivity. While it might be argued that the pace of change should be accelerated, it appears that progress is being made.

Preliminary analyses by the USRA staff indicate a potential for substantial productivity gains through changes in work rules, crew consists, bases of pay and craft distinctions. No attempt has been made, however, to anticipate the outcome of current labor-management discussions of some of these issues in preparing the Preliminary System Plan.

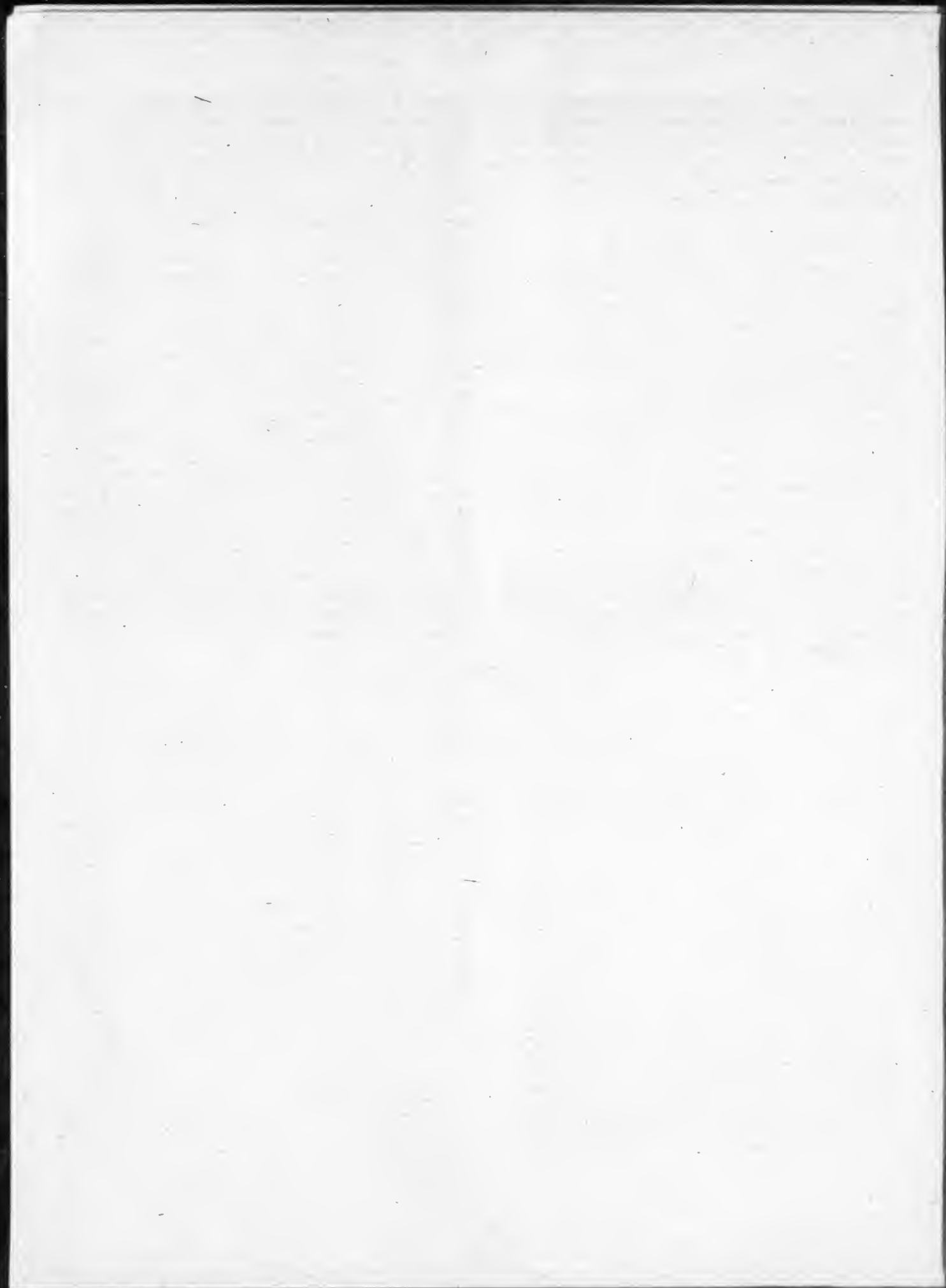
The Act anticipates that implementing and collective bargaining agreements for merging the properties will be negotiated by ConRail and the unions involved. How these agreements are negotiated will have a significant impact on the operations and viability of ConRail.

ConRail will be formed by merging several bankrupt railroads. Historically, mergers have generally resulted in a continuation of existing agreements upon which general implementing agreements have been laminated. The problem with the resulting complex agreements has been that frontline rail management could not operate as flexibly and efficiently as possible.

Supervisors have been unaware of what could or could not be done according to the agreements. This has occurred because frontline supervision's first responsibility is running the railroad and providing service. With the tradition of moving management frequently from place to place and with the poor physical plant that exists on the bankrupts today, supervisors have been totally preoccupied with simply keeping the operation running and have had little time for learning the idiosyncracies of each local agreement.

It is imperative that ConRail's implementing and collective bargaining agreements be oriented toward increasing productivity and be structured in a relatively simple straightforward manner so that they can be understood. With the severance protection clauses already contained in the Act, ConRail may be able to commence with such a set of agreements without adversely affecting the present employees of the bankrupts.

Equity, imagination and perspective as to future needs of the industry and its employees will be necessary as these agreements are negotiated.





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## Facilities and Equipment Evaluation and Planning

*The Association has had under study a vast railroad network covering 17 states, including about 21,000 miles of right-of-way, more than 4,500 locomotives and 175,000 freight cars, as well as shops, yards, signals, bridges and other facilities.*

*The Regional Rail Reorganization Act of 1973 recognized that correcting the problem of deteriorated facilities and inadequate equipment condition is essential to ConRail's success and directed the Association to plan for the railroad's rehabilitation and ongoing normal maintenance.*

*The first task was to compile a complete and refined inventory of all such assets and to determine their condition. These data formed a base for USRA planning decisions and rehabilitation strategy. This chapter outlines data collection methods and recommends a plan for restoring those physical elements essential to ConRail's success.*

*Correcting the deteriorated condition of the bankrupts' facilities and equipment will require a substantially greater public investment than previously contemplated. At current prices, the Association estimates the cost of eliminating deferred maintenance on lines included in ConRail at a minimum of \$2 billion. Even with the proposed reduction*

*in lines, proper rehabilitation will require the laying of about 1,650 track miles of new and second-hand rail and 2.4 million new cross-ties each year, plus repair of innumerable bridges and buildings, the roadbed and the signals and communications network. There are constraints other than those of a fiscal nature, the greatest of which is the lack of sufficient steel rail.*

*A program to bring the ConRail equipment fleet to its proper size and quality will cost a minimum of \$700 million (in 1973 dollars), plus the cost of improvements to major shop facilities. The plan also proposes the acquisition over a ten-year period of about 800 new locomotives and 20,000 new freight cars. The Association has prepared these estimates carefully and believes that they reflect reasonable and necessary investments.*

*This chapter also deals with such issues as the shop facilities to be retained, the extent to which the railroad should be rehabilitated and the priorities which must be set in view of the magnitude of work required with limited availability of resources.*

Deterioration of track, locomotives or freight cars leads to a decline in a railroad's ability to provide efficient and competitive transportation service. As shippers become dissatisfied and divert traffic to other railroads or transportation modes, revenues stagnate or decrease as day-to-day operating costs increase because of the lower efficiency of the physical plant. This has been the situation of the bankrupt railroads in the Region. Under the Act, the Association is responsible for conducting studies and formulating plans to rehabilitate, maintain and modernize these properties.

The physical plant of the railroads under study is a vast network covering 17 states and including 21,000 miles of right-of-way, more than 4,500 locomotives and 175,000 freight cars, as well as shops, yards, signals, bridges and other facilities.<sup>1</sup> It was first necessary to compile a comprehensive inventory of the existing facilities and then to assess their condition. Work necessary for rehabilitation as well as possible constraints (such as material and manpower shortages) to conducting a rehabilitation program were identified. After evaluating the required work and possible constraints, programs for ConRail's rehabilitation, maintenance and modernization were developed.

These programs were predicated on the need for improvement of the plant and equipment to an acceptable

level as quickly as possible but also reflect realistic assumptions regarding the effect of both material and financial constraints. Equipment programs were based on projected locomotive and car needs, based on the size and condition of the bankrupt carriers' present fleets, projected traffic growth and projected equipment utilization.

The present condition of the bankrupt railroads' physical plant is one of the major problems in developing a successful ConRail able to fulfill the requirements of the Act. Improvements in operations and potential marketing gains are dependent on improvements in the plant. These essential improvements will require maintenance costs substantially in excess of present levels to compensate for the past maintenance-deferral policies of the railroads.

The proposed rehabilitation described in this chapter and reflected in the pro forma statements (Chapter 14), was developed by programming what could reasonably be accomplished, assuming minimal difficulties in overcoming various constraints on the availability of manpower, material and equipment. These projections reflect:

- Eliminating all presently deferred maintenance by 1989,
- Correcting the deferred maintenance that will continue to occur until a sufficient program is fully underway, and
- Normal annual maintenance requirements.

<sup>1</sup> The figures contained in this chapter do not include the facilities and equipment of the Erie Lackawanna Railway. Preliminary investigations are being made by USRA staff of the EL plant and equipment and their related rehabilitation cost.

Should ConRail not be able financially to support all of the necessary rehabilitation work at the Association's projected rates of renewal, the proposed program can, if necessary, progress over a longer period of time by installing less rail, fewer ties and less other material each year. Obviously, all long-range programs require periodic review, and ConRail will be able to make revisions to the Association's presently projected program in the light of future traffic patterns and operational improvements resulting from rehabilitation activities. Any major revisions to the present program, however, would not be appropriate until ConRail's plant has been rehabilitated to the point where:

- Trains can get over the road effectively,
- Yard operations are improved significantly to handle traffic efficiently,
- Signal systems, structures and other facilities are reliable,
- Operations and traffic patterns have developed to the point where more definite projections are possible, and
- Future funding requirements and anticipated funding levels are determined.

The magnitude of deferred maintenance is so great, however, that the program realistically cannot be compromised in its early years. When operating efficiencies resulting from the rehabilitation program are available to ConRail and when future demands on the plant have better definition, review and appropriate revision of the program will, of course, be required.

Traditionally, the level of maintenance has been a function of available financing and the degree of operating efficiency which railroad management felt desirable in light of overall circumstances. But ConRail is not a traditional situation; the lines to be included in the system are so deteriorated that normal rules do not apply. While the Association's rehabilitation strategy can allow for some downward renewal rates during ConRail's formative years if availability of financing or material dictate no other choice, the consequences could be serious.

The Association's rehabilitation strategy recognizes that some sacrifice in operating efficiency may be required in the light of overall material and financial considerations. However, the result may be higher long-run costs, poorer service and possible decline in market share. For example, effective and profitable piggyback service is impossible if the railroads' main lines cannot sustain a dependable high-speed operation. Further, day-to-day operating costs can be affected by lower maintenance levels. Examples of these are:

- Increased costs resulting from derailments and damage claims,
- Increased day-to-day basic maintenance just to keep trains in operation, which is far less efficient than programed renewals,

- Increased train and engine crew costs resulting from increased times to get trains over the road,
- Increased per diem payments and other car utilization costs because the cars simply do not move as quickly both over the road and through terminals, and
- Lost revenue because the plant cannot adequately handle business.

Whatever course of action may be necessary, obviously priorities will be applied as to where work is done first. First priority must be given to those facilities retained in the Final System Plan which presently meet only minimal safety standards. After satisfaction of those requirements, the Association's plans provide for a staged approach, keyed to priorities, where the rehabilitation effort will produce a prompt impact. This strategy will be dictated by requirements such as:

- Traffic patterns,
- Train operating cost reductions which will result from an improved plant,
- Customer service,
- Equipment utilization,
- Equipment costs,
- Derailment costs and
- Ongoing interim maintenance costs.

On the basis of the route classification presented in Chapter 3, geographically specific rehabilitation priorities are as follows.

<i>Priority</i>	<i>Type</i>
First-----	Principal through freight routes
Second-----	Secondary through freight routes
Third-----	Primary feeder routes
Fourth-----	Secondary feeder routes

It should be noted that with respect to the secondary feeder system, these short local service lines (discussed in Chapter 7) are unlikely candidates for rehabilitation, barring local support from shippers or from communities. Industrial switching tracks, yard tracks and passing tracks will be rehabilitated and/or maintained in accordance with the routes they support.

These programs are described in more detail in the following pages. Because of the different characteristics of equipment as compared with track and other physical facilities, this chapter describes the Association's planning activities and proposed programs separately for each of these essential components.

### Physical Facilities

The physical plants of the railroads under study were identified and evaluated in the following categories:

- *Track*, consisting of 43,000 track miles, including switches, grade crossings of highways, and rail crossings of other railroad lines. "Track miles" represent the total mileage for all track on the rail-

roads as opposed to "route miles" which reflect miles of right-of-way, regardless of the number of tracks.

- *Yards*, ranging from large classification yards where trains are made up for movement over the road to small industrial yards from which cars are delivered to customers;
- *Signal systems*, including signals governing the movement of trains, grade crossing protection and various detection devices, such as devices which can detect hot journal boxes, excessive height, dragging equipment, etc.;
- *Bridges* of various sizes, types and ages;
- *Tunnels* of various lengths and construction types;
- *Servicing facilities*, such as facilities for the fueling of locomotives;
- *Shops* for repair and overhaul of locomotives, cars, equipment and roadway work equipment;
- *Buildings*, usually inventoried and reported as a component of another facility;
- *Freight terminals*;
- *Marine terminals*;
- *Electric traction*, including overhead wire and third-rail systems;
- *Other electrical*, including substations and transmission facilities, although much of this category was inventoried and reported as a component of other facilities;
- *Communication facilities*, largely inventoried and reported as a part of other facilities; and
- *Data management facilities*, mainly inventoried and reported as a part of other facilities.

Development of realistic rehabilitation estimates required not only this inventory but also an assessment of present condition. No existing study provided a complete inventory and assessment of all of the facilities of all the railroads under study. Further, it was essential that the Association base its planning decisions on independent data. USRA's data-gathering task was completed by several engineering consulting firms with one of the consultants acting as the project's technical direction coordinator to assure uniform sampling, reporting and estimating procedures.

A uniform inventory and assessment procedure was constructed for each facility category, including sampling techniques designed to provide confidence in the data for each facility category. For example, the sampling technique for running track provided detailed specifications for inspections every two track miles—a 2.6 percent sample. These samples were supplemented by interviews with railroad supervisors and an inspection trip over each line.

In addition, USRA staff made onsite inspections, further reviewed and refined the consultants' data and visited representatives of the bankrupt railroads and material suppliers. As anticipated, the study confirmed that past inadequate maintenance has caused deteriora-

tion of a major portion of the bankrupt railroads' track and other facilities. The bankrupt railroads, various consultants and representatives of government, industry and labor had also reported this deterioration.

The Department of Transportation had an evaluation of the Penn Central Transportation Company performed by a team of six chief engineers of solvent Class I railroads. The chief engineers evaluated the condition of the facilities and reviewed existing maintenance and rehabilitation programs. Their report provides the information required to support the program for the use of Section 215 funds as described in Chapter 15. Their facilities evaluation was performed, as was USRA's, during the fall of 1974. The findings of the report support those of USRA, particularly in regard to the immediate need to progress rehabilitation.

The USRA engineering consultants' study also provided the necessary detail for preparing rehabilitation estimates reflecting the cost of restoring the railroads' track, yards, signals, shops and other physical facilities to their previous best level of utility. Using established railroad industry standards, rehabilitation requirements were determined and then identified by standard work units which were developed for all required maintenance functions such as laying new rail, installing ties, repairing structures, renewing signal items, etc.

Standard costs were determined for each such work unit to translate the required maintenance work into dollar amounts. As of August 1974, the engineering consultants estimate that rehabilitation of all the railroads' track and other facilities to their previous best level of utility would cost approximately \$3.8 billion. This estimate assumes no constraints to performing the required rehabilitation work and includes no normal maintenance costs; it merely indicates what it would have cost to rehabilitate all the railroads' existing facilities to their previous best level if the work could have been performed during the third quarter of 1974. A cost summary of anticipated rehabilitation expenditures by facility is shown in Table 1.

Though this estimate was necessary for measuring the magnitude of rehabilitation work required for efficient operation, it assumes "instant" rehabilitation in 1974 dollars without regard to inflation or time and material constraints which, as discussed in the following pages, require that rehabilitation work be carried out over a number of years. The cost estimate developed by USRA staff for elimination of deferred maintenance on all facilities to be included in ConRail is \$2 billion for that work which can be accomplished in the first 10 years. However, the rehabilitation is programed over 14 years, and the cost for the additional 4 years is estimated to be \$300 million. This estimate is based on improving the facilities to accommodate their proposed use and is stated in constant 1973 dollars. The effect of inflation is described in Chapter 14 describing financial analysis of the Preliminary System Plan.



TABLE 1.—Summary of estimated rehabilitation costs<sup>1</sup>

Facility	Labor cost	Equipment cost	Commodity cost	Facility total	Salvage credit	Total cost
Trackwork.....	\$870,034,860	\$87,709,671	\$1,770,061,448	\$2,727,805,979	\$439,955,272	\$2,287,850,707
Yards.....	1,364,584	91,120	4,550,355	6,006,059	0	6,006,059
Signals.....	23,429,000	600,510	31,494,972	55,524,482	0	55,524,482
Bridges.....	378,994,657	62,336,292	152,175,935	593,506,884	-1,348,767	592,158,118
Tunnels.....	45,047,027	1,715,420	8,998,952	55,761,399	0	55,761,399
Servicing facilities.....	169,481	19,097	419,101	607,679	0	607,679
Shops.....	536,710	978,151	3,213,422	4,728,283	0	4,728,283
Buildings.....	54,406,880	2,491,493	21,862,553	78,760,926	0	78,760,926
Freight terminals.....	165,295	34,852	188,918	329,065	0	329,065
Marine terminals.....	3,222,359	146,647	5,991,751	9,360,747	-33,575	9,327,172
Electric traction.....	12,046,572	404,398	5,311,948	17,762,918	0	17,762,918
Other electrical.....	3,531,784	81,328	3,217,543	6,830,655	0	6,830,655
Communications.....	25,130,838	1,351,374	18,648,410	45,130,622	0	45,130,622
Total.....	1,418,020,047	157,960,343	2,026,135,308	3,602,115,698	-441,237,614	3,160,778,084
Contingency <sup>2</sup> .....						613,191,000
Grand total.....						3,773,969,084

<sup>1</sup> These figures reflect the condition of the Penn Central Transportation Co., the Reading Co., the Central Railroad Co. of New Jersey, the Lehigh Valley Railroad Co., the Lehigh & Hudson River Railroad Co., the Ann Arbor Railroad Co., and the Pennsylvania-Reading Seashore Lines.

<sup>2</sup> Contingency applied by the technical direction contractor.

Source: Data collected for USRA under inventory and assessment contract.

Note: These figures reflect the cost of rehabilitating the railroad facilities to their estimated previous best level of utility. They were prepared using 3d quarter 1974 dollars and do not consider any constraints to performing the rehabilitation work and do not include any normal maintenance.

To develop programs for performing the necessary work over the required number of years, the study included detailed information describing the required work functions for the rehabilitation of each segment of track and of each facility. A comparison of major deferred work units required for all the railroads studied and for the lines included in ConRail is shown in Table 2. These figures, of course, will be further refined as planning continues toward the formulation of a Final System Plan. Future planning will deal with defined programs and produce refined estimates.

With the inclusion of the Erie Lackawanna Railway and development of the ConRail structure, some changes in the proposed rehabilitation programs may be necessary. The proposed transfer of selected Reading lines to the Chessie System and the proposed trackage rights agreement with the Chessie, D&H and the N&W would reduce rehabilitation costs by approximately \$20 million. An effort to estimate deferred maintenance on the Erie Lackawanna is currently underway.

TABLE 2.—Summary of major deferred work units as of August 1974

	All railroads studied	Proposed consolidated system
Rail (miles):		
New.....	5,624	4,855
Relay.....	4,898	3,485
Total.....	10,522	8,340
Ties (millions).....	29.1	20.6
Switch ties.....	536,696	424,000
Turnouts.....	10,093	7,484
Road crossing track feet.....	642,000	408,000

Source: Data collected and summarized by engineering consultants to USRA.

#### Constraints and Assumptions

ConRail's rehabilitation requirements are so vast that availability of manpower, equipment and material must be considered. Various constraints to carrying out a rehabilitation program include:

- Lack of material (rail, ties, ballast, etc.),
- Lack of qualified manpower,
- Availability of new roadway work equipment and the condition of the railroads' existing equipment,
- Availability of rail welding facilities and related equipment,
- Interference of maintenance-of-way work with day-to-day railroad operations and
- Financial constraints.

From information supplied by the railroads and material suppliers, as well as other research, USRA staff prepared assumptions of the extent to which the required equipment, material and trained manpower will become available. These assumptions are summarized in the box and discussed below.

*Rail renewal.*—Present estimates are that the lines included in the Preliminary System Plan contain almost 8,400 track miles where rail replacement has been deferred. Even with the reduction of lines proposed in this Plan, it is envisioned that rehabilitation will require laying as much as 1,650 track miles (approximately 870 new and 780 second-hand) annually (Figure 1), an effort far beyond present capabilities. Rail laying activities will be constrained by lack of:

- Ability to purchase new rail,
- Facilities to weld rail,
- Welding trains to distribute continuous welded rail and

SUMMARY OF ASSUMPTIONS AND PROGRAMS

Year	USRA programs provide for--	Program projections
1975	12 new tie gangs	440 miles of rail available.....27% of need
	1 new rail gang	2,600,000 new ties available.....51% of need
	12 new surfacing gangs	
	224 special ballast cars	
1976	84 tie cars	
	TRAINING PROGRAM ESTABLISHED	380 miles of rail available.....23% of need
	8 new tie gangs	3,500,000 new ties available.....68% of need
	660 special ballast hauling cars	
1977	80 tie cars	
	ADDITIONAL WELDING LINE	630 miles of rail available.....38% of need
	10 new tie gangs	4,300,000 new ties available.....84% of need
	1 new welded rail train	
	2 new rail gangs	
1978	660 special ballast hauling cars	
	80 tie cars	
	ADDITIONAL WELDING LINE	760 miles of rail available.....46% of need
	6 new tie gangs	5,000,000 new ties available.....98% of need
	2 new welded rail trains	
1979	2 new rail gangs	
	556 special ballast hauling cars	
	56 tie cars	
	MAJOR NEW RAIL WELDING FACILITY	920 miles of rail available.....56% of need
	NEW RECLAMATION PLANT	5,000,000 new ties available.....98% of need
1980	NEW SIGNAL SHOP	
	5 new welded rail trains	
	2 new rail gangs	
1981	6 new welded rail trains	1,600 miles of rail available.....97% of need
	2 new rail gangs	5,100,000 new ties available.....100% of need
1981		1,650 miles of rail available.....100% of need
		5,100,000 new ties available.....100% of need

- Equipment and qualified manpower to install new rail.

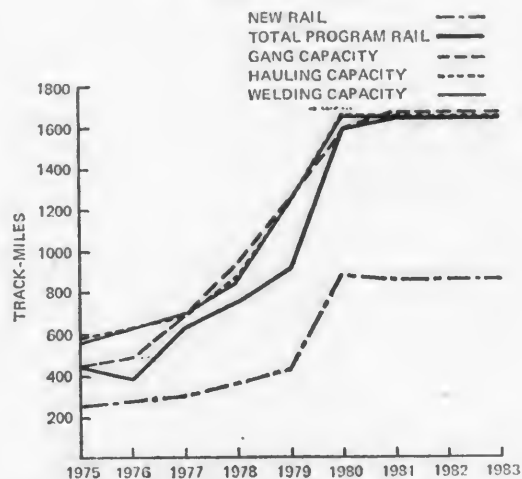
The availability of new rail is severely limited by the capacity of the nation's four rail mills. Present estimates are that only 210 track miles of new rail will be available in 1975 to the railroads under study, despite an estimated need for 870 miles of new rail during each year of ConRail's rehabilitation program.

The present decreased demand for steel may free some additional ingot capacity for rail steel, but the limited rolling and straightening capacity of the mills makes the exact amount uncertain. Although USRA's proposed programs do assume some increase in the availability of rail between 1976 and 1979, a new rolling mill will be required to fully alleviate the problem.

After 1980, the supply of rail should no longer limit the proposed program, if a new rail mill or improvements to an existing facility will be operational by that time.

Because of fluctuating orders over the last several decades by the rail industry, the steel industry has been unable to justify extensive investments in new rail-making facilities. Discussions between USRA and steel company officials have developed an indication of will-

FIGURE 1  
PROJECTED RAIL RENEWAL  
PROGRAM REQUIREMENTS  
1975-1984



SOURCE: USRA STAFF ANALYSIS

ingness on the part of the steel companies to consider increases in capacity in order to meet the ConRail rehabilitation needs. To assure the availability of this

capacity, ConRail may need to enter into a long-term financial commitment with the industry.

Increased availability of useable second-hand rail and switch material will result from stepped-up renewal programs, and it is crucial that rail and other material from abandonments be available for use elsewhere. To accommodate the anticipated need for useable second-hand material, the programs proposed by USRA provide for a new reclamation<sup>2</sup> facility and a System Signal Shop<sup>3</sup> to be operational by 1979.

USRA's proposed program also is constrained by the 550-track mile capacity of the railroads' three existing rail welding facilities. Plans provide for two additional portable welding plants, one at Lucknow, Pa., in 1977 and one at Columbus, Ohio, in 1978. Plans further provide for a major new rail welding facility by 1979 to achieve the capability for welding the 1,650 track miles per year that will be required for rehabilitation.

Rail welding also requires the ability to transport continuous welded rail, and the railroads' existing seven welded rail trains can transport approximately 580 track miles annually. The proposed programs provide for one new rail welding train in 1975, which is included in the Section 215 program, one in 1977, two in 1978, five in 1979 (coincident with the proposed new rail welding plant) and six in 1980.

Even with provisions for a new rail mill, a new rail welding plant and 14 new rail welding trains, USRA's program may also be constrained initially by the availability of trained labor and supervision to carry out the job and to assure maximum production for dollars spent. Though present indications are that manpower will be available, training programs for both existing and new employees will become an essential part of ConRail's overall rehabilitation and maintenance programs to assure the required labor.

Realizing the investment in training, plans further provide for a more stable working force so that trained employees are not lost because of seasonal furloughs. Temporary employees will, of course, still be required for peak seasonal demands. As sufficient trained manpower becomes available, one new rail gang will be added in 1975, and two each year from 1977 through 1980. With improved training, supervision and scheduling of work activities, the programs also propose to achieve a 50 percent increase in rail laying productivity over a number of years, from 80 to 120 track miles per annum per gang.

*Crosstie replacement.*—The 28,000 track miles selected for inclusion in the Preliminary System Plan require 2.4 million new ties annually to prevent further deteri-

oration. An additional 2.7 million new ties are needed during each year of the rehabilitation program to counteract the inadequate tie renewals of the past. Compared with the present annual renewal rate of 2 million, the consolidated system must be prepared to insert 5.1 million new ties each year. The three constraints to a tie renewal program are:

- Ability to purchase the ties,
- Availability of roadway work equipment and trained manpower to install the ties, and
- Availability of proper equipment to transport the ties to the work location efficiently.

Decreased demands upon the lumber industry have improved the availability of ties, and the tie industry has indicated that, with sufficient advance commitments, ties will be available. Initially there will be some production problems, especially in providing sufficient treating capacity, but these problems should not constrain tie supplies beyond 1980. Estimates are that 65 percent of the ties required will be available in 1976, 80 percent in 1977, 93 percent in 1978 and 1979 and 97 percent in 1980.

The railroads under study now have 35 tie gangs which, if properly staffed and equipped, can insert approximately 2.1 million new ties annually assuming present levels of productivity. USRA's planning provides for the acquisition of 36 new tie gangs over a 4-year period commencing at the end of 1975, 12 of which are included in the Section 215 program. A very high level of training and supervision will be required to maintain present production levels and also progressively to increase each gang's productivity 10 percent to approximately 71,000 ties per year.

Revisions of existing procedures as well as new procedures will assure optimum production for the time and money committed to these maintenance activities. For example, on some lines, particularly where there is heavy traffic, it may be desirable to work two gangs in the same general area to assure maximum production during the time the track is removed from service and available for maintenance. Proposed tie renewal activities are summarized in Figure 2.

*Ballast and track surfacing.*—Track surfacing involves the distribution and compacting of ballast under the ties to correct the track's profile and the cross level relationship of one rail to the other. This activity is closely related to rail and tie renewals. Twelve additional surfacing gangs are planned in 1975 and included in the Section 215 program.

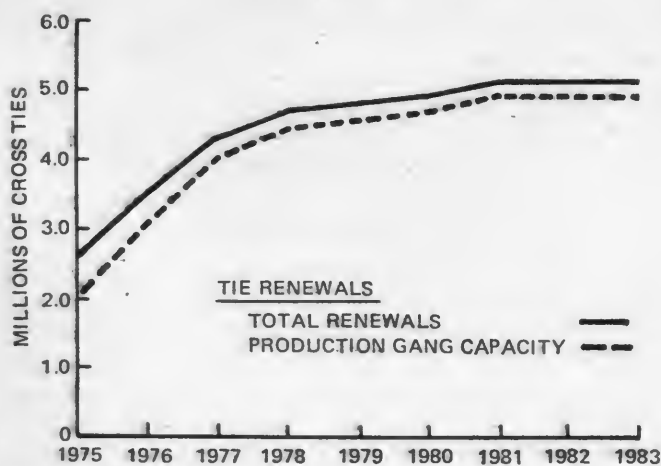
In addition to replacement of obsolete units, these gangs should fulfill the requirements for the consolidated system. Training programs, especially for machine operators and repairmen, should alleviate any manpower problems and, with proper training and supervision, it should be possible to increase annual sur-

<sup>2</sup> Such a facility reclaims and rebuilds rail material, such as frogs, switch points, joint bars, spikes, bolts, etc., made available from renewals and track retirements for use elsewhere.

<sup>3</sup> Similar to a reclamation facility, a signal repair shop repairs and rebuilds signal components such as relays, code equipment, electronic equipment, switch machines, signals, and automatic highway crossing equipment.



FIGURE 2  
PROJECTED RENEWAL OF TIES  
1975-1984



SOURCE: USRA STAFF ANALYSIS

facing capacity from the present 6,200 track miles to 7,100 track miles.

One possible constraint could be the availability of equipment to haul and distribute ballast. USRA's planning provides for acquisition of 2,100 special ballast hauling cars, 224 of which are included in the Section 215 program, to be delivered over a 4-year period commencing in 1976. Without this, it would be necessary to rely on less efficient, regular hopper cars, since this would remove as many as 3,500 such cars from regular revenue service.

*Signals and communications.*—The railroads under study include more than 14,000 miles of track where train movements are governed by signals, more than 1,300 automatically controlled interlocking plants,<sup>4</sup> more than 20 classification yards where remote control switches and car retarders<sup>5</sup> are used for sorting cars, over 8,000 highway grade crossings with automatic protection, various communication facilities including pole lines and radios and a variety of special protective devices which warn train crews of such dangers as hot journal boxes, dragging equipment, rock slides, etc. Inadequate maintenance and deferral of renewals has had an adverse effect on these facilities, and their maintenance and rehabilitation is included in USRA's proposed programs.

It is estimated that correcting deferred maintenance on all the railroads' existing communications and signal facilities would have cost \$100 million if all the necessary work requirements could have been completed

<sup>4</sup> An interlocking is a switch or group of switches inter-connected and signal controlled to allow the passage of trains from one track to another in proper sequence.

<sup>5</sup> Car retarders are found in hump yards where cars moving by gravity down the hump are switched to a selected track. The car retarders slow the movement of the freight car to assure proper speed for coupling.

during 1974. (This amount is included in the previously mentioned \$3.8 billion figure for total rehabilitation.) Work functions in this area include renewal of batteries, signal cable, and the signals themselves, replacement of obsolete interlocking plants, repairs to pole lines and renewal and repair of radios and other communication facilities. These activities initially will be constrained by:

- Lack of trained manpower and supervision to complete the necessary work activities,
- Availability of parts and other material,
- Engineering design lead time for modernization of signals and interlockings and
- Long lead times for delivery of parts and material. Much of this material must be specially manufactured for a particular project.

Given proper provisions for training, the additional manpower requirements will not present a significant problem. The key factor will be advance programming of projects, particularly those such as centralized traffic control installations,<sup>6</sup> for which equipment must be specially designed and manufactured.

*Bridges and buildings.*—The railroads studied include over 30,000 bridges of various age, design and construction, ranging from small spans and culverts to major facilities such as the Hell Gate Bridge in New York City. The railroads' buildings encompass everything from large stations to wayside shanties.

Traditionally, the railroad industry has considered bridges and buildings as one category for maintenance purposes, with manpower historically classified as the B&B (Bridges and Building) force. It is estimated that correcting deferred maintenance on this portion of all the railroads' existing facilities would have cost approximately \$727 million if all the work could have been completed in 1974. This amount is included in the previously mentioned total rehabilitation figure.

B&B maintenance activities include building repairs, renewal of bridge timber and steel and bridge cleaning and painting. The proposed program recognizes that lead times for engineering design requirements, the availability of steel and bridge timber, the availability of financing and the availability of construction forces to perform major rehabilitation will constrain reconstruction and rebuilding activities.

Initial efforts in this area will be devoted to safety requirements. However, sufficient labor and material is available for long-neglected cleaning and painting activities. Recognizing the condition of many bridges and buildings, the proposed program initially provides for substantial intermediate repairs.

<sup>6</sup> Centralized traffic control installations provide for remote controlling of many interlocking plants under the control of one man and providing signals so that trains can run in either direction on a track with movement governed by signal indication. These installations usually increase track use and often allow for retirement of one track in multi-track territory.



## Maintenance and Rehabilitation Programs

USRA's identification of track and other physical facilities, assessment of the facilities' condition, identification of ConRail's proposed use of these facilities, identification of constraints to performing rehabilitation, and assumptions as to the extent to which these constraints can be overcome provided the basis for the development of ConRail's long-term normal maintenance and rehabilitation programs. These in turn provide the basis for the maintenance cost estimates reflected in the pro forma statements in Chapter 14. The number of employees necessary for these programs is shown in Figure 3.

*Normal maintenance.*—The proposed normal maintenance programs are based on:

- Determination of the size of the system,
- Estimates of how long the track material (rail, ties, etc.) will last,
- Development of a cycle, based on system size and the materials' life expectancy, leading to
- Geographically specific programs for necessary rail and tie replacement, track surfacing, track inspections, weed and brush control and other activities to assure adequate maintenance.

Normal maintenance programs for facilities other than track are based on similar criteria that recognize the life of materials, service requirements, etc.

*Rehabilitation.*—This is work required to "catch up" on deferred maintenance to restore a line to a desired level of operation where normal maintenance cycles have not been followed in the past.

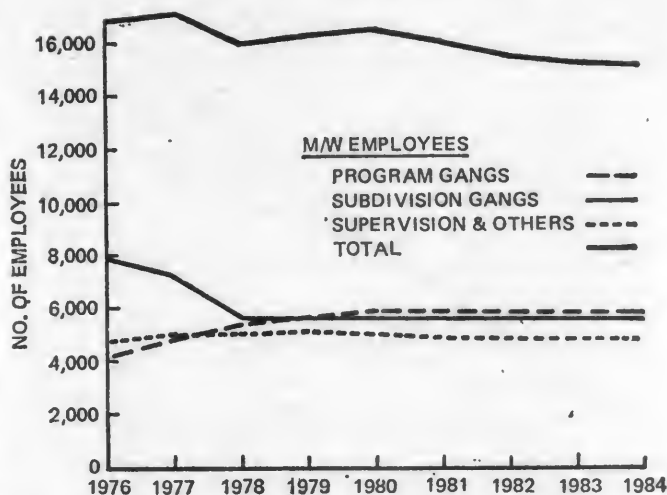
*Interim maintenance.*—Rehabilitation work throughout the system must be spread out over a number of years. Interim maintenance provides for expedient work on those lines to be retained in the Final System Plan to sustain operations until rehabilitation can be completed.

*Holding actions.*—This portion of the program is somewhat similar to interim maintenance and provides for maintaining the status quo on those lines not selected for inclusion in the Final System Plan until arrangements have been completed for their continued operation or disposition.

Work of this nature is the least productive for the resources required. Further, resources committed to holding actions are not available for the crucially-important rehabilitation activities on those main lines selected for inclusion in the Final System Plan, where an improved physical plant will contribute to less costly day-to-day operation of trains.

*Basic force.*—The operation of the railroad requires a basic maintenance force at the local-level to handle emergencies, to inspect facilities for unsafe conditions and to handle various work requirements which are impractical to perform with larger production gangs. At present these forces are spread severely thin throughout

FIGURE 3  
PROJECTED MAINTENANCE OF WAY  
EMPLOYEE REQUIREMENTS  
1975-1984



SOURCE: USRA STAFF ANALYSIS

the railroad, and the proposed program provides for their increase.

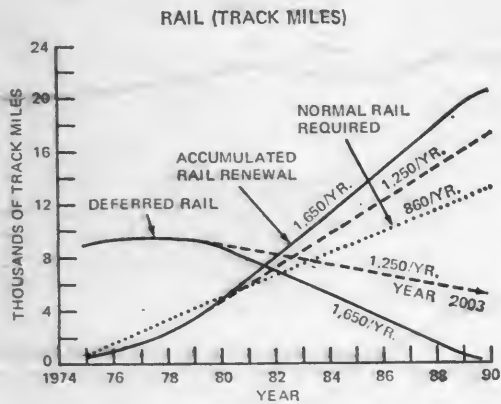
## Rehabilitation Strategy and Priorities

Long-range programs require annual review in light of changing circumstances and available technology, and the Association's rehabilitation strategy recognizes that, in light of future revisions, elimination of deferred maintenance may not be accomplished by 1989 as envisioned in the rail and tie programs set forth in Figures 1 and 2. Further, the strategy recognizes that this level of maintenance may never be fully achieved.

Future maintenance decisions will be based on different requirements after the plant has been rehabilitated. Re-assessment of the program, when appropriate, might provide for revision in the rates of renewal for rail and ties. As mentioned earlier, however, this point will not be reached during the early years of ConRail's operation.

The relationship of reduced rates of renewal and their effect on the number of years presently deemed necessary to complete rehabilitation is shown in Figures 4 and 5. For example, an annual reduction of 750,000 ties and 400 miles of new rail from presently projected renewal rates would result in an annual reduction in maintenance expenditures of \$65 million in 1974 dollars, but it would extend the program beyond the year 2000. It should be further noted that downward revisions of renewal rates in the past are one of the major reasons why the railroads' physical plant has so much deferred maintenance today.

FIGURE 4  
RAIL REHABILITATION STRATEGY



The line marked "Normal Rail Required" indicates the miles of new rail required each year to prevent further accumulation of worn-out rail. The lines marked "Accumulated Rail Renewal" and "Deferred Rail" show the relationship of various annual rates of rail renewals on the eventual elimination of deferred rail. For example, if 1,650 miles of new rail are laid each year, the normal rail renewal rate of 1,860 miles per year will be sufficient after 1990. Conversely, if only 1,250 miles of new rail are laid each year, a normal rail renewal posture will not be achieved until 2003.

Whatever rate of renewals is determined desirable, priorities must be assigned to determine where work is completed first. As mentioned earlier, first priority will be given to those facilities retained in the Final System Plan which presently meet only minimal safety standards.

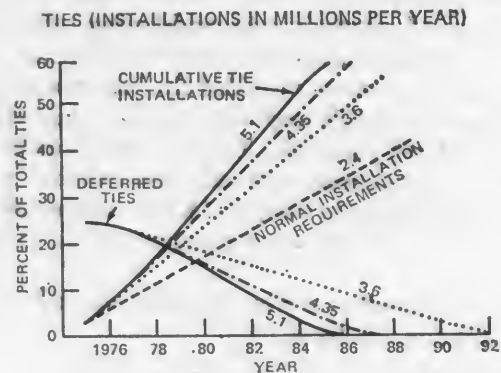
After satisfaction of those requirements, priority will be given to those areas which produce maximum improvement in efficiency. Considerations will be based on achieving lower train operating costs, better customer service, improved equipment utilization, decreased derailments, and decreased interim maintenance costs. As the program progresses and as initial priorities are satisfied, programs for increasing efficiency will form a larger percentage of the total work performed.

#### Capital Program

A capital program has been developed that will provide for reduced maintenance and operating expenses as well as track connections and other new facilities required to implement the Plan. A capital program is required to modernize the existing plant, particularly in those areas where improved operational efficiency will yield a desirable return on investment. Examples of such projects include:

- Modern signal systems,
- Shop, servicing and marine loading and unloading facilities,
- Track connections and facilities to handle new business,

FIGURE 5  
TIE REHABILITATION STRATEGY



The line marked "Normal Requirements" indicates the rate of tie replacement required to prevent further accumulation of deferred (defective) ties. The lines marked "Cumulative Tie Installations" and "Deferred Ties" show the relationship of various annual rates of tie renewals on the eventual elimination of deferred ties. For example, if 5.1 million ties are installed each year, the normal tie renewal rate of 2.4 million will be sufficient after 1986. Conversely, if only 3.6 million ties are renewed each year, a normal tie renewal posture is not achieved until 1992.

- Terminal improvements,
- Electronic scales,
- Rail highway cranes—wreck, etc.,
- Soil stabilization;
- Bridges,
- Tunnels, and
- Acquisition of maintenance of way equipment.

Initial efforts in this area will primarily be devoted to signal projects such as centralized traffic control installations, which not only produce long-range savings but also often allow for the retirement of one track in multi-track territory, thereby freeing badly needed track material for use elsewhere in the consolidated system.

#### Equipment and Related Facilities

USRA is dealing with the nation's potentially largest railroad fleet, consisting of 4,500 locomotives, 175,000 cars, a mechanical department force of 22,000, consisting mostly of craftsmen, and 60 repair points for both locomotives and cars. The proposed ConRail fleet would be equaled only by the combined fleets of the Burlington Northern and the Southern Pacific.

The major difference, however, is that the combined Burlington Northern and Southern Pacific freight car fleets have a bad order ratio<sup>7</sup> of 5.3 percent in contrast to ConRail's 10.7 percent ratio prior to proposed rehabilitation and acquisition plans.

<sup>7</sup> The ratio of total number of cars owned to those awaiting repair or disposition, expressed as a percentage.

To determine ConRail's optimal fleet size and programs to acquire, maintain and assure the fleet's quality, planning activities included:

- Establishing an inventory of existing equipment for both locomotives, cars and related support facilities,
- Assessing condition of this equipment and
- Developing a 10-year plan for maintenance and acquisition of locomotives and cars as well as provisions for their necessary support facilities (such

as shops, servicing facilities, spot repair tracks, etc.).

**Locomotives.**

Locomotive inventories were compiled from the various railroads' records which identify the locomotives by service designation (road freight, road passenger, road switchers, yard switchers), manufacturer, builder's model designation, average age, status of ownership and present condition (Table 3).

TABLE 3.—Summary of locomotives owned, leased, and under trust and conditional sales agreements

Type of locomotive and builder	Builder model	Wheel arrangement	Number of units			Leased	Trust	C.S.A.	Owned
			A	B	Total				
<b>PENN CENTRAL</b>									
<b>Diesel road freight:</b>									
EMD.....	F8; F7.....	B-B.....	100	11	111				111
EMD.....	FP7.....	B-B.....	19	2	21				21
EMD.....	GP9.....	B-B.....		40	40	30		10	
EMD.....	GP20.....	B-B.....	13		13		13		
EMD.....	GP30.....	B-B.....	62		62			52	10
EMD.....	GP33.....	B-B.....	147		147	64	23	58	2
EMD.....	SD35.....	C-C.....	40		40	40			
EMD.....	GP40.....	B-B.....	273		273	253	5	15	
EMD.....	SD40.....	C-C.....	110		110	45	57	8	
EMD.....	SD45.....	C-C.....	135		135	70		65	
Subtotal.....			899	53	952	502	98	208	144
Alco.....	RS32.....	B-B.....	24		24		14		10
Alco.....	RS27.....	B-B.....	15		15			15	
Alco.....	C424.....	B-B.....	1		1				1
Alco.....	C425.....	B-B.....	41		41	15	10	16	
Alco.....	C628.....	C-C.....	15		15	10	5		
Alco.....	C480.....	B-B.....	10		10	10			
Alco.....	C630.....	C-C.....	15		15			15	
Alco.....	C636.....	C-C.....	15		15	15			
Subtotal.....			136		136	50	29	46	11
G.E.....	U23B.....	B-B.....	77		77	77			
G.E.....	U25B.....	B-B.....	152		152	40	45	56	11
G.E.....	U25C.....	C-C.....	20		20	10	10		
G.E.....	U28B.....	B-B.....	2		2		2		
G.E.....	U28C.....	C-C.....	15		15			15	
G.E.....	U30B.....	B-B.....	60		60	40	20		
G.E.....	U30C.....	C-C.....	5		5			5	
G.E.....	U33B.....	B-B.....	81		81	81			
G.E.....	U33C.....	C-C.....	24		24	24			
Subtotal.....			436		436	272	77	76	11
Total diesel road freight.....			1,471	53	1,524	824	204	330	166
<b>Diesel road switcher (1,500 hp and over):</b>									
EMD.....	GP7.....	B-B.....			237	75		35	127
EMD.....	SD7.....	C-C.....			2				2
EMD.....	GP9.....	B-B.....			453	84		40	329
EMD.....	SD9.....	C-C.....			25	25			
EMD.....	GP38.....	B-B.....			491	479		12	
EMD.....	SD38.....	C-C.....			35	35			
Subtotal.....					1,243	698		87	458
Alco.....	RS3.....	B-B.....			116				116
Alco.....	RSD4.....	C-C.....			5				5
Alco.....	R611.....	B-B.....			53	13			40
Alco.....	R8D12.....	C-C.....			25	25			
Alco.....	RS11 (Mod.).....	B-B.....			6	6			
Alco.....	RSD15.....	C-C.....			5				5
Subtotal.....					210	44			166
G.E.....	U23C.....	C-C.....			19	19			
Total diesel road switcher.....					1,472	761		87	624

TABLE 3.—Summary of locomotives owned, leased, and under trust and conditional sales agreements—Continued

Type of locomotive and builder	Builder model	Wheel arrangement	Number of units			Leased	Trust	C.S.A.	Owned
			A	B	Total				
<b>PENN CENTRAL—Continued</b>									
<b>Diesel road passenger:</b>									
EMD.....	E7a.....	A1A-A1A			6			6	
EMD.....	E8a.....	A1A-A1A			35			35	
EMD.....	FL9.....	B-A1A			30			30	
EMD.....	FL9.....	B-A1A			30	30			
Total diesel road passengers.....					101		30	71	
<b>Diesel yard switcher (under 1,500 hp):</b>									
EMD.....	SW1.....	B-B			142			142	
EMD.....	SW8.....	B-B			28			28	
EMD.....	SW900.....	B-B			16			16	
EMD.....	NW2.....	B-B			58			58	
EMD.....	SW7; SW9; SW1200.....	B-B			296	55	25	216	
EMD.....	SW1500.....	B-B			89	89			
Subtotal.....					629	144	25	47	
Baldwin.....	S6.....	B-B			7			14	
Baldwin.....	S10.....	B-B			18			60	
Baldwin.....	RS10.....	B-B			4			28	
Baldwin.....	S12.....	B-B			23			3	
Baldwin.....	RS12.....	B-B			1			1	
Baldwin.....		B-B			1			1	
Subtotal.....					54			54	
Alco.....	S1; S3.....	B-B			19			19	
Alco.....	S2; S4.....	B-B			91			91	
Alco.....	T6.....	B-B			6	6			
Alco.....	RS1.....	B-B			16			16	
Alco.....	RS3.....	B-B			8			8	
Subtotal.....					140	6		134	
G.E.....	44 ton.....	B-B			1			1	
Total diesel yard switch.....					824	150	25	649	
<b>Summary of diesel electric locomotives:</b>									
Road passenger.....					101		30	71	
Road freight.....					1,524	824	204	166	
Road switcher type—1,500 hp and over.....					1,472	761		87	
Yard switcher type—1,500 hp and under.....					824	150		649	
Grand total.....					3,921	1,735	234	442	
<b>Penn Central: PRR/GE/WE</b>									
Electric locomotive: ALCO/GE.....					41			41	
Road passenger: ALCO/GE.....					5			5	
G.E.....					1			1	
G.E.....					6			6	
Subtotals.....					53			53	
<b>Road freight:</b>									
G.E.....	E44.....	C-C			44	44			
G.E.....	E44a.....	C-C			22	22			
PRR/GE/WE.....	GG1.....	2-C+C-2			37			37	
G.E.....	E33.....	C-C			10			10	
Subtotal.....					113	66		47	
<b>Switching:</b>									
PRR.....	B1.....	C			1			1	
Alco.....	S2.....	2-D-2			7			7	
Subtotal.....					8			8	
Total electric locomotive.....					174	66		108	



TABLE 3.—Summary of locomotives owned, leased, and under trust and conditional sales agreements—Continued

Type of locomotive and builder	Builder model	Wheel arrangement	Number of units			Leased	Trust	C.S.A.	Owned
			A	B	Total				
<b>READING COMPANY</b>									
<b>Diesel road switcher-freight:</b>									
EMD.....	GP7.....		41		41			41	
EMD.....	GP30.....		20		20		20		
EMD.....	GP35.....		37		37			37	
EMD.....	GP40-2.....		3		5	5			
EMD.....	SD45.....		5		5	5			
Subtotal.....			108		108	10	20	78	
Alco.....	C424.....		10		10			10	
Alco.....	C430.....		2		2	2			
Alco.....	C630.....		12		12	12			
Subtotal.....			24		24	14		10	
G.E.....	U30-C.....		5		5	5			
Total road freight.....			137		137	29	20	88	
<b>Diesel road passenger: EMD</b>									
<b>Diesel yard switcher:</b>									
EMD.....	OE-5.....		3		3			3	
EMD.....	OE-9.....		6		6			6	
EMD.....	SW900.....		21		21		10	11	
EMD.....	SW1001.....		25		25	25			
EMD.....	SW1200.....		19		19		14	5	
EMD.....	SW1500.....		21		21	10	11		
Total yard switcher.....			35		95	35	35	25	
<b>Summary of diesel electric locomotives:</b>									
Road switcher and freight.....					137	29	20	88	
Diesel road passenger.....					3			3	
Yard switcher.....					95	35	35	25	
Grand total.....					235	64	55	116	
<b>LEHIGH VALLEY RAILROAD</b>									
<b>Diesel road switch (over 1500 hp):</b>									
EMD.....	GP-18.....		6		6			6	
EMD.....	GP-38.....		4		4			4	
EMD.....	GP-38-2.....		12		12	12			
Subtotal.....			22		22	12		10	
Alco.....	RS-2.....		4		4			4	
Alco.....	RS-3.....		6		6			6	
Alco.....	RS-11.....		6		6	6			
Alco.....	C-420.....		12		12	12			
Alco.....	C-628.....		17		17			4	
Alco.....	DL-701.....		4		4			17	
Subtotal.....			49		49	18		31	
Total road switches.....			71		71				
<b>Diesel yard switch:</b>									
EMD.....	SW1.....		4		4			4	
EMD.....	SW6, 7, 8, 9.....		58		58			58	
EMD.....	NW2.....		6		6			6	
Subtotal.....			68		68			68	
Baldwin.....	DS-4-10.....		3		3	1		2	
Baldwin.....	DS-4-12.....		7		7	4		3	
Subtotal.....			10		10	5		5	
Total yard switches.....			78		78	5		73	
<b>Summary of diesel electric locomotives:</b>									
Diesel road switches.....					71	30		41	
Diesel yard switches.....					78	5		73	
Grand total.....					149	35		114	

TABLE 3.—Summary of locomotives owned, leased, and under trust and conditional sales agreements—Continued

Type of locomotive and builder	Builder model	Wheel arrangement	Number of units			Leased	Trust	C.S.A.	Owned
			A	B	Total				
<b>CENTRAL OF NEW JERSEY</b>									
<b>Diesel road switch-freight:</b>									
EMD.....	GP7.....		4		4			4	
EMD.....	SD35.....		12		12		12		
EMD.....	SD40.....		9		9		9		
Subtotal.....			25		25		21	4	
Alco.....	RS3.....		33		33			33	
Total road freight.....			58		58		21		
<b>Diesel road switch passengers:</b>									
EMD.....	GP7.....		9		9			9	
EMD.....	GP40.....		13		13	13			
Subtotal.....			22		22	13		9	
<b>Diesel yard switch:</b>									
EMD.....	SW600.....		4		4			4	
EMD.....	SW900.....		15		15			15	
EMD.....	SW1000.....		2		2			2	
Subtotal.....			21		21			21	
<b>Summary of diesel electric locomotives:</b>									
Road switcher-freight.....					58		21	37	
Road switcher-passenger.....					22	13		9	
Yard switcher.....					21	21			
Grand total.....					101	34	21	46	
<b>ANN ARBOR RAILROAD</b>									
Diesel road switch (over 1,500 hp), EMD.....	GP-35.....		10		10			10	
Diesel yard switch, ALCO.....	S1, S3.....		2		2			2	
	S2.....		1		1			1	
	RS1.....		2		2			2	
Subtotal (yard switch).....			5		5			5	
<b>LEHIGH AND HUDSON RIVER</b>									
Diesel road switch (over 1,500 hp), ALCO.....	C-420.....		6		6			6	
<b>CONRAIL SYSTEM</b>									
<b>Summary of diesel electric locomotives:</b>									
Road passenger.....					126	13	30	83	
Road freight.....					1,524	824	204	166	
Road switcher (over 1,500 hp).....					1,754	820		806	
Yard switcher (under 1,500 hp).....					1,023	211		752	
Total.....					4,427	1,868	234	1,807	
<b>Summary of electric locomotives:</b>									
Road passenger.....					53			53	
Road freight.....					113	66		47	
Switchers.....					8			8	
Total.....					174	66		108	
Grand total (ConRail locomotive fleet).....					4,601	1,934	234	1,915	

As of Apr. 1, 1974.

Source: Railroad Operating Records—10/74.

TABLE 4.—Recommended attrition rate for diesel locomotives

	Pas-senger	Road freight	Road switch	Yard switch	Total
<b>Penn Central:</b>					
Ownership.....	101	1,524	1,472	824	3,921
Average age.....	18.8	9.7	14.6	22.7	14.8
Potential retirements.....	71	132	166	181	550
Average age.....	20.6	22.9	21.6	24.0	22.5
Fleet reduction (percent).....	70.3	9.4	11.2	21.9	14
Locomotives remaining.....	30	1,362	1,306	643	3,371
Average age.....	14.5	8.1	14.2	20.7	12.9
<b>Reading Company:</b>					
Ownership.....	3	180	-----	102	235
Average age.....	24	8.4	-----	8.0	8.4
Potential retirements.....	3	0	-----	6	9
Average age.....	24	0	-----	28.2	26.8
Fleet reductions (percent).....	100	0	-----	5.9	0.08
Locomotives remaining.....	0	180	-----	96	224
Average age.....	0	8.4	-----	6.7	7.7
<b>Lehigh Valley R. R.:</b>					
Ownership.....	0	17	54	73	144
Average age.....	-----	9.5	12.3	22.6	17.2
Potential retirements.....	-----	0	10	73	8.3
Average age.....	-----	-----	24.3	22.6	22.8
Fleet reduction (percent).....	-----	-----	18.5	100	57.6
Locomotives remaining.....	-----	17	44	-----	61
Average age.....	-----	9.5	10.0	-----	9.8
<b>Central of New Jersey:</b>					
Ownership.....	22	21	37	21	101
Average age.....	14.3	6.7	19.9	25.8	17.1
Potential retirements.....	9	0	37	21	67
Average age.....	21.0	-----	19.9	25.8	21.0
Fleet reduction (percent).....	40.9	-----	100	100	66.3
Locomotives remaining.....	13	21	0	0	34
Average age.....	6.0	6.7	-----	-----	6.4
<b>Ann Arbor Railroad:</b>					
Ownership.....	0	0	10	5	15
Average age.....	0	0	10.0	24.0	14.7
Potential retirements.....	0	0	0	5	5
Average age.....	0	0	-----	24.0	24
Fleet reduction (percent).....	0	0	-----	100	33.3
Locomotives remaining.....	0	0	10	0	10
Average age.....	0	0	10.0	-----	10.0
<b>Lehigh &amp; Hudson River:</b>					
Ownership.....	0	0	6	0	6
Average age.....	0	0	8.5	0	8.5
Potential retirements.....	0	0	0	0	0
Average age.....	0	0	-----	0	-----
Fleet reduction (percent).....	0	0	0	0	-----
Locomotives remaining.....	0	0	6	0	6
Average age.....	0	0	8.5	0	8.5
<b>Total:</b>					
Ownership.....	126	1,692	1,579	1,025	4,422
Average age.....	17.9	9.6	14.6	21.4	14.4
Potential retirements.....	83	132	213	286	714
Average age.....	20.7	22.9	21.4	23.9	22.5
Fleet reduction.....	65.9	7.8	13.5	27.9	16.2
Locomotives remaining.....	43	1,560	1,366	704	3,708
Average age.....	11.9	8.2	14.0	19.1	12.5
<b>Total road service:</b>					
Ownership.....	-----	3,271	-----	-----	-----
Average age.....	-----	12.0	-----	-----	-----
Potential retirements.....	-----	345	-----	-----	-----
Average age.....	-----	21.9	-----	-----	-----
Fleet reduction (percent).....	-----	10.5	-----	-----	-----
Locomotives remaining.....	-----	2,926	-----	-----	-----
Average age.....	-----	10.9	-----	-----	-----

NOTE: Ownership includes all locomotives owned, leased or obtained by C.S.A. Locomotives currently operating as leased or under C.S.A. not considered for retirement.

Fleet condition analyses reflecting the state of repairs were developed, using the railroads' statistical maintenance data, inspections conducted by USRA, engineering consultants' valuation information and USRA staff studies. These data also were used to generate projected retirements from the fleet and the formulation of repair programs to bring the fleet to a status

of normal maintenance procedures (Table 4 and Figure 6).

Requirements for new locomotive acquisitions were projected to offset retirements, to handle anticipated new business and to meet special requirements generated by the planned abandonment of the electric freight locomotive operation, discussed in Chapter 13. Projected new acquisitions (Table 5) were based on savings anticipated from consolidation of the individual fleets of the bankrupt carriers, from gains expected from improved management techniques through use of more extensive, modernized data systems and from benefits realized by rehabilitation of the track facilities.

Adjustments were made to limit acquisitions to a reasonable rate consistent with production schedules of locomotive builders. These adjustments slow the retirement rates of older locomotives, increase the repair program requirements and adversely affect reductions in maintenance costs.

USRA's plans provide for a heavy rebuilding program, at average costs, to repair or replace prime components after recommended and acceptable service periods. Procedures are under study that this necessary maintenance work can be performed with minimal out-of-service time to prevent a build up of bad order locomotives and make the highest possible number of locomotives available to haul trains.

The success of the projected repair program (Table 6) will be essential to a well-maintained and reliable fleet and to prevent further deferred maintenance. It is expected that the existing shop facilities can accommodate the heavy locomotive repair and maintenance program that is projected. No substantial increases in manpower at various shops are anticipated, since the projected number of locomotives to be repaired represents only a modest increase over current production levels.

The availability of material necessary for repair programs may require some future adjustments to the plan; however, considering the present condition of the fleet and the current heavy repair programs underway, locomotives can be kept within acceptable bad order guidelines by initiating adequate managerial control to determine selective repair programs using the available material.

Financial constraints also will require careful management decisions concerning selective repair programs. If the consolidated system is to have the dependable locomotives so essential to its long-range economic viability, these programs cannot be constrained by erratic budget allocation.

The projected locomotive acquisition program is essential to prevent the locomotive fleet from deteriorating into functional and technical obsolescence. Without new locomotives, bad order ratios will rise, more expensive repairs to units which would otherwise have been retired will be inevitable and a general deterioration of

FIGURE 6

LOCOMOTIVE FLEET AGE ANALYSIS

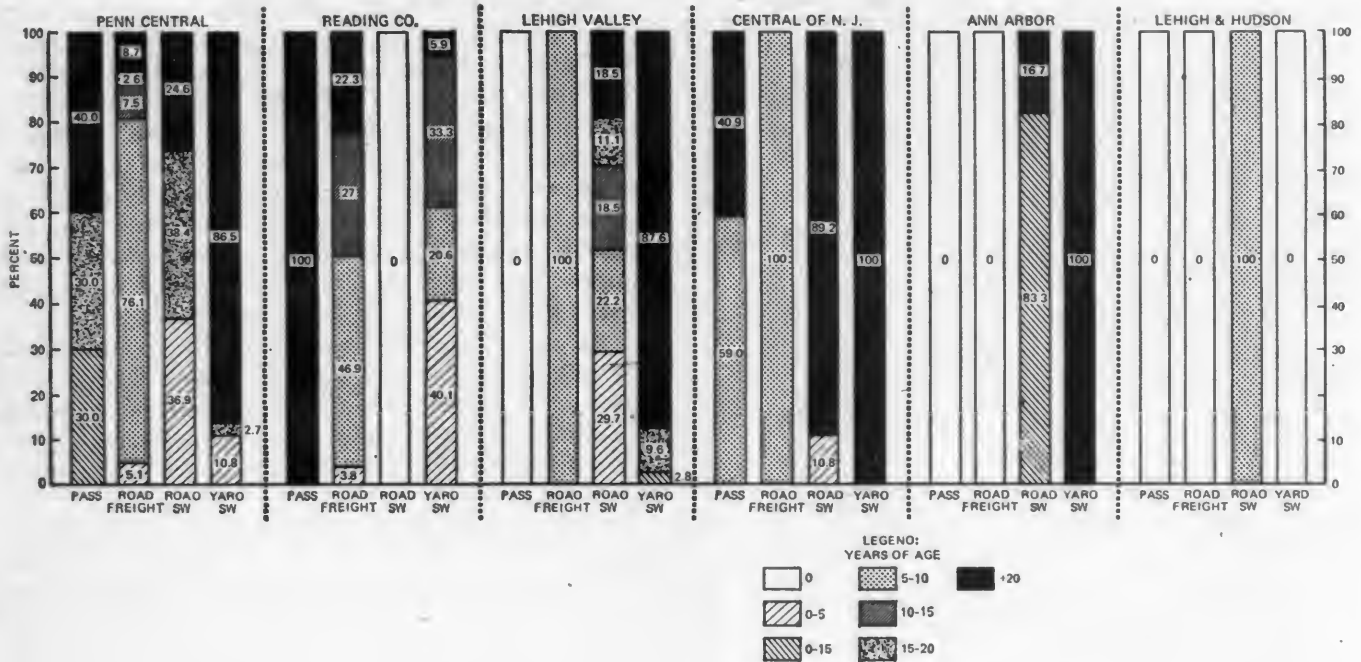


TABLE 5.—Projected ConRail locomotive fleet,<sup>1</sup> 1976-85

Road units <sup>2</sup>	Increased volume TBS 0.0103	Track rehabilitation	Merger	Other	Fleet	New <sup>3</sup> locomotives	Retire	Convert to switch	Net fleet
1975.....	33	(40)			3,271		(16)		3,255
1976.....	33	(101)	(21)		3,255		(22)	(67)	3,166
1977.....	32	(81)	(21)	<sup>4</sup> (30)57	3,166	74	(29)	(96)	3,115
1978.....	32	(45)		<sup>4</sup> (51)56	3,115	160	(25)	(153)	3,097
1979.....	32	(75)			3,097	78	(25)	(87)	3,063
1980.....	32	(86)			3,063	6	(32)	(20)	3,017
1981.....	31	(76)			3,017	7	(52)		2,972
1982.....	31	(39)			2,972	41	(52)		2,961
1983.....	31	(39)			2,961	43	(52)		2,952
1984.....	30	(39)			2,952	43	(52)		2,943
1985.....	30	(39)			2,943	43	(52)		2,934
Switcher units	Increased volume TBS 0.0103	Track rehabilitation	Merger	Other	Fleet	New <sup>4</sup> locomotives	Retire	Convert to switch	Net fleet
1975.....	11				1,025	11			1,036
1976.....	11	2% (21)	(24)		1,036		(101)	67	1,002
1977.....	10	2% (20)	(24)		1,002		(130)	96	968
1978.....	10	2% (20)			968	13	(176)	153	958
1979.....	10	2% (20)			958		(97)	87	948
1980.....	10				948	49	(59)	20	958
1981.....	10				958	49	(39)		968
1982.....	10				968	49	(39)		978
1983.....	10				978	49	(39)		988
1984.....	10				988	49	(39)		998
1985.....	10				998	49	(39)		1,008

<sup>1</sup> Diesels only. <sup>2</sup> Year end. <sup>3</sup> 9:10 new:old. <sup>4</sup> 1:1 diesel:electric. <sup>5</sup> 1:1 new:old.

the fleet will occur as the fleet's age increases and older locomotives become less efficient.

The maintenance and renewal of the present locomotive fleet will not require a substantial increase in

the present level of such expenditures to accommodate ConRail's needs. However, current maintenance procedures will require review and some revision to assure optimum production with available resources. For ex-



TABLE 6.—Major repair schedule for ConRail locomotives

Year	Road locomotives <sup>1</sup>	Switcher locomotives <sup>2</sup>
1976.....	817	117
1977.....	792	116
1978.....	750	106
1979.....	726	114
1980.....	757	112
1981.....	779	113
1982.....	770	113
1983.....	757	115
1984.....	761	118
1985.....	765	121

<sup>1</sup> Based on 4-year intervals.  
<sup>2</sup> Based on 8-year intervals.

ample, some shops lack sufficient manpower to handle periodic maintenance on the number of locomotives assigned, while other shops are not fully utilized.

**Freight Cars**

Freight car inventories for the various railroads under study were developed from internal records and reports to the Interstate Commerce Commission. Also, to determine the inventory and condition of the present fleet, field inspections by USRA staff were supplemented by an inventory and assessment study performed by engineering consultants to ascertain financial valuation of freight cars.

The number of revenue freight cars reported to the Interstate Commerce Commission as of December 31, 1973, for each of the railroads under study, is shown in Table 7 by class of equipment and ownership. In summary, the freight car fleet as of December 31, 1973, was as follows:

Railroad	Number of freight cars	Percent of total
Penn Central.....	155,725	89.0
Reading.....	12,586	7.2
Lehigh Valley.....	3,982	2.2
Ann Arbor.....	366	0.2
Central of New Jersey.....	2,514	1.4
Lehigh and Hudson.....	6	.....
<b>Total.....</b>	<b>175,149</b>	<b>100.0</b>

Of the total freight cars, the equipment type was as follows:

Type of equipment	Number in inventory	Percent of total
Boxcar.....	60,102	34.3
Gondola.....	38,580	22.0
Open top hopper.....	51,103	29.2
Covered hopper.....	13,163	7.5
Flat.....	6,967	4.0
All other.....	5,234	3.0
<b>Total.....</b>	<b>175,149</b>	<b>100.0</b>

The ownership of freight car equipment by the railroads under study declined from 190,091 cars in 1970 to

175,149 in 1973, as shown in Table 8 and summarized as follows:

Total freight car equipment

Year	Changes during year		Inventory as of Dec. 31
	Additions <sup>1</sup>	Retirements <sup>1</sup>	
1970.....			190,091
1971.....	9,534	12,658	186,967
1972.....	10,896	14,353	183,010
1973.....	2,983	10,850	175,143
<b>Total.....</b>	<b>23,193</b>	<b>37,861</b>	.....

<sup>1</sup> Number of cars.

Note: This summary excludes ownership of Lehigh and Hudson, which accounted for only 6 cars as of Dec. 31, 1973.

As of November 1, 1974, the combined fleet for the railroads had decreased to approximately 170,000 cars. Of this total, more than 18,000 were in bad order condition. The inventory of fleet and cars out of service, by railroad and car type, as of the above date, are shown in Table 9 and summarized as follows:

Type freight car	Total fleet	"Bad order" unserviceable cars	"Bad order" ratio (percent)
Plain box.....	29,400	7,074	24.1
Equipped box.....	29,597	2,966	10.0
Covered hopper.....	13,224	614	4.6
Gondola.....	34,196	2,022	5.9
Open top hopper.....	51,885	4,324	8.3
Flats.....	6,202	728	11.7
TOFC.....	964	270	28.0
M/L flats.....	4,446	178	4.0
Other.....	323	51	15.8
<b>Total fleet.....</b>	<b>170,237</b>	<b>18,227</b>	<b>10.7</b>

This 10.7 percent bad order ratio is unusually high when compared to other Class I railroads. The fleet of the bankrupt carriers studied is approximately 12.5 percent of the total Class I railroad ownership; however, the bankrupt carriers out-of-service fleet accounts for approximately 21 percent of all Class I unserviceable freight cars.

The number of revenue freight cars by age grouping and type for the railroads under study is shown in Figures 7 and 8. For the combined fleet, the average age by type is as follows:

Type freight car	Average age (years)	
	Original date built	Original date built or latest rebuilt date
Box car.....	18	12
Covered hopper.....	15	13
Gondola.....	17	14
Open top hopper.....	17	12
All other.....	12	12
<b>Total fleet.....</b>	<b>17</b>	<b>13</b>

TABLE 7.—Summary of freight cars owned and leased—By railroad (As of Dec. 31, 1973)

Class of Equipment and Designations	Penn Central			Reading			Lehigh Valley			Ann Arbor			Central of New Jersey			Lehigh and Hudson			Total System		
	Owned	Leased	Total	Owned	Leased	Total	Owned	Leased	Total	Owned	Leased	Total	Owned	Leased	Total	Owned	Leased	Total	Owned	Leased	Total
	Box—General service (un-equipped) (all B, I-070, R-00, R-01).....	11,173	16,871	27,544	1,106	345	1,451	773	813	1,586	98	98	98	600	40	709	13,824	17,549	31,993	13,824	17,549
Box—General service (equipped) (A-20, A-30, A-40, A-50, R-06, R-07).....	13,322	7,338	20,660	377	890	1,257	183	19	202	66	10	76	2	2	2	13,765	8,228	21,993	13,765	8,228	21,993
Box—Special service (A-00, A-10).....	4,935	1,510	6,445	67	67	134	976	984	1,960	72	59	131	72	59	131	5,187	1,829	6,716	5,187	1,829	6,716
Gondola—General service (all G, except G-9).....	16,860	11,636	28,396	2,374	936	3,312	3	3	6	52	413	465	52	413	465	20,282	12,807	33,089	20,282	12,807	33,089
Gondola—Special service (G-9, J-00, all C, all E).....	3,766	1,303	5,069	261	158	419	60	60	120	60	60	120	60	60	120	4,027	1,464	5,491	4,027	1,464	5,491
Hopper (open-top)—General service (all H, except H-70).....	27,546	18,190	45,736	4,065	860	4,925	478	177	655	208	208	406	601	495	1,096	31,723	19,103	50,896	31,723	19,103	50,896
Hopper (open-top)—Special service (H-70, J-10, J-20, all K).....	6,938	3,845	10,288	137	80	217	478	177	655	208	208	406	601	495	1,096	137	80	217	137	80	217
Hopper (covered) (L-4).....	47	47	94	350	450	800	478	177	655	208	208	406	601	495	1,096	47	47	94	47	47	94
Tank, under 12,000 gal. (T-0, T-1, T-2, T-3).....	6,938	3,845	10,288	350	450	800	478	177	655	208	208	406	601	495	1,096	6	6	12	6	6	12
Tank, 12,000 to 18,999 gal. (T-4).....	47	47	94	350	450	800	478	177	655	208	208	406	601	495	1,096	47	47	94	47	47	94
Tank, 19,000 to 24,999 gal. (T-5, T-6).....	1	1	2	350	450	800	478	177	655	208	208	406	601	495	1,096	1	1	2	1	1	2
Tank, 25,000 gal. and up (T-7, T-8, T-9).....	1	1	2	350	450	800	478	177	655	208	208	406	601	495	1,096	1	1	2	1	1	2
Refrigerator (meat) mechanical (R-11, R-12).....	1	1	2	350	450	800	478	177	655	208	208	406	601	495	1,096	1	1	2	1	1	2

See footnotes at end of table.

TABLE 7.—Summary of freight cars owned and leased—By railroad (As of Dec. 31, 1978)—Continued

Class of Equipment and Designations	Penn Central		Reading		Lehigh Valley		Ann Arbor		Central of New Jersey		Lehigh and Hudson		Total System	
	Owned	Leased	Owned	Leased	Owned	Leased	Owned	Leased	Owned	Leased	Owned	Leased	Owned	Leased
	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Refrigerator (other than meat mechanical (R-04, R-10).....		13												13
Refrigerator (meat) nonmechanical (R-02, 08, 09, 14, 15, 17).....														
Refrigerator (other than meat nonmechanical (R-03, 05, 13, 16).....	3	96	113	92	9	101							205	310
Stock (all stock).....	3												3	3
Autotrack (F-5, F-6).....	4,727		4,727										4,727	4,727
Flat—General service (F-0).....	2,798	400	3,198	37	49	49			16	78	04		2,900	478
Flat—Special service (F-1, 9, 20, 30, 40, L-2, L-3).....	1,521	827	2,348	79	3	5	4	4					1,603	833
Flat—TOFC (F-7, F-8).....	430	701	1,131	5	5	5			17	37			435	718
All other (L-0, 1, 4, 080, 090).....	62	70	132	1	1	1							63	70
Total freight cars.....	89,417	66,308	155,725	8,966	3,020	12,586	2,625	1,307	3,932	1,412	1,102	2,514	6	102,794
cabooses.....	1,901	211	2,112	133	20	153	97	14	47	47	6		2,198	231
Grand total.....	91,318	68,519	157,837	9,099	3,040	12,739	2,722	1,307	4,029	1,459	1,102	2,561	6	104,992
													4	72,586
													8	175,149

Note: Summary of equipment:

Type of equipment:	Number	Percent of total
Box car.....	60,102	34.3
Gondola.....	38,590	22.0
Open top hopper.....	51,103	28.2
Covered hopper.....	13,163	7.5
Flat.....	6,967	4.0
All other.....	5,234	3.0
Total.....	175,149	100.0

Source: Form R-1, form R-C as of Dec. 31, 1978.

TABLE 8.—Freight car additions and retirements for railroads under study, 1971-73

Type car and railroad	Inventory Dec. 31, 1970	(1971)			Inventory Dec. 31, 1971	(1972)			Inventory Dec. 31, 1972	(1973)			Inventory Dec. 31, 1973
		Additions	Retire- ments	Net change (loss)		Additions	Retire- ments	Net change (loss)		Additions	Retire- ments	Net change (loss)	
<b>Boxcar:</b>													
Penn Central.....	59,751	1,815	3,741	(1,926)	57,825	4,263	5,140	(877)	56,948	1,595	3,804	(2,209)	54,649
Reading.....	2,510	615	376	239	2,749	233	116	137	2,886	1	112	(111)	2,775
Lehigh Valley.....	1,047	75	75	(75)	1,872	299	517	(218)	1,654	200	61	139	1,793
Central of New Jersey.....	1,621	6	32	(26)	1,595	.....	533	(533)	1,062	2	333	(351)	711
Ann Arbor.....	244	6	6	.....	244	2	65	(63)	181	.....	7	(7)	174
<b>Total.....</b>	<b>66,073</b>	<b>2,442</b>	<b>4,230</b>	<b>(1,788)</b>	<b>64,285</b>	<b>4,817</b>	<b>6,371</b>	<b>(1,554)</b>	<b>62,731</b>	<b>1,798</b>	<b>4,427</b>	<b>(2,029)</b>	<b>60,102</b>
<b>Covered hopper:</b>													
Penn Central.....	9,482	1,279	314	965	10,447	651	555	96	10,543	66	311	(245)	10,298
Reading.....	831	2	23	(21)	910	.....	3	(3)	907	.....	7	(7)	900
Lehigh Valley.....	893	52	25	27	920	30	103	(73)	847	17	209	(192)	655
Central of New Jersey.....	1,191	77	77	(77)	1,114	33	31	14	1,123	.....	32	(32)	1,091
Ann Arbor.....	213	.....	1	(1)	212	.....	.....	.....	212	.....	4	(4)	208
<b>Total.....</b>	<b>12,710</b>	<b>1,323</b>	<b>440</b>	<b>893</b>	<b>12,603</b>	<b>716</b>	<b>682</b>	<b>34</b>	<b>13,637</b>	<b>83</b>	<b>563</b>	<b>(480)</b>	<b>13,157</b>
<b>Open top hopper:</b>													
Penn Central.....	48,608	3,061	3,747	(686)	47,922	2,106	2,088	38	47,990	.....	2,224	(2,224)	45,766
Reading.....	5,824	423	174	249	6,073	70	955	(885)	5,188	24	370	(346)	4,842
Lehigh Valley.....	316	.....	54	(54)	262	.....	135	(135)	127	.....	67	(67)	60
Central of New Jersey.....	536	.....	122	(122)	414	.....	124	(124)	290	204	29	175	465
Ann Arbor.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<b>Total.....</b>	<b>55,284</b>	<b>3,484</b>	<b>4,097</b>	<b>(613)</b>	<b>54,671</b>	<b>2,176</b>	<b>3,282</b>	<b>(1,106)</b>	<b>53,565</b>	<b>228</b>	<b>2,690</b>	<b>(2,462)</b>	<b>51,103</b>
<b>Gondola:</b>													
Penn Central.....	37,115	1,632	2,980	(1,328)	35,787	1,725	2,306	(581)	35,206	337	2,088	(1,751)	33,455
Reading.....	3,910	168	218	(53)	3,855	105	122	(17)	3,838	63	170	(107)	3,731
Lehigh Valley.....	1,708	8	89	(81)	1,627	.....	251	(251)	1,376	.....	113	(113)	1,263
Central of New Jersey.....	226	.....	.....	.....	226	.....	92	(92)	134	.....	3	(3)	131
Ann Arbor.....	107	.....	8	(8)	99	.....	85	(85)	14	.....	14	(14)	.....
<b>Total.....</b>	<b>43,066</b>	<b>1,823</b>	<b>3,295</b>	<b>(1,472)</b>	<b>41,594</b>	<b>1,830</b>	<b>2,856</b>	<b>(1,026)</b>	<b>40,568</b>	<b>400</b>	<b>2,388</b>	<b>(1,988)</b>	<b>38,580</b>
<b>All other:</b>													
Penn Central.....	12,148	442	483	(41)	12,107	851	1,046	(195)	11,912	438	763	(325)	11,587
Reading.....	491	.....	92	(92)	399	6	75	(69)	330	19	11	8	338
Lehigh Valley.....	210	.....	20	(20)	190	.....	23	(23)	167	.....	6	(6)	161
Central of New Jersey.....	103	.....	1	(1)	102	.....	6	(6)	96	17	2	15	111
Ann Arbor.....	6	10	.....	10	16	.....	12	(12)	4	.....	.....	.....	4
<b>Total.....</b>	<b>12,958</b>	<b>492</b>	<b>596</b>	<b>(144)</b>	<b>12,814</b>	<b>857</b>	<b>1,162</b>	<b>(305)</b>	<b>12,509</b>	<b>474</b>	<b>782</b>	<b>(308)</b>	<b>12,201</b>
<b>Grand total:</b>													
Boxcar.....	66,073	2,442	4,230	(1,788)	64,285	4,817	6,371	(1,554)	62,731	1,798	4,427	(2,029)	60,102
Covered hopper.....	12,710	1,323	440	893	12,603	716	682	34	13,637	83	563	(480)	13,157
Open top hopper.....	55,284	3,484	4,097	(613)	54,671	2,176	3,282	(1,106)	53,565	228	2,690	(2,462)	51,103
Gondola.....	43,066	1,823	3,295	(1,472)	41,594	1,830	2,856	(1,026)	40,568	400	2,388	(1,988)	38,580
All other.....	12,958	492	596	(144)	12,814	857	1,162	(305)	12,509	474	782	(308)	12,201
<b>Total.....</b>	<b>190,091</b>	<b>9,534</b>	<b>12,658</b>	<b>(3,124)</b>	<b>186,967</b>	<b>10,396</b>	<b>14,333</b>	<b>(3,937)</b>	<b>183,010</b>	<b>2,983</b>	<b>10,850</b>	<b>(7,867)</b>	<b>175,143</b>

Source: Railroad's annual report to Interstate Commerce Commission; Form A-1971 and 1972, Form R-1-1973. Note: Lehigh and Hudson equipment not included in above (6 cars).



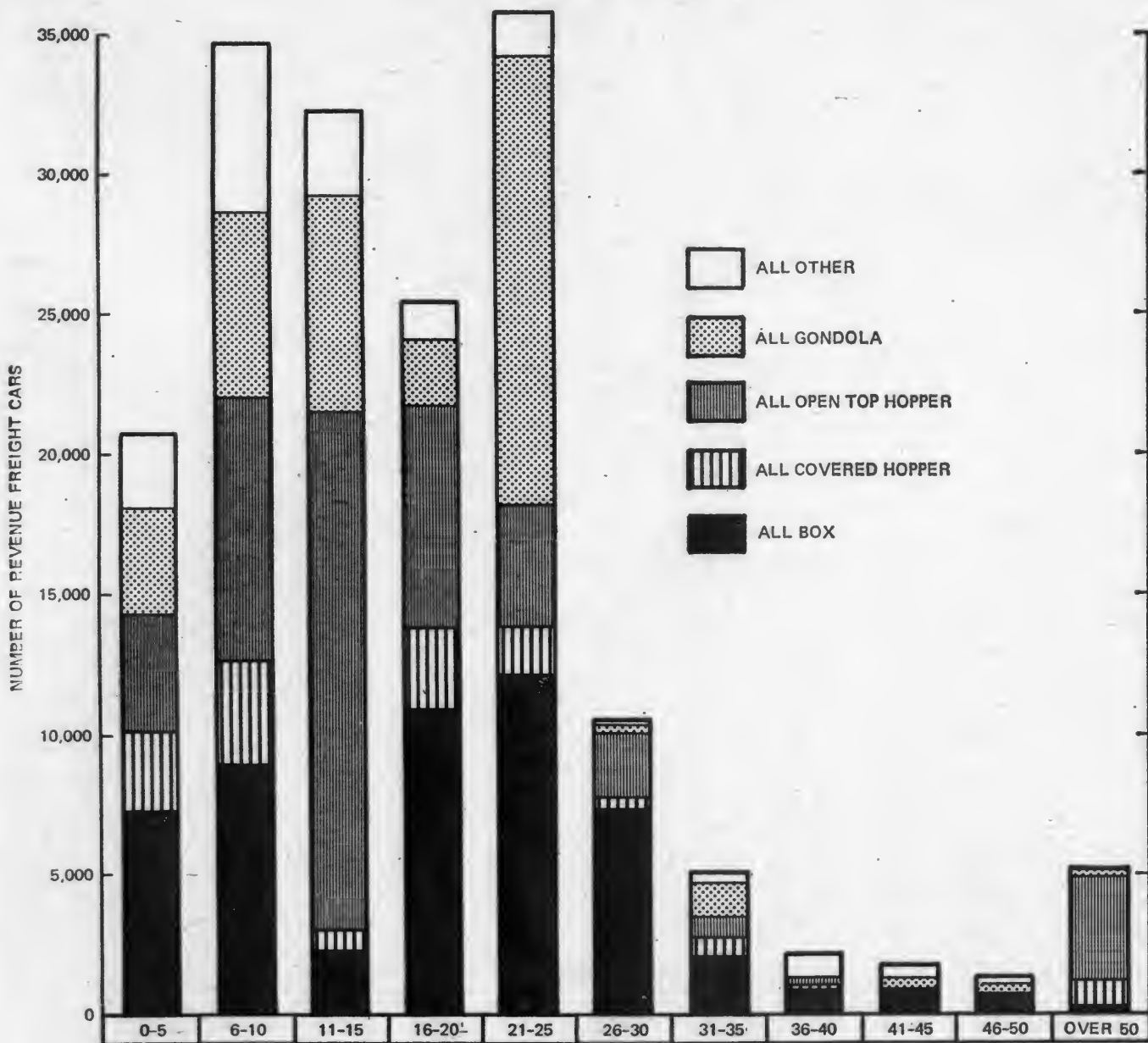
TABLE 9.—Revenue freight cars in unserviceable condition as of Nov. 1, 1974

Type car	Penn Central (A)			Reading Co. (B)			Lehigh Valley (B)			Ann Arbor (B)			Central of New Jersey (B)			ConRail system		
	Total freight cars		Percent B.O. <sup>1</sup>	Total freight cars		Percent B.O. <sup>1</sup>	Total freight cars		Percent B.O. <sup>1</sup>	Total freight cars		Percent B.O. <sup>1</sup>	Total freight cars		Percent B.O. <sup>1</sup>	Total freight cars		Percent B.O. <sup>1</sup>
	Fleet	Awaiting repair		Fleet	Awaiting repair		Fleet	Awaiting repair		Fleet	Awaiting repair		Fleet	Awaiting repair		Fleet	Awaiting repair	
Plain box.....	25,788	6,198	24.1	1,414	124	8.8	1,695	570	33.6	94	62	66.0	459	122	26.6	29,400	7,074	24.1
Equipped box.....	27,628	2,906	10.5	1,599	32	2.1	290	22	7.6	80	6	7.5	60	.....	.....	29,597	2,966	10.0
Covered hopper.....	10,300	463	4.5	900	22	2.4	662	65	9.8	202	6	3.0	1,151	38	3.3	13,224	614	4.6
Gondola.....	29,080	1,549	5.3	3,729	176	4.7	1,307	292	22.3	.....	.....	.....	130	5	3.8	34,196	2,022	5.9
Open top hopper.....	46,592	3,989	8.5	4,741	298	6.2	120	14	11.7	.....	.....	.....	482	55	12.7	51,845	4,324	8.3
Flats.....	5,702	666	12.2	334	16	4.8	68	13	19.1	4	1	25.0	94	2	2.1	6,362	728	11.7
TOFC.....	984	270	28.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	984	270	28.0
M/L flat.....	4,446	178	4.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,446	178	4.0
Other.....	284	48	16.9	23	3	10.7	11	.....	.....	.....	.....	.....	.....	.....	.....	323	51	15.8
Total fleet.....	150,663	16,265	10.8	12,685	669	5.3	4,153	976	23.5	380	75	19.7	2,326	242	10.4	170,237	18,227	10.7

<sup>1</sup> Bad ordered.

Source: (A) Penn Central fleet and bad order from Penn Central Inventory as of Oct. 28, 1974; (B) Association of American Railroads—OS-40A report as of Nov. 1, 1974.

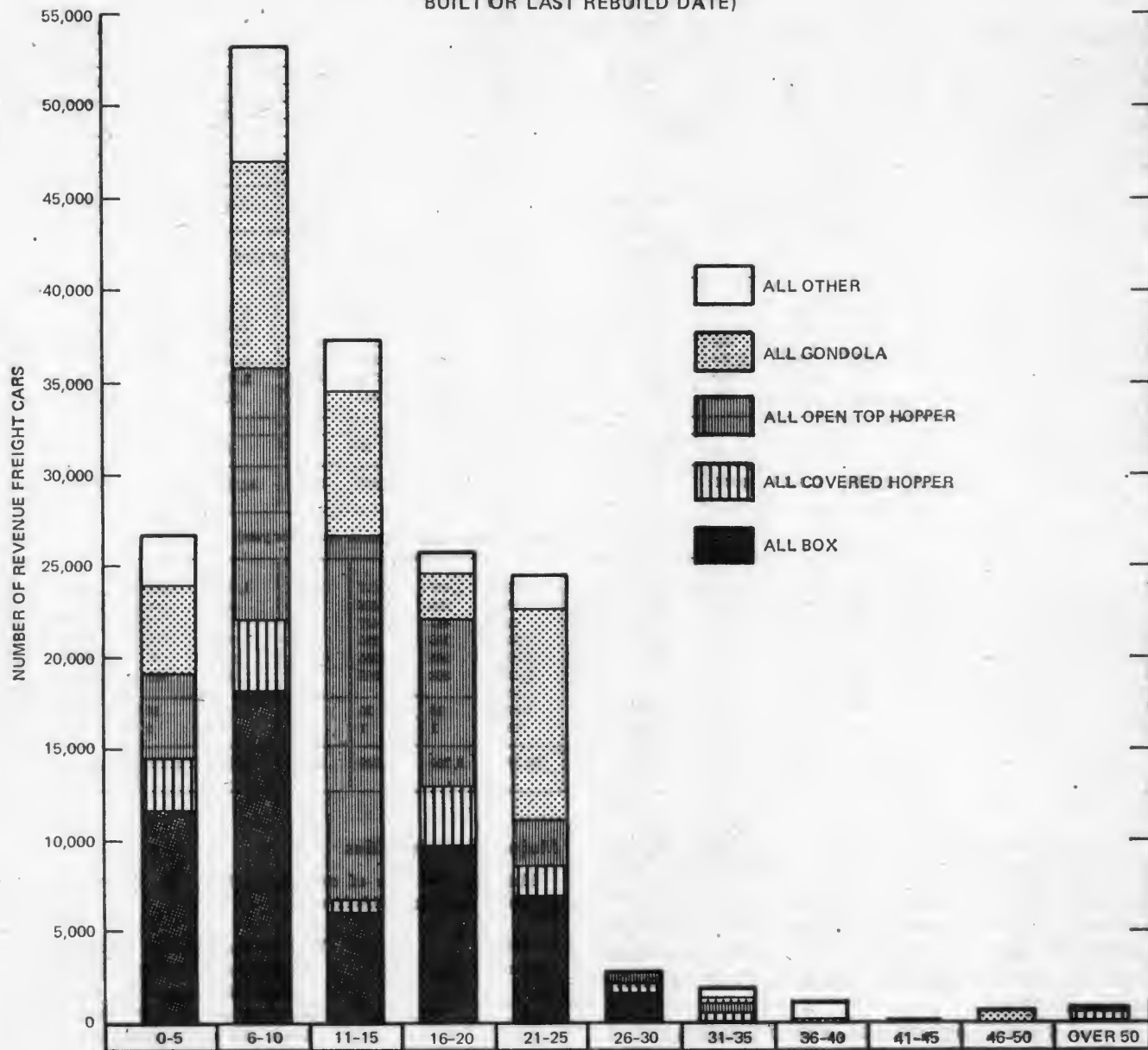
**FIGURE 7**  
**NUMBER OF REVENUE FREIGHT CARS**  
**RAILROADS UNDER STUDY**  
**BY TYPE AND AGE (ORIGINAL DATE BUILT)**



SOURCE: RAILROAD RECORDS

FIGURE 3

NUMBER OF REVENUE FREIGHT CARS  
RAILROADS UNDER STUDY  
BY TYPE AND AGE (ORIGINAL DATE  
BUILT OR LAST REBUILD DATE)



SOURCE: RAILROAD RECORDS

TABLE 10.—Estimated freight car acquisition, heavy repair, and retirement program for ConRail, 1976-85

Type car	1976	1977	1978	1979	1980	1976-80 period	1981	1982	1983	1984	1985	1981-85 period	1976-85 period
Estimated freight car acquisition program (number of cars per year)													
Plain box.....		1,040		463	1,013	2,516	414	1,197	2,362	2,104	1,727	7,804	10,320
Special box.....													
Covered hopper.....													
Gondola.....		2,114	792	406	455	3,767	1,845					1,845	5,612
Open top hopper.....	456	1,881	1,108			2,945							2,945
Flat car.....	443	171				614				327	360	687	1,301
TOFC.....													
M/L flat.....													
All other.....													
Total.....	899	4,706	1,900	869	1,468	9,842	2,259	1,197	2,362	2,431	2,087	10,336	20,178
Estimated freight car heavy repair program (number of cars per year)													
Plain box.....	3,143	2,572	2,644	1,920	1,401	11,680	750	750	750	1,500	1,500	5,250	16,980
Special box.....	1,935	1,585	1,060	1,341	2,580	8,521	2,500	2,500	4,000	3,000	3,000	15,000	23,521
Covered hopper.....	870	1,011	530	754	930	4,095	1,000	1,200	1,000	2,000	1,000	6,200	10,295
Gondola.....	1,950	2,096	2,226	2,278	2,222	10,772	3,000	2,300	2,300	2,300	2,300	12,200	22,972
Open top hopper.....	3,600	3,000	2,400	3,000	2,700	14,700	3,000	3,500	3,500	3,500	3,000	16,500	31,200
Flat car.....	928	761	366	598	612	3,265	600	300	300	600	600	2,400	5,665
TOFC.....													
M/L flat.....	8	5				13							13
All other.....	26	66	25			137	50	25	50	25	25	175	312
Total.....	12,460	11,116	9,271	9,891	10,445	53,183	10,900	10,575	11,900	12,925	11,425	57,725	110,908
Estimated freight car retirement program (number of cars per year)													
Plain box.....	1,601	1,648	1,344	1,777	2,250	8,620	1,977	1,977	1,977	1,977	1,780	9,688	18,308
Special box.....	204	334	349	479	1,269	2,685	586	586	586	586	594	2,938	5,573
Covered hopper.....	68	68	68	68	153	425	417	417	417	417	404	2,072	2,497
Gondola.....	999	928	946	1,353	1,375	5,601	186	186	186	186	179	923	6,524
Open top hopper.....	1,840	1,620	1,770	920	3,154	9,304	265	265	265	265	292	1,352	10,656
Flat car.....	226	206	206	253	252	1,143	302	302	302	302	287	1,495	2,638
TOFC.....	424	2	22	2	85	555							555
M/L flat.....	332	415	482	518	226	1,973	16	16	16	16	16	80	2,053
All other.....	31	31	31	26	1	120	1	1	1	1	2	6	126
Total.....	5,725	5,272	5,218	5,396	8,765	30,876	3,750	3,750	3,750	3,750	3,554	18,554	48,930

Forecasts of ConRail's future freight car requirements are based on projected traffic. USRA's proposed car program for the period 1976-1985 provides for the acquisition of 20,178 new freight cars, heavy repairs to 110,908 existing and retirement of 48,930 cars. This program is shown in detail in Table 10. These estimates were based upon:

- A 31 percent improvement in car utilization,
- Projection of future traffic demands,
- Projected fleet attrition due to age, condition, type of equipment and non-anticipated losses to the fleet (such as cars damaged in derailments, fires, etc.), and
- Projected heavy repairs to the existing fleet. The extent to which these repairs are made will depend upon the demand for specific car types, the economic return to be gained considering the remaining life of cars to be repaired, and the availability of enough cars to justify tooling up the rebuild facility for a specific car type.

### Major Shop Facilities

The proposed role of existing facilities in the consolidated system is summarized below:

Juniata  
(Altoona, Pa.)

Will be the heart of ConRail's locomotive maintenance. USRA's plans provide for improving the engine, traction motor and truck rebuild lines, and also envision Juniata for all major rebuilding, plus repairs to collision and fire-damaged units and major modifications. Juniata will require \$4.8 million in capital improvements.

Samuel Rea Shop  
(Hollidaysburg, Pa.)

Will be ConRail's major freight car repair shop and the major supplier of component car parts for the entire consolidated system. In addition, Samuel Rea will bid on all new cars in competition with car manufacturers. While this facility has enormous potential capabilities, it needs capital improvements of \$10.8 million.



Reading Locomotive Shop (Reading, Pa.)	Will be used to supplement Juniata's main component locomotive change-out programs. In addition, a truck rebuild line will be added, plus all major overhauls on switcher locomotives. Capital improvements of approximately \$500,000 are required.	E'Port (Elizabeth, N.J.)	Will be principal locomotive running repair shop for Newark, Waverly, and Oak Island. Needs capital improvements of \$600,000.
Reading Car Shop (Reading, Pa.)	Will supplement Samuel Rea Car Shop, handling all medium repairs plus special car modification programs. Capital improvements of \$950,000 are required.	Meadows (Newark, N.J.)	The locomotive facility will be closed with units and manpower transferred to E'Port. The car forces will remain the same.
Sayre (Sayre, Pa.)	Locomotive and car operations presently performed at Sayre will be reassigned. Of 269 craftsmen, 80 had less than three years' service as of January 2, 1974 and are subject to termination, and 18 men are over 60 years of age and are subject to reduced separation payments. Those remaining will be offered transfer to other locations.	Oak Island (Newark, N.J.)	Will be a major terminal yard and will need new servicing facilities. Locomotives will be reassigned to E'Port for maintenance. A new car repair track is required to increase car production at a cost of \$1.5 million.
Wilmington (Wilmington, Del.)	Will continue as the major repair and maintenance point for electric GG-1 locomotives, Metroliner cars and MU (multiple-unit) commuter cars under contract for Amtrak and various regional passenger operating authorities. Freight diesel locomotives presently assigned to Wilmington will be reassigned to Morrisville, Allen Street and Abrams (in the Philadelphia area) for maintenance.	Reading Car Repair Track (Reading, Pa.) Allen St. (Philadelphia, Pa.)	Will perform all running car repairs in the Reading area.
Collinwood Back Shop (E. Cleveland, Ohio)	Will continue in the Plan's early years as the major overhaul point for ALCO and General Electric locomotives and components.	Abrams (Norristown, Pa.)	Will be the major car repair shop in the Philadelphia area. Capital improvements of \$250,000 are required.
<i>Running Repair Shops</i>			
Collinwood Diesel Shop (Cleveland, Ohio)	There will be no change in the present operation. Collinwood will continue to do periodic locomotive maintenance plus component change-out work.	Enola (Harrisburg, Pa. area)	Will continue as it is at present. Additional cars can be repaired by adding a second and third track.
Harmon Shop (Croton-on-Hudson, N.Y.)	Does not include any freight operations and will not be acquired.	Harrisburg (Harrisburg, Pa.)	Will have increased units assigned and will continue to do major component change-outs. Capital improvements of \$200,000 are required.
Beacon Park (Boston, Mass.)	No change anticipated.	Conway (Pittsburgh, Pa. area)	Will have increased units assigned and will continue to do major component change-outs.
Buffalo (Buffalo, N.Y.)	No change anticipated.	Ashtabula (Ashtabula, Ohio)	Is now the major locomotive shop for the Pittsburgh area. However the entire facility is obsolete and inefficient and requires a capital expenditure of \$7 million.
Cedar Hill (New Haven, Conn.)	Requires a new combination car and locomotive repair shop with capital improvements of \$3.5 million.	Detroit (Detroit, Mich.) 59th Street (N. Chicago, Ill.)	Supports the Ashtabula ore and coal piers. A new car repair track is needed with capital expenditure of \$200,000.
Seikirk (Albany, N.Y.)	Will continue its present operation plus the assignment of additional locomotives. Capital improvements are required at an estimated cost of \$100,000.	Stanley (Toledo, Ohio area)	Will continue with anticipated downgrade in activity.
DeWitt (Syracuse, N.Y.)	No change anticipated.	Avon (Indianapolis, Ind.)	There will be no change in present operation. However, new fuel-sand facilities are required plus minor improvements. Capital improvements of \$500,000 are required.
Morrisville (Morrisville, Pa.)	Will handle additional periodic locomotive inspections, as freight functions are phased out of Wilmington.	Buckeye (Columbus, Ohio) Rutherford (Rutherford, Pa.)	Will handle increased traffic with increased locomotive and car repair activity.
			To accommodate proposed increased activity, the diesel shop will need storage facilities plus a wheel truing machine. Capital improvements are estimated at \$2 million. No change anticipated.
			Will be phased out as a locomotive maintenance facility. This work and the necessary manpower will be transferred to Enola and Harrisburg. Facilities will be retained for servicing locomotives. The car repair track at Rutherford is an excellent facility and its force will be expanded.

### Marine Facilities

Ashtabula  
(Ashtabula, Ohio)

The coal pier at Ashtabula was built in 1968 and is an excellent facility with capabilities of loading 6,000 tons per hour into ships for Great Lakes movement. Depending on the traffic, there is a need for additional capital improvement at a cost of \$3.8 million. The ore unloading facilities at Ashtabula consist of 50-year-old ore unloading bridges requiring replacement at an estimated \$35 million.

Port Richmond  
(Philadelphia, Pa.)

This facility has excellent acreage for future marine development. However, it needs very extensive capital expenditure to replace their present coal and ore facilities. Therefore, under present plans, it should be phased out. Personnel will be offered transfers to other locations.

Greenwich  
(S. Philadelphia, Pa.)

Greenwich has excellent unloading facilities and should be the key marine facility in the east for ore imports. The coal dumper and pier need capital improvements of \$5.8 million.

### Material

During 1973 and 1974, demand for new freight car production was constrained by the supply of forging, casting and wheels. This was caused by insufficient steel allotted to the railroad industry and lack of production capacity of forging and casting manufacturers due to obsolete plants.

New car orders for the industry for 1974 and 1975 numbered about 65,000 each year. In addition, more stringent regulation by the Federal Railroad Admin-

istration has increased the need for wheels and other components. There is a possibility, however, that with the present economic outlook, the steel companies may increase the railroads' supply of steel for car requirements. This would enable ConRail to advance the rehabilitation of car fleets as outlined in this chapter.

### Manpower

Certain changes of manpower assignments are anticipated in the restructuring of ConRail shop facilities. Sayre, the major shop of the Lehigh Valley Railroad will not be needed. The 269 employees employed there can be utilized in the system by a transfer to the Reading shops.

The Rutherford locomotive maintenance facility, involving 107 Reading employees, is expected to be abandoned. The work would be transferred to the nearby Harrisburg facilities on the Penn Central.

Workload of some of the smaller facilities over the network will be changed, eventually requiring management decisions to adjust the manpower at these locations. None will be of the magnitude of the adjustments at Sayre or Rutherford. Further, an increase of freight car repairs at Altoona heavy repair shops will require additional employees to support an expanded car repair program. The projected locomotive repair program is expected to require adjustment since Altoona will be the major locomotive repair point for all road locomotives. Any increase, however, may be offset by adjustments resulting from the transfer of work.

A further examination of manpower requirements at the various locomotive and car running maintenance facilities will be necessary. Our preliminary studies indicate that certain facilities are undermanned for the work load involved.

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## Light-Density Lines and Their Impact on Communities<sup>1</sup>

*Maps of the Northeast and Midwest rail system reveal a proliferation of branch lines, a heritage of the rail industry's early growth. With shifting traffic and widespread truck operations, many of these light-density rail lines became uneconomical, resulting in a large cash drain on the bankrupt carriers.*

*Although the Regional Rail Reorganization Act of 1973 mandates the creation of a financially self-sufficient and for-profit private corporation, it provides for the maintenance of essential, but unprofitable, branch line services through a program of rail service continuation subsidies.*

*This chapter discusses the origin of the light-density line problem, the financial ramifications for the ConRail System of continuation of these lines and the potential impact upon shippers and communities if services on these lines were terminated.*

*The chapter finds that, from an overall regional standpoint, abandonment would not have a serious impact, but that harm could be done to specific communities. It recommends that the subsidy provision provided in Title IV of the Act be used to obviate the direct conflict between the Act's goals of avoiding serious community, labor and environmental impacts and its intent of creating a financially self-sustaining ConRail System.*

<sup>1</sup> This chapter also appears as the first part of Chapter 16 in Volume II.

Of all the issues raised since congressional enactment of the Regional Rail Reorganization Act of 1973, none has been the subject of more discussion and debate than the future of the light-density or branch rail lines.

The Department of Transportation report was issued on February 1, 1974. It labeled 15,575 miles of the 61,000 miles of track it studied as potentially excess. Since that time the testimony of the public at the RSPO hearings and the January 10, 1975 RSPO comments on the Association's Annual Report all focused on the light-density line issue. What is the problem, and what are its dimensions? What is the solution in the Preliminary System Plan, within the limits of the Act?

### Light-Density Lines in Perspective

At the time of the original rail construction in the Region, trackage networks of individual railroad companies were small—designed to meet the real or anticipated requirements of a limited area. Track connections were built almost at random between communities to facilitate the flow of goods and to permit competition with other railroads. There was no overall regional design to the rail network. Local service and local traffic flows dominated the business.

The Nation's population, industry and commerce were concentrated in the area bounded by the Mississippi River on the west and the Ohio River on the south, and consequently the rail system was far more comprehensive in the Midwest and the Northeast than in the rest of the country.

Even before the maximum system size was attained in 1916, the composition of rail services was changing. As natural resources in an area were exhausted, or as production locations shifted, or as anticipated demands for certain services failed to materialize, the need for rail service changed. Thus, even though there was growth in the overall rail system, service was being withdrawn from some areas.

The industry's rapid and unplanned expansion and overextension created many lines which never were economical, but of far more significance to unprofitable operations have been the technological development of alternate modes of transportation, the shifts in production and distribution technologies or locations, and shifts in the final demand for goods and services. Often these factors moved together.

Development of the motor-carrier industry, for example, reflected improvements in the basic technology of that form of transportation (including the construction of modern highways) and produced shifts in location of economic activity to suburban areas and rapid growth of light manufacturers and services relative to heavy manufactures and mining (see Chapter 1). Similarly, pipeline operations achieved large increases in technological efficiency during the shift from coal to petroleum fuels and produced the relocation of much economic activity from the Northeast to the Gulf states.

A major factor was the extensive development of inland waterways which diverted from rail services a large volume of bulk products. As a consequence of these changes, traffic which had been carried almost entirely by the rail industry was captured by competitive modes, causing readjustment problems for the Northeast and Midwest Region in particular. These fundamental, structural changes are continuing today.

The rise of the trucking mode is of greatest importance with respect to intermodal competition and demand shifts and their impact on light-density lines. As the railroads themselves had once been a revolutionary force in facilitating the development of previously inaccessible areas, the development of modern highways and the motor-carrier industry has revolutionized the transportation patterns in the Region. The improvement of "farm to market" roads and the highway network generally made agriculture and small manufacturing less dependent upon small rural communities and the rail lines serving them.

Traffic originating from these communities became more suitable to trucking than rail service; often rail lines in agricultural areas were left with no traffic other than once-a-year movements of crops. Highway improvements also promoted a vast increase in private auto ownership and resulted in the virtual disappearance of local rail passenger service.

Improved highways and the rise of the motor carrier industry permitted decentralization of much urban-based commerce. Heavy manufacturing and shipping activities had clustered around rail facilities located in the central city, but the development of efficient motor carriers and modern highways accelerated migration of industrial activity and population from city centers to the suburbs and from the Northeast and Midwest to the South and West. These relocations often reduced the distance which commodities had to move, thereby enhancing the ability of motor carriers to compete effectively for the traffic.

Another factor is that reorganizations of the industry—in particular, railroad mergers and traffic reroutings—made some trackage unnecessary. The industry has sought lower unit costs through better utilization of equipment and economies of scale. Mergers were undertaken to attain the traffic levels and system size thought necessary to realize these economies. Mergers, particularly when they involved parallel rail carriers, presented opportunities to downgrade or retire one of two main lines, plus internally redundant feeder and branch line systems that were an amalgamation of the lines of the merged entities. Traffic rerouting and service restructuring often eliminated the economic justification for what had been main and secondary lines.

In sum, the Region's rail system has long faced a transition problem of substantial proportions. Rail lines which at one time were self-supporting have been left



with inadequate traffic and revenue. Many such lines remain today, still draining the financial and competitive strength of rail carriers.

### Railroads Try To Adjust

Railroads have engaged in a number of practices to adjust to the redundant capacity which developed from the processes of the past and which continue today. These efforts include service reduction, deferral of maintenance, internal cross subsidies and the abandonment of lines.

*Reduction of service* is an almost automatic—albeit usually lagged—response to a decline in traffic. Service frequency is adjusted after traffic declines are noted and identified as permanent. The effectiveness of this approach is tempered by two factors. First, service reductions may have the effect of forcing some of the remaining traffic to motor carriage, thereby further eroding the financial condition of the line. Second, limited service reductions often result in only minor savings.

*Deferral of roadway maintenance* also tends to be an automatic but lagged response to a decline in traffic, especially when the carrier's earnings are low. Reduction in roadway maintenance levels reduces operating expenses in the near term, with little or no impact on revenues in the short run. This process can be called gradual disinvestment.

Railroad profits closely follow general trends in the economy. Since internally generated cash flow is almost the only source of funds for maintenance-of-way, it is general industry practice to defer maintenance during periods of low earnings and to try to catch up when earnings are high. When maintenance is deferred for long periods and when the level of catch-up maintenance fails to equal accumulated deferrals, the basic plant deteriorates, and the ability to provide service is reduced with a consequent adverse effect on revenues. The cycle tends to be self-generating and, if continued long enough, facilities deteriorate until safe operation is impossible without improvements to the plant.

By definition, wherever a continuing service fails to cover its costs, an *internal cross subsidy* results (see Chapter 2). Deficits produced by such services are offset by higher rate levels on other services or by erosion of shareholders' equity. Cross subsidies can be justified only where the service being supported is likely to revive and return to profitability in the near term. Prolonged cross subsidy benefits neither the carrier nor, obviously, other shippers who must pay higher rates.

The final course of action available to a railroad is *abandonment*. Since 1920, the Interstate Commerce Commission has had authority to control the abandonment of rail mileage. The abandonment procedure involves the preparation and submission by the railroad to the ICC of an application containing information

pertaining to the line and the size of its reported deficit and the carrier's financial ability to bear the loss.

The ICC may hold public hearings on the proposal before weighing the evidence and deciding whether retention of the line meets the test of "public convenience and necessity." Since passage of the National Environmental Policy Act of 1969, and as a result of subsequent court cases, the ICC must also prepare an environmental impact statement on the abandonment decision (see Chapter 11).

An inadequate and protracted adjustment process affects the shippers and communities served as well as the carriers. Declines in the quality and quantity of rail service and increased cost and rate levels speed the process of industry outmigration and limit the ability to attract new industry. This, in turn, gradually affects the individual community and its population and employment base. These effects are considered in more detail in the latter part of this chapter.

### Service Discontinuance in the Past

The filing of abandonment applications has been cyclical, reflecting carrier earnings levels and inability to continue cross subsidies. The limited abandonment activity between 1920 and 1927 reflected satisfactory profit levels and little intermodal competition. Between 1928 and 1941, however, there were a great many abandonments due to the decline of traffic during the Depression and the effects of motor carrier competition.

Between 1942 and 1953, abandonment activity slowed amidst a surge of freight and passenger traffic. In addition, in 1942 the Supreme Court upheld the right of the ICC to include employee protection conditions in abandonment authorizations. This changed the rules for abandonment and reduced the potential cost savings.

Abandonments were at a relatively high level between 1954 and 1969, reflecting the advent of the Interstate Highway System and several economic downturns during the period. Since 1969, there has been an increase in applications as a consequence of the continued diversion of traffic to competing modes and the industry's depressed earnings level.

Between 1920 and 1970, railroads filed 4,473 abandonment applications involving 73,555 miles. In the majority of instances, the abandonment petition was approved. Carriers have become sophisticated in predicting which applications will be approved—hence the high success rate.

If a carrier is uncertain of the outcome, it usually will choose to continue the line in operation but reduce maintenance expenses, impairing service which in time may be reduced to the point of de facto abandonment.

Of equal importance, however, to a full understanding of the problem is that gradual extension throughout the Region of that process of de facto abandonment mentioned above. This has happened to far too many

shippers and communities—often almost without their notice. No shipper or community is well served by a continuation of such a practice, and it is the Association's desire—as hereinafter developed—not only to halt such a practice but gradually to improve rail service on those branch lines which do pass the test of economic viability as promptly as the availability of material will allow.

### USRA and Light-Density Lines

The light density line issue presented USRA with a significant challenge. The 1974 DOT report dealt with solvent as well as bankrupt carriers, but the Association's planning is concentrated on the light-density lines of the "railroads in reorganization." The DOT report found 15,575 miles of the 61,000 miles of track it studied as "potentially excess." USRA found 9,600 miles of track of the bankrupt railroads as appropriate for studies. Of that amount about 3,400 miles have been recommended for inclusion in ConRail. The remaining 6,200 miles of track are available for subsidy under Title IV of the Act. USRA evaluated such light-density lines in light of its congressional mandate to provide "adequate service" through an "economically viable" rail system.

The debate in Congress on the Act and the committee reports are replete with references to the "for profit" operating company (ConRail) to be created under the Act. Subsequent Special Court and Supreme Court decisions have made clear USRA's responsibility to follow this directive of the Congress, while pursuing as well the other goals set forth in the Act. Clearly it must plan for an economically viable ConRail. Failure to do so would leave Congress and the Nation exactly where they were in 1973—with bankrupt carriers.

Some have asserted that the light-density line problem is the critical issue for the bankrupt carriers; others contend that the problem is insignificant. While other areas exist where the impact on net income is as great as that caused by light-density lines, the deficits from branches are nevertheless significant; estimated losses are at least \$38 million a year. A lower deficit can be assumed only by accepting the premise that services should continue over facilities which are so debilitated that they fail to meet safety standards for 10 mph operation, a premise which can only result in their ultimate abandonment when the plant becomes totally inoperable. The estimated costs to ConRail are predicated on maintenance sufficient to maintain safe operation at 10 miles an hour. The implications of such losses on ConRail viability are significant.

The inclusion of all light-density lines in the ConRail System would require a "cross subsidization" of the service provided on those lines that do not generate revenues adequate to cover costs. As discussed in Chapter 2, cross subsidy is the process through which money-losers are continued in operation by using profits from

other service. When the railroads were, in effect, a monopoly insofar as transportation of freight and people were concerned, this was a valid concept. The monopoly power was accepted in part because it provided subsidized services at no cost to the government.

The basic factors which have adversely affected the profitability of the rail industry are discussed elsewhere (see Chapter 1). They have reduced the economic base that allowed the railroads to provide internal subsidies to deficit services. Railroad companies through lower profits and shippers through higher rates have carried the brunt of the cross subsidy load.

The cross subsidy concept has lost its validity in the railroad industry. Once defensible and rational, cross subsidies now, including those for branch lines, are threatening the existence and reducing the quality of service in the railroad system. Accordingly, the Association explicitly rejected the cross subsidization concept, determining that, in the context of the Act, to do otherwise would be inimical to the goals of the Act.

A correlation between light-density lines and the viability of the restructured system is made by the Congress and the courts. The House Interstate and Foreign Commerce Committee report on the Act states: "The Committee recognized the necessity for 'slimming down' the system allowing Northeast systems to throw off the excess trackage in an effort to become profitable." (House Report 93-620 p. 28.) There are numerous references in the congressional debate on the Act about the need to reduce the size of the system, both duplicative mainlines and uneconomic light-density lines, if the mandate expressed in Section 206(a)(1) of the Act, the creation of a financially self-sustaining rail service system, is to be achieved. The Supreme Court viewed the problem this way: "Congress concluded that solution for the crisis required reorganization of the railroads, *stripped of excess facilities*, into a single-viable system operated by a private, for-profit corporation." (emphasis added) (Regional Rail Reorganization Act Case, Slip opinion, Dec. 16, 1974, pp. 3-4)

In discussing the Tucker Act remedy, the Special Court stated that the Court of Claims judgment could be "non-existent and . . . need not be large" if the Association follows a "sufficiently hard-nosed course [in dealing with unprofitable services] and Congress allows a sound plan to become effective." (Special Court, Regional Rail Reorganization Act of 1973, Slip opinion, Sept. 30, 1974, ft. 98, p. 92)

In view of the legislative history and the subsequent court interpretations of congressional action, there can be little doubt that USRA must present a plan that requires economic self-sufficiency of the light-density lines to be included in the ConRail System.

### Reconciling the Goals of the Act

It is important to note that the eight goals of the Act apply to the entire Final System Plan. It would

be a gross distortion to attempt to apply them individually to any single aspect of the Plan or, carried to an extreme, to each individual light-density line.

Some of the goals themselves are in conflict, and it is impossible to give them all equal weight. Adjustment and accommodation being inevitable, USRA has sought to balance the Act's objectives and goals. What became clear in the process was the fact that, unless a viable system is achieved, the other goals of the Act could not be achieved.

Congress apparently recognized the primacy of the goal of economic self-sufficiency, particularly with regard to light-density lines. The House Interstate and Foreign Commerce Committee report on the Act stated: "It recognized the need for safeguard for small areas, to be able to continue essential service which is not economical for the carrier. This was recognized as a social cost to be borne by the government." (House Report 63-620, pp. 28-29.) To provide the necessary public support, Congress included the "Rail Service Continuation Subsidies" authorized by Section 402 of the Act.

### Light-Density Line Alternatives

Even though Congress, the DOT report, and railroad experts all assumed that the Regional rail system was over-extended with excess capacity and that profitability required to the elimination of uneconomic service, USRA did test that assumption.

It is the Association's judgment that the light-density lines are a significant part of the total industry problem in the Region. The overcapacity of the system, the overlapping service areas of the bankrupt carriers, the extremely poor physical condition of the light-density lines, the amount of money and material needed to upgrade the track, the operating deficits on the light-density lines—all made clear the impossibility of building a restructured system with service continuing on all branch lines.

After reaching the conclusion that the goals of the Act could not be met by including all light-density lines in the restructured system, the Association then had to decide which branch lines to recommend for inclusion in ConRail. To exclude every line that failed to show a profit would have eliminated lines that could become financially self-sustaining with small revenue increases and relatively short-term traffic growth. Prudent business management compels inclusion of such lines in the ConRail System.

Also rejected was the alternative of transferring all unprofitable lines to solvent railroads in the Region. Not ruled out, however, was the transfer of individual lines in which a solvent carrier may be interested. The Association will provide any interested solvent carrier with all of the data in its possession to assist in the

evaluation of the transfer of individual lines from the bankrupt to solvent carriers. It must be emphasized, however, that such actions by solvent carriers are voluntary and cannot be mandated by the Association.

The Act, its history and the interpretative judgments of the courts left the Association with only one realistic alternative; that is, including financially self-sustaining lines, or those likely to become so in the near term, in ConRail and making the other lines available for the rail continuation subsidies authorized by Title IV of the Act. In addition, Title IV makes loans available to public bodies for purchasing and rehabilitating lines that are required, in their judgment, for social and economic purposes.

### Rail Service Continuation Subsidy Program

As noted above, the Interstate and Foreign Commerce Committee Report on the Regional Rail Reorganization Act of 1973 stated:

The Committee recognized the necessity for "slimming down" the system—allowing the Northeast system to throw off the excess track in an effort to become profitable. It recognized the need for safeguards for small areas, to be able to continue essential service which is not economical to the carrier. This was recognized as a social cost to be borne by the government. (House Report 93-620, p.p. 28-29.)

Title IV provides the means by which essential services may be contained through government assumption of social costs.

Rail service continuation subsidies can be used to cover the "costs of operating adequate and efficient rail service, including, where necessary improvement and maintenance of track and related facilities" (Section 402(j)). The federal government share of the subsidy for any light-density line is 70 percent, with state and/or local government or shippers putting up the remaining 30 percent of the cost.

The Act (Section 401(a)) states that rail service continuation subsidies should be used where "the cost to the taxpayers of rail service continuation subsidies would be less than the cost of abandonment of rail service in terms of lost jobs, energy shortages, and degradation of the environment."

Of the nearly 9,600 estimated miles of active light-density lines under study, it appears that 3,400 miles will be recommended for inclusion in the restructured system. This means that about 6,200 miles are available for participation in the rail service continuation subsidy program.

The Act authorizes \$90 million for each of 2 years to meet the federal share of the 70 percent subsidy cost. Of this amount, \$45 million is apportioned to the eligible states and \$45 million is allocated to the Secretary of Transportation to be distributed at his discretion.

It appears now, however, that the total cost of continuing service for the first year on *all* of the light-



density lines not included in ConRail will not exceed \$38 million. It could be lower. This means that the federal share would not exceed \$27 million, with the states' share for the entire Region standing at \$11 million.

Under the Act, the Rail Services Planning Office (RSPO) has the responsibility as outlined in Section 205(d)(4) to:

... assist State and local and regional transportation authorities in making determinations whether to provide rail service continuation subsidies to maintain in operation particular rail properties by establishing criteria for determining whether particular rail properties are suitable for rail service continuation subsidies. Such criteria should include the following considerations: Rail properties are suitable if the cost of the required subsidy per year to the taxpayers is less than the cost of termination of rail service over such properties measured by increased fuel consumption and operational cost for alternative modes of transportation; the cost to the gross national product in terms of reduced output of goods and services; the cost of relocating or assisting through unemployment, retraining, and welfare benefits to individuals and firms adversely affected thereby, and the cost to the environment measured by damage caused by increased pollution.

The rail service continuation subsidy program is to be administered by the Department of Transportation. In order to become eligible, a state must undertake to meet the requirements Congress set forth in section 402(c) of the Act. They are:

(1) The State has established a State plan for rail transportation and local rail services which is administered or coordinated by a designated State agency, and such plan provides for the equitable distribution of such subsidies among State, local, and regional transportation authorities;

(2) The State agency has the authority and administrative jurisdiction to develop, promote, supervise, and support safe, adequate, and efficient rail services; employs or will employ, directly or indirectly, sufficient trained or qualified personnel; and maintains or will maintain adequate programs of investigation, research, promotion, and development with provision for public participation;

(3) the State provides satisfactory assurance that such fiscal control and fund accounting procedures will be adopted as may be necessary to assure proper disbursement of, and accounting for, Federal funds paid under this Title to the State; and

(4) the State complies with the regulation of the Secretary issued under this Section.

Under this Act, the Association does not have a role in determining which lines should be subsidized. Indeed, the needed planning and decision making process is clearly in the hands of the State. Nevertheless, the Association has taken certain steps which may provide assistance to the state and local governments.

A handbook has been prepared for use by state and local agencies which describes detailed procedures which can be used to estimate the effects of the removal of a branch line on the community so as to help it reach a conclusion as to whether a line should be subsidized.

## Impact on Communities and Shippers

The potential effects of the Final System Plan are both regional or system-wide and local. The Association is specifically directed to consider both.

The Association believes it is the responsibility of the states to undertake or coordinate the analyses of potentially adverse local impacts. To facilitate the most complete consideration of these potential impacts, one of the responsibilities of the RSPO is to solicit, evaluate and make available the views of the public, as well as those of state and federal officials.

Consideration of all but one of the regional impacts is contained in other chapters of this Plan. This chapter responds to Section 206(a)(8) of the Act, which requires that the Final System Plan be formulated in such a way as to minimize "job losses and associated increases in unemployment and community benefit costs in areas in the Region presently served by rail service."

The Region represents a significant portion of the Nation's economic activity, containing approximately 38 percent of the employment, 55 percent of the personal income and 48 percent of the population of the Nation. There could be a significant adverse local, industry-wide or regional impact from reductions in the size of the rail system. However, four factors serve to diminish the potential widespread impacts.

First, the planning process is directed toward the revitalization of the system as well as its restructuring, and many users will benefit greatly from improvements in rail service.

Second, the restructured system will represent a sizeable portion of the Region's rail system—a system that will continue to be extremely comprehensive even if none of the excluded lines are subsidized. Virtually all areas of the Region will continue to have access to rail service.

Third, the ubiquity of highways and the ready availability of private, contract and common motor carriage serve further to diminish the potential impacts of reductions in the size of the rail system in any given area. Depending on the costs to the shipper, motor carriers could provide the entire transportation service or a portion of it, with the joint use in some cases of rail or water carriers.

Fourth, almost by definition the adverse economic effects of abandonments tend to be minimal except for quite specific local communities and shippers that are involved directly. Lines identified for either subsidy or abandonment are by definition lines with very low traffic volume.

The methodology used by the Association almost automatically includes those lines in ConRail whose volume of rail traffic is significant. If a line does not qualify for inclusion in ConRail or for service by an adjacent profitable carrier, its volume of traffic is sufficiently low



that the radius of adverse impact from abandonment is very limited.

Any adverse effects of the discontinuance of service along certain rail lines will flow into the area's economy through the impact on the specific shippers that use them. The actual magnitude of the impacts will depend on the effect of increased production costs on the firm's market and profit and on the effectiveness of management in its attempts to minimize potential adverse effects. These factors depend, in turn, on the relative importance of transportation costs to total costs, the availability and substitutability of other modes and the firm's ability to pass cost increases forward through price increases. All these factors vary from area to area and shipper to shipper.

Analysis of the potential area impacts from a reduction in the size of the rail system was undertaken by the Association with the assistance of the Public Interest Economic Center. *The analysis described in Appendix J significantly overstates the potential impact of termination of service on lines not included in ConRail.* The scope of the analysis, which is discussed at greater length in that appendix was dictated by two factors.

First, the analysis had to be completed prior to the development of specific recommendations concerning each line which is a candidate for inclusion in the restructured system. Therefore, the analysis had to consider the potential adverse social and economic impacts resulting from the discontinuance of service over the lines declared potentially excess by the Department of Transportation in the Secretary's Report of February 1, 1974, not the lines studied by the Association.

A total of 15,600 miles of both bankrupt and solvent carriers in the Region was declared potentially excess in the Secretary's Report while the Preliminary System Plan covering bankrupt carriers would make only 6,200 miles of road eligible for rail service continuation subsidies.

The second factor affecting the scope of the analysis is the magnitude of the potential adverse effects. The lines declared potentially excess have, by definition, very low usage levels. As a consequence, estimates of the potential effects at the regional and state level likely would be overwhelmed by the magnitude of the continuing activity. To obtain usable estimates, the analysis of economic impact was undertaken at the county level, and 510 counties in the Region were studied.

A more definitive analysis of the economic impact on local communities that might result from a discontinuance of rail services or from a substantially improved rail service would have been preferable. However, a more sophisticated and individualized analysis proved to be impossible because of time and budgetary constraints. The information and evaluation derived from the RSPO hearings will be taken into account carefully as the Final System Plan is developed.

The elements subjected to analysis were the potential reductions in employment and income and the potential increase in transportation costs. The basic inputs were the employment and payroll data for the several relevant types of productive activity. Certain types of activity were excluded from the analysis because they do not make significant direct use of rail transportation. The excluded activities included fisheries, public utilities (except electricity and gas suppliers), service industries (except wholesale and retail trade), financial services and personal services such as amusement, medical and legal services.

For the remaining activities, it was assumed that, if the county would lose any rail lines, all plants in the county, whether they actually use this service or not, would be affected directly. This assumption, which overstates the potential impact, is made necessary by the aggregate nature of the data.

The actual calculation proceeded in two steps. Each industry in a county was treated initially as if all plants used the national average rail service for inbound and outbound movements. These results were then reduced by the ratio of the traffic generated on potentially excess lines to the total traffic for the U.S. DOT zone containing the involved county.

In computing the increased costs of alternative transportation, the difference between estimated rail and common motor carriers costs was used. The two most important alternatives excluded by this approach are private carriage and trailer-on-flat car or container-on-flat car service. Because increased transportation costs are the most significant impact identified by the analysis, inclusion of these two services probably would have reduced the impact.

### Results of the Community Impact Analysis

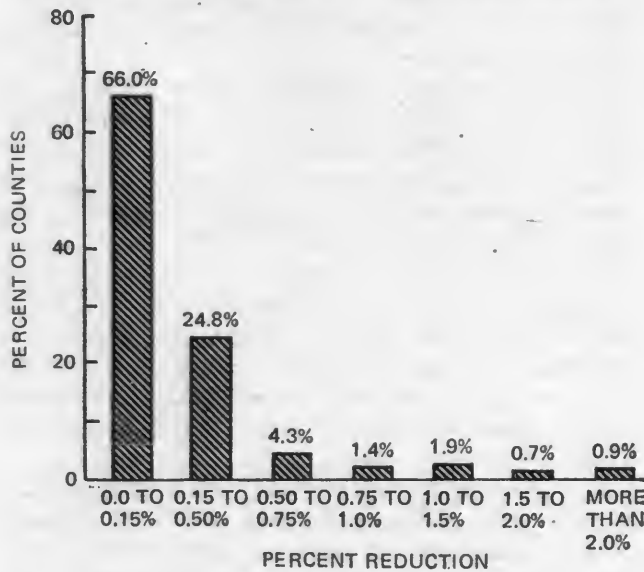
The results of the analysis are summarized in Figures 1-3. They indicate that the potential overall impact from the termination of rail service on all of the potentially excess lines of the DOT report represents a very small proportion of the counties' existing economic bases. Figure 1 indicates that in only 15 of the 451 counties did the estimated decrease in industrial employment exceed 1 percent. Figure 2 shows that the potential reduction in county income is less than 1 percent in 80 percent of the counties. Figure 3 indicates that the potential increase in transportation costs as a percent of income is less than 1 percent in 99 percent of the counties studied. In only 32 of the 510 counties studied do any of the projected impacts exceed 2 percent.

In short, even the most pessimistic estimates of the adverse impacts on the Region and areas within the Region indicate that the effect of the suggested reduction in the size of the rail system would be negligible. In contrast, the expected benefits to the users of the remaining restructured system will far outweigh anticipated adverse impacts. Despite the negligible overall

impact, however, the adverse effect on individual shippers and communities may be substantial and Congress may well wish to consider some further means for mitigating such effects.

FIGURE 1.—Potential reduction in county employment after discontinuance of light-density line rail freight service

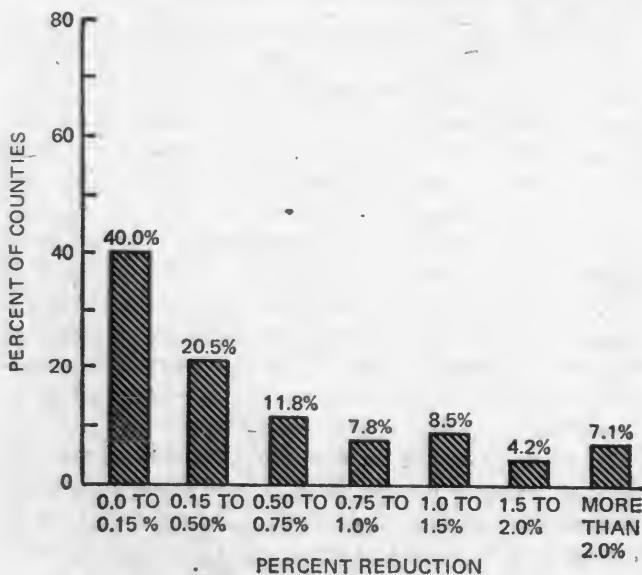
POTENTIAL REDUCTION IN COUNTY EMPLOYMENT



Source: Public Interest Economics Center, *Community Impacts of Railroad Service*.

FIGURE 2.—Potential reduction in county income after discontinuance of light-density line rail freight service

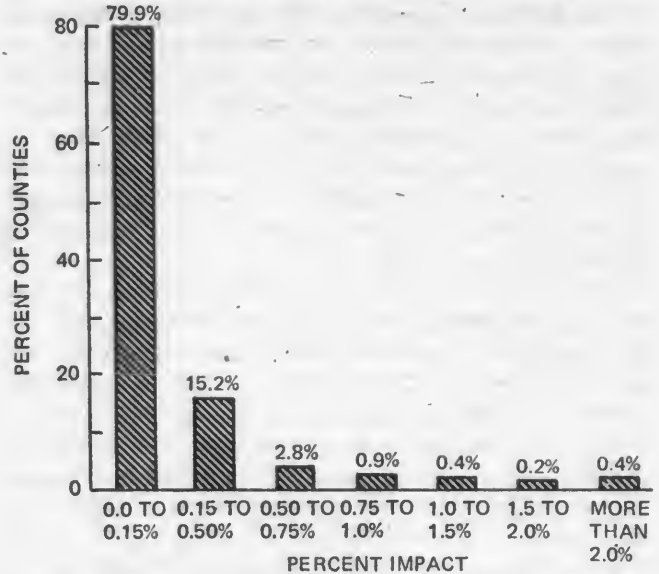
POTENTIAL REDUCTION IN COUNTY INCOME



Source: Public Interest Economics Center, *Community Impacts of Railroad Service*.

FIGURE 3.—Potential increase in transportation cost, as percent of county personal income, after discontinuance of light-density line rail freight service

POTENTIAL INCREASE IN TRANSPORTATION COST AS PERCENT OF COUNTY PERSONAL INCOME



Source: Public Interest Economics Center, *Community Impacts of Railroad Service*.

Service by Other Carriers

The Final System Plan will contain recommendations for continuation of service on light-density lines by alternative railroad carriers. Undoubtedly, there are lines that will not be financially feasible in the restructured system but would be self-sufficient if operated as part of another railroad. There are two circumstances in which alternative carrier service could achieve self-sufficiency.

First, other railroads operating in the vicinity of the line might, by a combination of geographic circumstances and markets, be able to provide service profitably. The Association will provide all available data and information to facilitate analysis by the involved carrier(s) for those lines where alternative service may be feasible. The assumption of such service by an adjacent profitable carrier is wholly voluntary and could depend on whether the railroad could gain by assumption of service.

Second, alternative railroad service might achieve self-sufficiency if operated by a short line or Class II railroad. Short line railroads generally have lower costs than the larger systems, principally due to lower pay scales and closer management attention than exists on a typical branch line.

Further, the pay scales of Class I railroad employees are negotiated on a nationwide basis, but short-line employees generally are paid prevailing local

rates. The entire management effort in short-line rail operations results in a concentration of attention both on the level of costs and service which differentiates it from the branch line operating effectiveness of large carriers.

While there is a valid role to be played by the short-line railroad, it should be recognized clearly, however, that such roles are limited. Unless there are valid reasons to expect the normal economies of short line operations to occur, as mentioned above, they may not be a good solution. Not all short lines are profitable. A short-line railroad which can survive only by inequitable revenue divisions or other indirect subsidies should not be encouraged, either directly or through subsidies.

The Association's primary interest is in maintaining as much service as possible. It will do its utmost to facilitate continuation of service on lines not included in the restructured system, whether it be by doing what it can to help states evaluate the subsidy option or making possible acquisition by solvent carriers.

### Railroad Marine Operations

The marine services of the bankrupt railroads in the Region, which are discussed fully in Chapter 18, are not profitable. The large investments in new marine equipment, which are long overdue, could reduce operating costs substantially but not eliminate deficits attributable to these segments of the railroads in reorganization.

Two of the five marine operations in the Region are potential medium density routes and, except for New York Harbor, are routings for through freight that could move entirely by rail. The Lake Michigan car ferries serve traffic which would otherwise move through the Chicago gateway; the Chesapeake Bay float is an alternative to the Alexandria, Va., gateway and services oversized loads; the New York Harbor car-float provides the most direct route to Long Island from the South and West.

The Association has concluded that investment in railroad marine operations would be a mistake. Promotion of all-rail routings is preferable where this is possible. All-rail land movements are considerably more energy-efficient, for example.

Alternative car-float and lighterage services are offered in the New York Harbor by two Brooklyn terminal companies. There is a good possibility that the Chesapeake Bay car-float operation might be taken over by a solvent carrier, such as Southern or the Richmond, Fredericksburg & Potomac, while extending its operations into the Wilmington area. This possibility is addressed in Appendix D.

The decision of the Association to treat marine operations in the same manner as light-density lines is based on the assumption that it is rail service for which funds provided under the Act would be available for marine

operations under the 70-30 federal-state sharing formula. It is assumed also that the capital costs of new or rehabilitated float equipment would qualify under the provisions of Title IV, as in the case of light-density line rehabilitation. The Association recommends that the U.S. Department of Transportation and the RSPO consider the merits of subsidizing marine operations.

### Determination of Branch Line Self-Sufficiency

Light-density lines studied in this process were:

- Those lines of bankrupt carriers identified by the DOT Report as potentially excess,
- Those identified by the bankrupt carriers for possible abandonment,
- Those identified by USRA operations planning staff and their consultants as requiring study.

The Association also studied lines which had formally been abandoned under ICC hearings in order to develop an accurate definition of the systems of the bankrupt carriers at this time.

Altogether the Association identified 844 light-density line segments and 11,800 route miles for study. (This does not include any light-density lines of the Erie Lackawanna). Of these, 540 segments constituting 9,600 miles of service are currently in operation, and 176 line segments constituting 1,200 miles have already been abandoned under ICC procedures. Finally, 128 segments covering 1,000 miles are not currently being served although these have not been formally abandoned.

As these lines were identified for analysis, the appropriate state agency was notified by the Association and the reasons for or against the line's inclusion discussed. Each branch line selected for study was identified to determine its exact location. Specific data concerning costs of serving the line as well as the revenue it generated were developed. These data were provided by the railroads serving the segment, individual shippers, concerned citizens and state and federal agencies. Information also was developed at the hearings sponsored by the Rail Services Planning Office in the spring of 1974. The testimony included general comments concerning the DOT Report, comments concerning the methods employed and comments pertinent to individual zones or line segments. The various state and federal agencies involved in the planning process also supplied useful information and technical assistance to the Association.

When analyzing each branch line as USRA did, the key questions to be asked are: What are the costs of continuing service? Will there be sufficient line-generated revenue to cover these costs? What is the near term traffic growth potential of the lines? Are there recoverable fossil fuel deposits on the line?

Because the use of generalized rather than individ-



ualized data was a major criticism of the DOT report, USRA devised a data collection system that individualized all information for each separate light-density line. For each light-density line the following characteristics were identified:

Physical characteristics—length, quality of track ridings, number of ties and rails needed to upgrade, etc.

Freight service characteristics—type of service, frequency, type of equipment used, crew size, etc.

Shipper characteristics—each shipper's name, location, billing station number, etc.

Traffic characteristics—car loadings and tons of each commodity shipped and revenues received by carrier, etc.

In addition to the information provided for the above categories by consultants and bankrupt carriers, USRA carefully catalogued, line by line, all of the information on light-density lines gathered at the RSPO hearings or in USRA's own review. Numerous other shippers and communities sent further information directly to USRA that has also been helpful.

From these reports, it was possible to determine the specific revenue generated by an individual branch line and to estimate costs attributed to that line, including those directly variable operating costs which would occur on the main line in handling that traffic. This step included analysis of the comparative costs of upgrading

the branch line to FRA Class I and II track standards and the costs of maintaining tracks to either of these standards over a period of time. Also included were the costs of capital specifically utilized on the branch lines.

With these data, each line was then analyzed to determine whether revenues currently generated by traffic originating or destined to the line were sufficient to cover the costs directly attributable to that traffic. Lines were divided between those that had sufficient revenues to cover full rehabilitation to Class II standards (i.e., 25 miles per hour) and those which would support only maintenance of track to Class I standards (i.e., 10 miles per hour).

If a line was long enough to be rehabilitated to Class II standards and thereby generate net savings from operations adequate to cover the cost of that upgrading, then the Class II standard was used along with the resulting lower operating cost. On the other hand, if upgrading to Class I standards with its higher attendant operating costs provided adequate overall revenues to operate the line, this standard was used.

If a line did cover its variable costs, including maintenance to either standard, it was recommended for inclusion in the restructured system.

If the branch line failed this test, an analysis was conducted to determine if it could cover its variable costs

## COAL FIELD SERVICE

The Congress specifically directed the Association to preserve, to the extent possible, "existing railroad trackage in areas where fossil fuel natural resources are located." (Section 206(a)(4).)

The pursuit of this goal has been a major concern for the evaluation of the traffic growth potential on individual lines serving areas which hold fossil fuel reserves has been difficult and complex.

Not all lines servicing areas with these reserves actually serve or would be required to serve reserves which are economically recoverable. Further, some reserves may not be tapped for decades, if ever. Identifying individual rail lines which should be preserved for fossil fuel purpose is a difficult task.

Use of the Region's coal reserves primarily depends on the ability of individual deposits to meet EPA requirements, their mineability, proximity to the market, expected use (metallurgy vs. steam production) and the price and availability of alternative fuels. Assessment of the extent to which each of these factors affects a given coal deposit requires a great quantity of detailed data and judgments by qualified people.

In an effort to develop line-specific coal production estimates, contacts have been established with the U.S. Department of Interior, the National Coal Association and the Region's coal-producing states. Recommendations concerning specific lines largely or solely because

they serve fossil fuel reserves will be included in the Final System Plan.

Regarding continued service to fossil fuel resources USRA has adopted the following positions:

1. On lines required to reach economically recoverable reserves, if service is now provided it will be continued whether viable or not. Where the line does not pass USRA viability tests, however, service will be maintained on an "on demand" basis and only so long as no major repairs are required on the line. At such time as repairs are required the line will fall into the category listed below.

2. On those lines required to reach economically recoverable reserves and where there is not now service, the Association proposes that such lines be considered for "rail banking", and that this concept be developed in conjunction with the Final System Plan.

The lines recommended in the Preliminary System Plan either for continued service or rail banking are based on the best available information the Association could obtain, to date. We will continue to work with the Federal Energy Administration, Department of Interior, the National Coal Association and the Regions' coal producing states to make a more accurate estimation of where economically recoverable coal reserves exist.



either with a modest rate increase (10% or less) or with an expected traffic increase (specific growth if available, projected ConRail System growth if *not*).

If the line did not cover such costs, even with reasonable rate increases and traffic growth, a review was conducted to determine whether the line had connections to other carriers. Where such connections exist, the railroad will be provided the data and information necessary to assess the line's potential viability.

Therefore, a financially self-sufficient line to be included in the restructured system, ConRail, is one that:

1. Is capable of generating sufficient revenue to cover the costs incurred on the light-density line itself as well as the cost of serving branch-line-generated traffic beyond that branch line.
2. While not currently self-sustaining, can be made viable by reasonable rate adjustments.
3. While not currently self-sustaining, can be made so because of the identifiable traffic growth in the near term.

All other lines automatically become available for participation in the subsidy program (Section 402) under the Act, with the decision concerning continued service on these lines depending on state and local action. If a line is not included in ConRail, and if the state and local interests and shippers fail to provide the subsidy, the Act permits the discontinuation of service.

### Outcome of the Analysis

Results of the analysis of each line's prospects for attaining financial self-sufficiency are reported in detail in Appendix K to Volume II. Of the 9,600 miles of active roadway studied, 3,400 miles are recommended for direct inclusion in the Preliminary System Plan without further study. These lines account for approximately 75 percent of the traffic and revenue generated on the lines studied. The remaining lines should be studied carefully by the states, regional and local agencies, and shipper, to decide which justify continuation of service through subsidies and those which should be abandoned.

The 6,200 miles not recommended for inclusion in the Preliminary System Plan can be continued in operation through service continuation subsidies, as previously discussed. The required subsidy level should be estimated using a formula developed by RSPO, but the formula was not received sufficiently early to allow such computation. In addition, the most recent RSPO standards still are only proposed and not final standards.

The analytical result presented in full in Appendix K to Volume II included detailed consideration of each line's financial self-sufficiency under the traffic, revenue and estimated cost levels which prevailed in 1973. Analyses to be completed after preparation of the Preliminary System Plan include the identification of traffic growth realized, for example, due to the location of new shippers on the line, and the development of sound proposals concerning service continuation by an alternative railroad.

Because only 1973 data are used in the analysis, new firms could have come into existence, and existing shippers could have permanently increased their use of rail service since the data were collected. Second, a line may realize the necessary traffic growth in the near term to become self-sufficient. In both cases, the lines involved would represent prudent business investments and should be included in the Final System Plan.

More current carrier data will be analyzed to assist in the identification of traffic growth which already has been realized. The major sources of the needed information are the testimony provided at the RSPO hearings (including those to be held on the Preliminary System Plan), communications received directly from individual shippers and information provided by such public agencies as the state departments of transportation. Where the verified information indicates that the traffic growth will permit self-sufficiency, the line segment will be recommended for inclusion in the Final System Plan.

### An Overview

As stated at the outset of this chapter, no issue generated as much interest and debate during the planning process for this report as did the light-density line issue. It dominated meetings to discuss the work of the Association held with state and local officials, public interest groups, shippers, members of Congress and nearly every group that met with representatives of the Association.

The Association approached this issue with considerable care and preparation, aware in particular of reactions to the Department of Transportation report last year. No doubt there will be honest differences of opinion; as to the correctness of our approach, our methodology, the data used and our conclusions.

Because the Association dealt only with the light-density lines of bankrupt carriers and the DOT report studied solvent as well as bankrupt railroads it immediately pared down the number of miles of track where continued service was thought to be in jeopardy. The Association concluded that of the 9,600 miles of track under study 6,200 miles were not suitable for inclusion in the restructured system.

It is important to keep in mind that this Plan, although a major step in the restructuring process, is only one step in the process and is now offered for public comment and evaluation. Upon its release of the Rail Services Planning Office will begin a formal hearing and evaluation procedure as it did with the DOT Report. Hearings will be held throughout the 17-state Region. RSPO will announce the dates and locations of those hearings.

The Association views this part of the process as vitally important to the successful submission of a Final System Plan to Congress. It may be expected that this set of hearings will focus primarily on the light-density line issue. States, communities, shippers and other interested citizens will present their views on our plan.

The Association gives its assurance that all of these comments, particularly the RSPO evaluation due on April 28, will be given careful consideration. The Association is seeking, through the RSPO hearings, definitive information and material assistance relevant to individual branch lines. This is especially important in the case of light-density lines that have an identifiable capability for growth in the near term. Also being

sought are other proposals which may result in continued service on lines that now appear to be uneconomical.

The goal of the Association, limited only by the requirements of the Act, is to provide in the Final System Plan for the continuation of as much rail service as possible. In pursuing that goal, it seeks whatever guidance and help may be available.

**THE RAIL TRUCK TRADE-OFF FOR BRANCH LINE SERVICE**

Truck service could be substituted for rail on many light-density branch lines. Such substituted service involves continuation of rail service to a railhead with transfer of cargo to truck for final delivery. A study was made of the comparative costs of rail branch line operations and coordinated rail-truck service, including transfer operations. This analysis differs from other USRA-sponsored studies, such as the community impact study. It is limited to branch line operations and highway-substituted service.

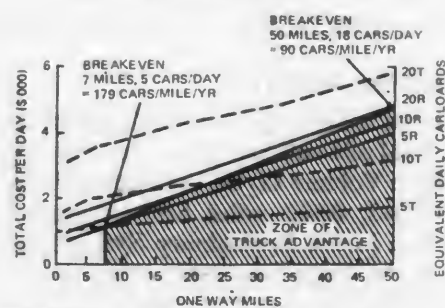
Figure 4 portrays the transfer cost per ton for several commodity types and a range of daily transfer terminal volumes. As these costs indicate, it is more economical to transfer merchandise freight in piggyback trailers than to transfer the cargo. Conversely, the case of bulk commodities, it is cheaper to transfer the cargo to truck. The combined cost of transfer and trucking from a rail terminal, for various lengths of rail branch line, is summarized in Table 1.

A comparison of these costs to movement by rail is shown in Figure 5. It may be concluded from the data in Figure 5 that a rail-truck transfer operation results in lower total resource consumption than rail for branch lines longer than 7 miles, averaging 5 loaded cars per day, and for branch lines 50 miles long with 18 cars per day or less.

TABLE 1.—Cargo transfer and trucking costs per ton

Commodity type	Length of haul (miles)				
	5	10	20	35	50
Unitized or palletized freight..	\$3.62	\$3.96	\$4.41	\$4.95	\$5.72
Piggyback trailers.....	3.32	3.66	4.11	4.65	5.42
Granular/liquid bulk commodities.....	2.87	3.21	3.66	4.20	4.77

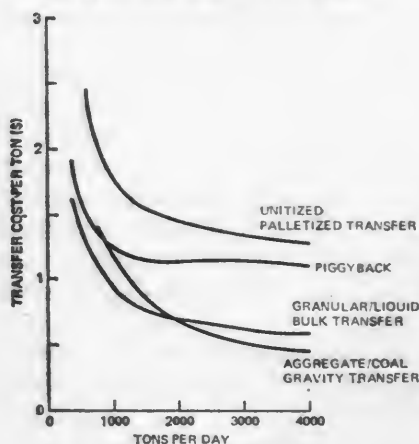
FIGURE 5  
COMPARATIVE  
RAIL-TRUCK COSTS  
FULL ECONOMIC COST BASIS



ASSUMPTIONS:  
1. NORMALIZED MAINTENANCE  
2. REHABILITATION TO 30 MPH STANDARD  
3. 10% COST OF CAPITAL  
4. CURRENT (1974) REPLACEMENT COSTS  
5. AVERAGE CARLOAD OF 55 TONS, BULK COMMODITIES  
6. "ENGINEERED" TRANSFER TERMINAL COSTS

LEGEND  
R — RAIL COSTS  
T — TRUCK COSTS (INCLUDING CARGO TRANSFER)

FIGURE 4  
COMPARATIVE FREIGHT TRANSFER COSTS



NOTE: COSTS BASED ON ONE-WAY LOADS, LAND COSTS OF \$10,000/ACRE, FULL ECONOMIC COSTS, 10% COST OF CAPITAL

Since the preponderance of branch lines under study falls within the range of these conditions, it is safe to say that the transloading concept has particular merit as an alternative to retaining unprofitable light-density rural and urban branch lines. This is especially significant given the ultimate costs of restoring many local lines to proper standards of maintenance.

With respect to fuel use, all-rail movement is more efficient than truck—about four times more efficient under conditions of high capacity utilization, but only slightly more efficient (1.4 times) with short, light trains. Under conditions of balanced movement, the relative efficiency of truck vs. rail is even greater. Changes in the price of fuel will shift the cost trade-off between rail and truck and thus alter total economies of fuel consumption. See Chapter 11 for additional discussion of energy and air pollution aspects of the truck-rail trade-off question.

# 8

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## Intramodal and Intermodal Competition

*Public policy has long sought to protect competition in our private enterprise economy because competition generally is assumed to lead to efficient industrial production and good service at reasonable prices for consumers.*

*USRA considered longstanding differences of expert opinion regarding the desirable amount of competition between rail carriers operating in a given market. The chapter recognizes that excessive competition between railroads at times has led to greater costs, reduced or erratic service and higher rates for shippers, but elimination of rail-rail competition in key markets is an unacceptable policy under the mandate of the Act.*

*Extensive competition has developed from other modes, especially trucking but also water carriers and pipelines. This intermodal competition has diverted traffic and revenues from railroads and has made it increasingly more difficult to offer rail service by multiple carriers in the same market. On the other hand, effective intermodal competition is*

*valuable to society because it provides a ready alternative for shippers where rail-rail competition might have diminished. Increasingly, it is the motor carrier industry that sets cost and service standards for the railroads.*

*USRA's preliminary conclusion is that indirect rail-rail competition (not duplicated door-to-door services) and the ready availability of other competitive modes would fulfill the competitive goals of the Act.*

Competition among firms in the same industry and market is an important feature of public policy toward business in America. Competition, an underlying premise of the private enterprise system, is protected and encouraged by antitrust laws and numerous pieces of special legislation. Even in highly regulated industries like railroading, competition is prized as a means of controlling abusive business behavior because it is automatic, penetrating and persistent. Shippers and consumers generally value competition among suppliers as the best guarantor of reasonable prices and as the best mechanism for assuring good service, technological progress and efficient management. Those who advocate less public regulation of quasi-public utilities like railroading—in order to give industry greater flexibility in pricing and services—place heavy reliance on the self-regulating character of competition; without a healthy and balanced competitive system, the public will demand more, not less regulation.

On the other hand, with respect to industries that have some if not all of the characteristics of public utilities, competition may be more valuable in theory than in fact. Head-to-head competition of rival firms may be valuable to shippers by lowering their rates, but other less direct forms of competition may be equally valuable over the long run. Indirect forms of competition may be sufficient to bring about improved cost performance and innovations in services. In areas of great excess trackage, as in the Granger States, excessive competition has been known to result in less frequent service, poorer utilization of plant and equipment, higher unit costs and hence higher charges to the shipper than otherwise would have been required. Too much competition may be one of the causes of financial instability and bankruptcy of some railroad carriers. Hence, excessive competition is no more a friend of the shipper than inadequate competition.

The Act gives prominence to the goal of maintaining and enhancing effective competition in the Region. Section 202(b)(2) states that “in addition to its duties and responsibilities under other provisions of this Act, the Association shall . . . prepare an economic and operational study and analysis of . . . the competitive or other effects [of the Final System Plan] on profitable

railroads.” In Section 206(a)(5) the Act provides that: “the Final System Plan shall be formulated in such a way as to effectuate [among other goals] . . . the retention and promotion of competition in the provision of rail and other transportation services in the Region.”

Competition is a goal of the Act that may conflict with others, particularly Section 202(b)(5), which requires the Association to consider methods of achieving economies through consolidations and pooling arrangements, and Section 206(b), which mandates consideration of ways to achieve rationalization of rail services and the rail service system in the Region. (See also Section 206(g) with respect to consolidation arrangements.)

### Competition Defined

It is a basic tenet of economics that a purely competitive market economy will produce the best allocation of social resources. Proper resource allocation enables production of a given bundle of goods and services at the lowest possible cost or, as a corollary, assures that the mix of goods and services produced by the economy best satisfies consumers for any given level of expenditure.

Thus, pure competition produces the condition of maximum social welfare: All goods and services are produced in the proper amount, all “inherent advantages” are fully exploited, all economic resources and factors are most efficiently used, prices in the market are reasonably low—given the size of the market and available technology—and undue concentrations of economic power do not accumulate.

### The Definition of Markets

The economist's model of pure competition seldom is realized in actual business practice. Nevertheless, American public policy toward business places great stock in maintenance of competition; but how much competition and what kind? Statutory boundaries of anticompetitive behavior are found in the antitrust laws and transportation statutes,<sup>1</sup> but 75 years of antitrust case law

<sup>1</sup> Two sources on statutory and regulatory standards for competition in the transportation industries are Alfred E. Kahn, *The Economics of Regulation: Principles and Institutions* (John Wiley & Sons, Inc., 1971), and Michael Conant, *Railroad Mergers and Abandonments* (University of California Press, 1964).



and regulatory rulings have failed to provide a precise definition of the lawful minimum of competition.

To get at the question of how much competition should exist (or conversely, the degree of "monopoly power" which should be allowed), it is necessary to define the market in which competition is supposed to exist. Economists measure the degree of monopoly power in a market by "cross elasticities of demand," or the degree to which one product can be substituted for another. Antitrust law comes at this by attempting to define "relevant markets"—the range of substitutable products that the law will not allow to be monopolized. Unfortunately, the definition of "relevant markets" cannot be determined any more precisely than "adequate competition;" indeed, the two concepts are fully interdependent.

The transportation industries pose difficult problems of market definition because of the point-to-point character of traffic movements and the high degree to which modes can be substituted for each other. For example, if a shipper wants steel to move from Pittsburgh to St. Louis, it will be significant that the Penn Central, Chessie System and Norfolk & Western all provide single-line service. The shipper is well situated with respect to intramodal competition, but intermodal competition also may be a factor in this market. Steel is a valuable commodity and earlier delivery may save the shipper some distribution expenses; trucking firms could haul the steel to St. Louis in competition with the railroads, probably with faster delivery. Also, steel products are heavy, and inland waterway carriers might be able to move the steel at rates low enough to cover the time-related costs of (presumed) slower delivery by barge. For this point-to-point movement, there is high cross-elasticity among rail, truck and barge service or, in other words, intermodal competition is highly effective.

### Workable Competition

Because pure competition rarely exists, economists and antitrust lawyers have arrived at the notion of "workable competition." This concept strikes a balance between theory and pragmatism—between pure competition, which relies on large numbers of sellers to prevent monopoly control of prices and service levels, and the undeniable fact that total market demand places a limit on the number of sellers of a size large enough to take advantage of production economies.

"Workable competition" is best achieved when a market has the largest number of firms which can exist in an industry, without any firm being too small to reap all of the economies which might come from being big—such as specialization, research work, volume purchases, advertising advantages and the like. Each firm in an in-

dustry should be large enough to achieve these economies; but if a firm is larger than the threshold size, the total number of firms is reduced unnecessarily.

In railroading, economies resulting from dense traffic flows are likely to be so great that only one firm can be of optimal size in many point-to-point markets. Two firms of optimal scale may be able to coexist in larger markets. In general, two railroad firms in a large freight market will produce a "workable" level of intramodal competition.

For smaller city-pairs, only one rail carrier is practicable, but that does not mean that no competition exists or that shippers are at the mercy of the railroads; there are several avenues of escape. First, there is intermodal competition. Second, there is the option to route traffic to other rail carriers at intermediate junctions (called short-hauling). Third, the shipper over time may relocate or revise production and distribution strategies, part of the reason for the decline of railroading as described in Chapter 1. Fourth, a multiplant firm can threaten to reallocate production toward other existing plant locations.

Public economic regulation of an industry substitutes for market competition under the antitrust laws. So long as there is regulation, the number of competitors in "relevant markets" is not so important as it is under market competition. If a policy choice were made to lessen public rate regulation, however, the number of effective competitors in each market could not be ignored.

In sum, "workable competition" is a practical balance between pure competition of large numbers of sellers and no competition or monopoly. "Workable competition" produces acceptable results, i.e., prices close to production costs, good service to customers, efficient management and technological progress at reasonable costs.

### Competition vs. Competitors

In our complex industrial society, individual people as consumers rarely participate directly in freight transport decisions. Shippers and receivers serve as intermediaries for consumers, paying the freight bill as part of the final production costs of goods and services purchased by consumers. To the extent that there are benefits of competition, those benefits are received indirectly by consumers and directly by shippers or receivers. In defining types or levels of competition, therefore, it makes sense to view competition as it is perceived by shippers and receivers—the directly participating beneficiaries.

A contrary view often is presented by rail industry representatives who, in a merger case for example, typically are more interested in impact on *competitors* than

impact on *competition*. Their argument is that there can be no competition without healthy firms to compete. That is so, but when public policy has sought to protect *competitors*, it often has done so at the expense of consumers, who may be made to pay higher rates to keep inefficient firms in business. If, instead, the competitive forces were permitted full rein, efficient firms would survive and inefficient firms would fail. Public policy must intervene, of course, to prevent predatory competition and its excesses.

The Association believes that protection of competition comes before protection of competitors. USRA cannot neglect competitive impacts on rail carriers in the Region, but where the interests of these carriers may conflict with the interests of creating the best long run solution for consumers generally, the latter course must be favored. A most serious policy problem exists if, in mapping a competitive industry structure, potential competitors refuse to engage in territorial extensions designed to bring about an acceptable level of competition. In that case, absence of willing competitors becomes an immediate problem which must be solved in the interests of competition generally.

### **Intramodal (Rail-Rail) Competition**

Efficiency of railroad service in the Region is affected considerably by the nature and extent of competition between railroads. Resolution of this complex subject was a key part of the Association's deliberations in preparing the Preliminary System Plan. Few areas have evoked such differences of expert opinion and it has been impossible to reconcile these differences with statistical or other factual findings.

Some observers believe rail-rail competition is costly to provide in the Region because it necessarily implies retention of duplicate and underutilized facilities. Others believe that the goal of preserving rail-rail competition is consistent with creating a financially sound rail system in the Region. This latter group believes that

whenever a choice between one larger firm and two smaller firms serving the same markets is to be made, the more competitive solution (two firms) also results in establishment of firms of more efficient size. According to this view, the two competitive firms will be managed better, and will be more aggressive and more progressive than a single larger firm. As a result they will provide better service at lower rates, over time, than will the larger firm. These two conflicting viewpoints can be summarized as in the numbered paragraphs on this page.

The Association has made special studies of the kind and level of competition in the Region, has made preliminary investigations of economies of scale and economies of density in railroads, has reviewed the Secretary's Report and the testimony of witnesses before the RSPO and has solicited expert opinion from key economists, transportation consultants and rail shippers. The viewpoints expressed and the analytic results reported in these sources amount to a near-unanimous rejection of anticompetitive solutions in major markets.

USRA's approach to the resolution of the issue of the proper level of rail-rail competition was to define types of competitive service which might be created or maintained, then to determine which areas of the Region should be served by each type of competition. USRA determined that the proper *amount* of competition cannot be resolved without reference to multiple *types* of competition. The various types of rail-rail competition are defined and analyzed in the preceding section. The Association's basic plan for competitive service in the Region is described in Chapter 3, and location-specific determinations are discernible in the large industry structure map enclosed with this volume of the Plan.

The general policy adopted by USRA is that effective rail-rail competition must be provided in key markets including markets presently dominated by bankrupt carriers. Rail competition need not be sustained,

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#### *For Emphasizing Competition*

1. Firms of small or moderate size are equally or more efficient than the largest firms.
2. Economies of density can be achieved through creation of proper route structures and expanding joint operations.
3. Rails already have lost almost all divertible traffic to other modes, so only rail-rail competition is effective.
4. A larger number of competitive firms keeps open a larger number of future restructuring options and avoids putting all the eggs in one basket.
5. Good service to shippers derives from aggressive competition of more than one firm for a given amount of business.
6. Competitive firms will be financially sound if underlying conditions are adequate, because competition provides incentives to good management and firm size is at optimal scale.

#### *For De-emphasizing Competition*

1. Larger firms are at least potentially more efficient than smaller firms, especially if the latest managerial techniques are employed.
  2. Economies of density are best achieved by consolidating freight flows over the minimum number of firms.
  3. Rail-rail competition was beneficial in the past but is largely nonexistent or irrelevant today because firms in other modes, not other rail carriers, set cost and service standards.
  4. A smaller number of firms enables concentration of scarce managerial talent and focusing of federal assistance funds in limited areas.
  5. Good service to shippers derives from concentration of traffic flows, enabling more frequent schedules, run-through trains, better plant, etc.
  6. Financial viability is a function of minimum plant duplication and avoidance of "destructive" competition—which undermines the rate level.
-

however, in markets where traffic volumes are such that rail efficiency would be impaired significantly by duplication of facilities and services. Given a choice between two or three railroads, each providing an inadequate level of service, and a single carrier providing a high quality of service, the single carrier choice is preferred.

Determinations of traffic levels adequate to sustain competitive rail services can be made only by consideration of the specifics of each market. Withdrawal of services must be considered on a case-by-case basis. Because of the way the mainline rail networks have developed, for example, it may be relatively inexpensive to maintain two-carrier service to one particular traffic generating area, while elsewhere two carriers could not split the same amount of traffic and earn the same aggregate amount of profit. Most important, when considering how to continue competition in markets which otherwise would be monopolized, it is essential to find a carrier *willing* to provide competition (see Chapter 3).

Finally, continuation of rail-rail competition in the Region is not necessarily incompatible with increased rail efficiency or reduction of duplicative facilities and services; opportunities for coordination of services between carriers enable achievement of economies of density without reducing service to a single carrier monopoly.

The Association, like the Department of Transportation in its February 1, 1974 report, has rejected the extremes of monopoly rail service in the Region and an industry organization of multiple small firms. The institutions recommended in this Preliminary System Plan are of manageable size. No part of the Region generating large amounts of traffic is left without rail-rail competition in the general vicinity. The Association has given substantial credence to the argument that concentration of traffic flows is an important source of economies and can result in better service to shippers in the aggregate. Further, USRA tentatively has concluded that, while economies traceable to large corporate size are not obvious in this industry, economies of density are important.

#### Existing and Proposed Levels of Rail-Rail Competition

USRA staff has analyzed the market share of dominant railroads in counties served by candidates for consolidation. Table 1 shows the distribution of 171 counties by the rail market share of the dominant railroad, both at present and for one proposed configuration of consolidated roads. At present, the 171 counties examined in Table 1 are distributed fairly evenly across the three classifications tabled. Sixty-two counties show no railroad in possession of a dominant traffic share, defined as 70 percent of carloads generated. Complete monopoly positions in railroad traffic exist in 51 counties.

The Association's proposed three-system configuration results here in an increase in traffic dominance by individual railroads. The number of counties with no dominant railroad drops to 42, while the number monopolized by one railroad rises to 74.

TABLE 1.—*Rail market dominance in 171 counties east of Ohio: <sup>1</sup>Distribution of counties and carloads generated <sup>2</sup>by percentage of carloads served by dominant railroad <sup>3</sup>—present and Three Carrier System <sup>4</sup>(proposed)*

	Traffic share of dominant railroad		
	Less than 70 percent	70 to 99 percent	100 percent
Number of counties:			
Present.....	62	58	51
Three Carrier System.....	42	55	74
Percentage of total carloads:			
Present.....	64	28	8
Three Carrier System.....	51	32	17

<sup>1</sup> Eastern portion of Region only, east of Ohio/Pennsylvania border, with small number of counties excluded where no service exists by 5 candidates for consolidation.

<sup>2</sup> Carloads generated—originated or terminated.

<sup>3</sup> Dominant railroad—railroad with highest carloads generated in county. Shares lower than 70 percent were not considered dominant and were consolidated into 1 grouping.

<sup>4</sup> Three Carrier System is a proposed alternative involving consolidation of 5 carriers plus 2 systems of solvents.

Source: USRA staff analysis.

The lower half of Table 1 shows the percentage of carloads generated in various dominance classifications. The proportion of carloads in areas with 100 percent dominance rises from 8 percent at present to 17 percent under this configuration, while traffic in counties with no dominant carrier falls from 64 to 51 percent. It should be noted, however, that for this example over half the carloads generated still would be served in competitive markets, and by no means all the monopolized markets would be under the influence of the consolidated network of railroads.

A more direct measure of the degree of competition between railroads is the availability of multiple line service and reciprocal switching agreements to individual customers versus service by a single line. Table 2 shows the number of customers with service in these three classifications for selected Pennsylvania and Northern New Jersey areas. Very few customers, only 24 of 2,669, have direct connections to more than one railroad, and only another 150 are covered by reciprocal switching agreements whereby one railroad will pick up cars to exchange with a second carrier (usually) for a small fee. Fully 2,495 of the 2,669 customers have only single line service, indicating that direct rail-to-rail competition at the shipper's location is very rare, even in highly developed industrial areas such as these.



TABLE 2.—Number of customers served by railroads in the Philadelphia and Northern New Jersey areas distinguishing single line service, multiple line service and reciprocal switching service

Railroad(s)	Stations								Total
	Philadelphia	Newark	Harrison	Elizabeth <sup>1</sup>	Jersey City	Bayonne	Perth Amboy	Allentown-Bethlehem Easton	
<b>Single line service:</b>									
B&O.....	40								40
EL.....		57	22		36				115
PC.....	859	241	23	155	65	11	6		1,360
CNJ.....		119		99		53	9		290
RDG.....	563							15	578
LV.....		30					23	69	122
Subtotal.....	1,462	447	45	254	101	64	38	84	2,495
<b>Multiple line service (direct connection):</b>									
PC-RDG.....	12								12
RDG-LV.....								2	2
PC-CNJ.....						1			1
PC-EL.....					1				1
CNJ-LV.....		3			1	2	1		7
LV-EL.....								1	1
Subtotal.....	12	3	0	0	2	3	1	3	24
<b>Multiple line service—reciprocal switching:</b>									
PC-RDG.....									
PC-LV.....		25			42		5	1	73
PC-CNJ.....					50		8		58
PC-EL.....									
RDG-LV.....								18	18
LV-EL.....								1	1
Subtotal.....	0	25	0	0	92	0	13	20	150
Grand total.....	1,474	475	45	254	195	67	52	107	2,699

<sup>1</sup> Includes Port Newark.

### The Problem of Competitive Service to Small Shippers

Small shippers<sup>2</sup> suffer several disadvantages relative to large shippers; these disadvantages are clearest in the area of service quality. Small shippers generally are harder to serve per work unit and have less leverage over carriers than large shippers do. Understandably, therefore, small shippers may place a premium on competition, hoping that the rivalry of carriers will produce benefits that they cannot exact from a single carrier or hope to obtain by regulation alone. The large shipper, who on the surface has the most to gain from competition, may be less vociferous on the subject than the small shipper, because the large shipper can exact through leverage ("monopoly power" in the economist's jargon) what the small shipper can get only through competition or very extensive and careful public regulation. The irony is that service to large shippers may be in volume sufficient to warrant competition, while for the small shipper, competition is uneconomic under any definition.

There are three ways small shippers partially can overcome their competitive disadvantages. One is to join with other small shippers in an association, which then has total volume sufficient to achieve the advantages possessed by large shippers. Such an association can pro-

<sup>2</sup> A small shipper is defined as one who generates small volumes of carload traffic, as distinct from a shipper (large or small) of small parcels.

vide research services on available rates, for example, a function that a single small shipper might not be able to afford. Shipper associations also enable consolidation of shipments to achieve more favorable multiple-car rates. Second, a small shipper can locate in a market area with one or more large shippers. Proximity to major traffic generation points may result in improved service and even more favorable rates. Third, the small shipper can seek effective regulation, pursuing the rights and remedies that the applicable law and regulations afford.

### Shipper Views

In order to learn more about how shippers view the advantages of competition, USRA asked one of its consultants<sup>3</sup> to gather a group of knowledgeable shipper representatives to discuss these issues. A few of the findings are pertinent.

Shippers believe that the "personality" of the individual railroad is a significant factor in the treatment of its customers—both large and small. Some small railroads consider every account of major significance to them, are generally successful at maintaining good communications with their customers through personal contacts and achieve efficient operation in all aspects of their business over which they have control.

<sup>3</sup> Simat, Helleeson and Elchner.



## TYPES OF RAIL-RAIL COMPETITION

Often it is assumed that rail-rail competition exists only if a given shipper has direct access to two railroad companies. That assumption can be overdrawn. Indeed, most shippers do not have *direct* access to two railroads. Do they have any benefits of competition without such direct access? Surely direct access gives a shipper more leverage, but to ignore the broader implications of indirect, regional competition is to discount the essential dynamics of the American economy. Business behavior is affected by trends and innovations elsewhere in industry, and carriers in the South or West set standards of service and rates that cannot be ignored in the East and Midwest. Within the northeast Region, competition between specific points may be less relevant to the regional economy than the existence of car-

riers which are responsive to their specific (perhaps captive) shippers by virtue of corporate pride, industry-wide trends in productivity or innovation and sound financial condition.

This is another way of saying that "competition in the large" may well be a more important policy goal than retention of multiple-carrier competitive service to specific shippers—"competition in the small." Such a conclusion is particularly appropriate in an era of large, geographically diverse organizations with service patterns that are national in scope.

Because there has been a great deal of controversy about the definition of competition, and in order to show different ways in which competition could be provided, the Association has prepared the following typology.

FIGURE 1

### NO COMPETITION (REGIONAL MONOPOLY)



The Region is served by a single carrier on whose lines all rail shippers are located.

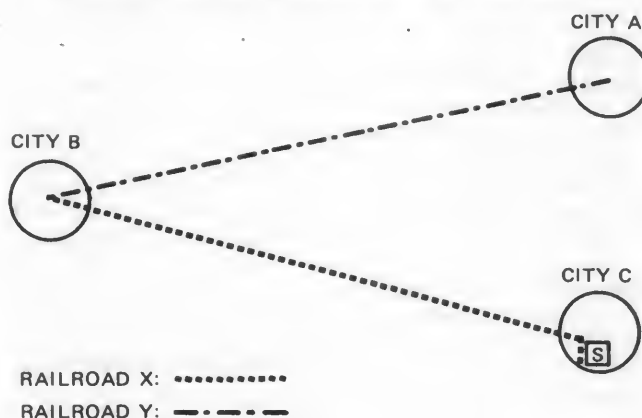
Under such a situation, the shipper(s) has no choice of rail carrier within the Region, although there is a modal choice of truck, water or air. The shipper, however, does have only a single rail carrier to deal with and a single integrated service for all of his shipments. If the carrier is well-managed, it should be able to concentrate traffic flows and provide the shipper with a high level of service.

Rates and car supply would be almost totally at the discretion of the carrier within the regulatory guidelines. With no competitive pressures from other rail carriers, the carrier might be slow to innovate with rates or equipment. Rate breaks and innovative equipment would be provided to the shipper only when it was beneficial to the railroad.

In this case the shipper, if dissatisfied with rail service, has only the options of switching to potentially higher cost modes, decentralizing to avoid long-distance transportation altogether, or going out of business entirely. These threats are unlikely to move the carrier to innovate, since only the largest and most profitable shippers can fully exercise these options while staying in business. The shipper has recourse to the regulatory process, but experience with regulatory agencies indicates that correction of service deficiencies and car supply inadequacies would be extremely slow and burdensome. Regulatory bodies can prevent certain negative actions more readily than they can promote positive improvements to the shipper.

FIGURE 2

### INDIRECT COMPETITION (LOCAL MONOPOLY)



Two or more carriers, relatively balanced in terms of revenues and physical size, serve the Region but do not always serve the same city-to-city markets. The shipper is physically located on Railroad X and has no access to Railroad Y.

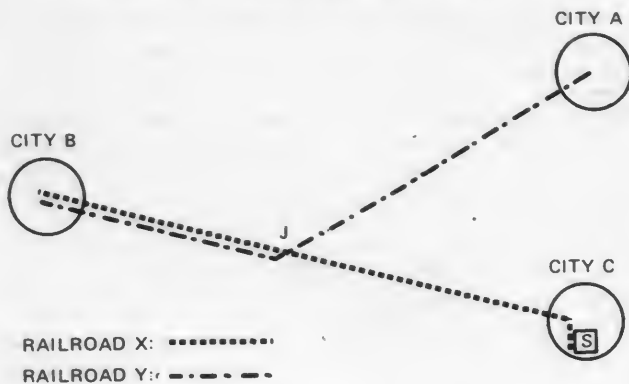
Indirect competition still gives the shipper no choice of rail carrier within the Region, but it does provide some benefits from rail-rail competition. As the carriers compete for on-line industrial location, price and equipment innovation would be used as inducements. Generalized competition in the Region tends to make individual carriers more responsive, more efficient, better managed. To the extent that the carriers are well managed, service levels to shippers should be high, as individual carriers would be able to concentrate their flows.

There would be a tendency of one carrier to emulate the innovations of the other. For example, innovations by Railroad Y can make the shipper's competitors from City A more price-competitive in City B by lowering their transportation costs. Railroad X must match or do better than this or it will lose traffic when the shipper begins to ship less because of his declining market share, relocates to maintain that share or goes out of business.

In this case, the shipper's options are changing modes, decentralizing, relocating on the competing railroad, or going out of business. The threat of relocation is particularly potent, because the serving carrier knows that his competitor will encourage that relocation. These are valid options only for the larger and more stable firms; smaller shippers benefit only coincidentally from the innovations made by the carriers.

FIGURE 3

## REMOTE COMPETITION (SHORT HAUL)



Two or more carriers serve the Region and are directly competitive over certain parts of their route structure even though they do not always serve the same city-to-city markets.

Here the shipper has a choice of rail carrier within the Region. Even though physically located on Railroad X, the shipper can use Railroad Y for that portion of the haul from an intermediate junction (J) to destination. Railroad Y could actively compete for this traffic by supplying the shipper with cars in return for routing over its line. Railroad Y could not compete on a price basis, however, as it must establish a through rate with Railroad X. Since Railroad X is trying to retain the traffic, it is unlikely to participate in such a rate.

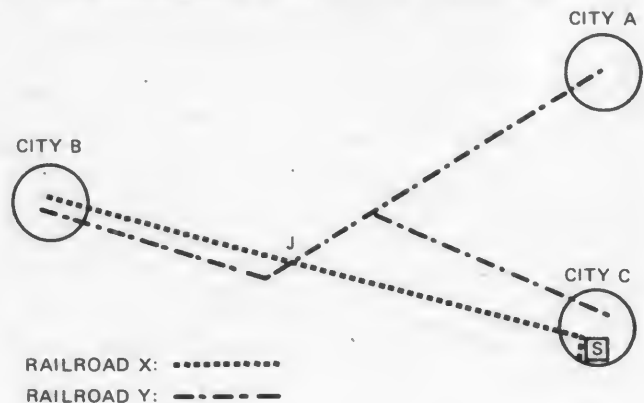
The ability to use Railroad Y for part of the move gives the shipper a direct revenue leverage over Railroad X, as the railroad can be denied revenue generated between the junction and City B. This leverage can be used to encourage Railroad X to innovate in pricing, service and car supply in order to retain the traffic.

There is a potential service cost to the shipper in doing this, as Railroad X still has control of the car over part of the move. Although it is unlikely that Railroad X would slow the service between City C and the junction—because that service involves shipments of other customers—it is possible that Railroad X would delay giving the shipper's car to Railroad Y once it got to the junction; this is the way a railroad can punish one of its shippers for "short-hauling" the railroad. Even if a delay were not deliberate, the introduction of an additional switching operation may itself cause a delay.

In this case the shipper's options include a choice of carrier. The revenue leverage inherent in that choice gives the shipper the ability to pit one carrier against another in his attempt to derive competitive concessions.

FIGURE 4

## LIMITED ACCESS COMPETITION (INTERMODAL)



Two or more carriers serve the Region and generally serve the same city-to-city markets. Within the cities, these carriers serve only those shippers physically located on their respective lines.

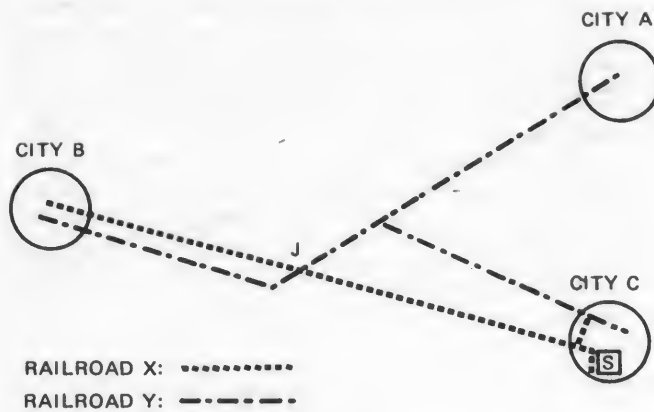
For carload traffic, Limited Access Competition presents the same situation as did remote competition; the shipper's access to Railroad Y is still at the junction. For intermodal (i.e., TOFC, COFC) traffic, however, the shipper now has a local choice of carrier. Depending on the susceptibility of his commodity to intermodal handling, the shipper now has the option of using Railroad X or Railroad Y for the entire haul. This increases revenue leverage, the ability to exert more pressure on carriers in both modes to innovate in pricing, service and car supply.

Shipper leverage is greater under this type of competition than under remote competition, but carrier counter-leverage remains the same. The carrier controls part of the carload move as it did in the previous case, but none of the intermodal move. The shipper may suffer declining levels of service on remaining carload traffic if he diverts too much traffic to intermodal service. Also, there may be an indirect service cost to be paid by all shippers for the privilege of having two (or more) railroads serving the same city. The total traffic flow from City C must be divided among competing carriers, and these lower volumes would mean less frequent dispatching of trains and fewer through trains (i.e., nonstop from City C to City B). Consequently, the overall level of service may decline.

Limited Access Competition facilitates the shipper's option to relocate because he now needs only to relocate across town to gain direct access to Railroad Y for carload traffic. With a local move, the shipper can keep the same labor force, raw material supply and distance to market.

FIGURE 5

OPEN ACCESS COMPETITION  
(RECIPROCAL SWITCHING)



Two or more carriers serve the Region and generally serve the same city-to-city markets. Within certain cities, all shippers have access to either carrier through an arrangement known as open (or reciprocal) switching. Under such an arrangement, the shipper located on Railroad X could specify Railroad Y as the originating railroad. Railroad Y would then deliver an empty car to Railroad X, which would switch it to and from the shipper and deliver the load back to Railroad Y for the line-haul move. Railroad X would perform these services for Railroad Y for a specified charge per car.

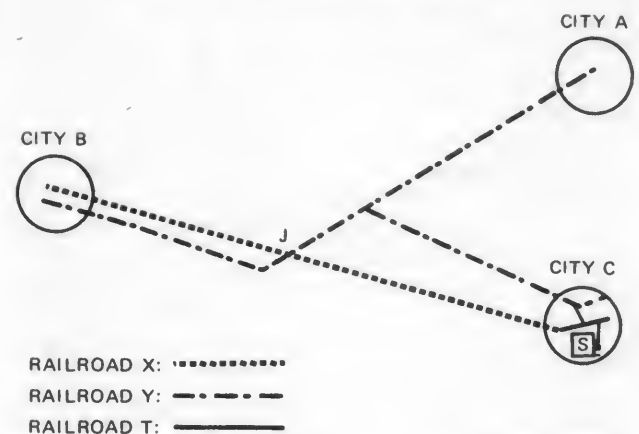
Under Open Access Competition, the shipper has a local choice of competitive carriers. This not only will provide the shipper with increased revenue leverage but also will allow Railroad Y to compete with Railroad X on the basis of rates and service as well as car supply. This increased leverage should improve the response time of the carriers, as the potential effect on revenues is significantly greater than in the cases considered previously.

The shipper may face a reduction in service associated with fragmentation of the traffic flows and potential delays resulting from the introduction of an additional interchange. The serving carriers have an incentive to delay such movements, since they face an almost total loss of revenue from that move. If the two competing railroads are performing a relatively equal amount of switching for each other, the fear of retaliation helps to prevent these semi-intentional delays. But if one carrier is predominant and does not fear retaliation by the other, the switching delays are more likely to occur.

The shipper has the ability to short-haul his serving carrier for the full length of a movement, giving him more leverage over the carrier than would competition of the types described previously.

FIGURE 6

INDEPENDENT ACCESS COMPETITION  
(NEUTRAL TERMINAL COMPANY)



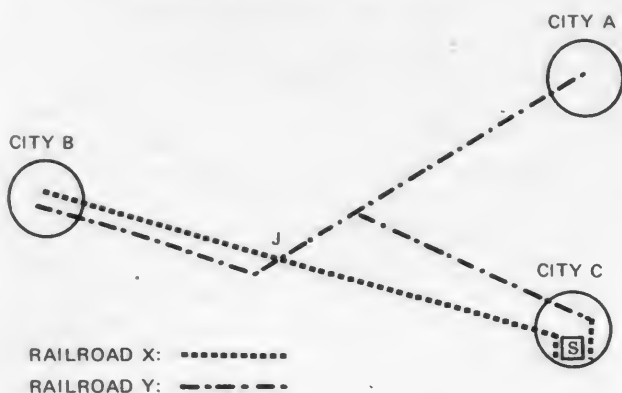
Two or more carriers serve the Region and generally serve the same city-to-city markets. Within certain cities, all the shippers are served by a neutral terminal (or switching) railroad (T) that has access to all the railroads serving that city (X and Y). The shipper(s) physically located on Railroad T could have that railroad switch cars to either Railroad X or Railroad Y. Railroad T would then assess a switching charge against the line-haul railroad which that carrier would absorb as a cost.

The only significant difference between Open Access Competition and Independent Access Competition lies in the neutrality of the terminal railroad (T). Since it makes no difference to Railroad T which line-haul railroad receives a car, the switching of cars should be on an equal basis. The shipper is no longer subject to counter-measures by a competing carrier in the performance of a switching move. Since the shipper's leverage cannot be counter-attacked, the shipper bears much of the responsibility for price, service and equipment innovations.

On the other hand, the shipper no longer has a single-carrier competitive option. He must deal with at least two carriers (the terminal railroad plus at least one line-haul railroad) and subject the traffic to the delays usually encountered in multiple line service.

The shipper has no more leverage than under reciprocal switching, but does enjoy neutrality in getting cars to the line-haul carriers competing for them.

FIGURE 7  
MULTIPLE ACCESS COMPETITION  
(JOINTLY SERVED INDUSTRY)



One shipper complained of the arrogance of a carrier that assumed its traffic to be in bondage by reason of plant locations. This carrier refused to discuss the possibility of a rate adjustment until the shipper had entered into serious negotiations with a motor carrier. A shipper noted that large firms frequently experience the same kinds of problems with railroad service that smaller companies do, particularly where decentralized facilities of major firms include individual plants which account for small volumes of freight traffic. This would seem to imply that location (a factor affecting rail operating costs) is more important than leverage.

The larger and more sophisticated shippers seem to rely on splitting traffic between competing carriers in order to obtain improved railroad performance. To split their traffic, some shippers have elaborate "report card" rating systems. Obviously large shippers are better placed to engage in this practice than are small shippers.

The shippers agreed that traffic splitting was an extensive practice that could work both for and against the shipper and the railroad. Splitting could produce better service and reward the carrier for improved service; it also could make the railroads more responsive to shipper interests. On the other hand, traffic splitting can result in lower volume and thus higher cost to both carriers, which makes each such carrier less efficient.

Traffic splitting can be used to good effect because larger shippers often feel that they know rail costs better than the railroad carriers themselves. Large shippers seem to want railroads to cover costs of all shipments and make a fair return, but they also want favorable rates for volume shipments.

These shippers sought competition among railroads and between other modes because it promotes good performance in service, cost levels, technical and mar-

Two or more carriers serve the Region and generally serve the same city-to-city markets. Within various cities, certain shippers are directly served by more than one carrier. The shipper is physically located on both Railroad X and Railroad Y and has a competitive choice of carrier right at his loading dock.

Multiple Access Competition might provide a little more leverage over carriers than the two previous options. More important, the shipper has two single-carrier routing options, a substantial benefit. Multiple Access Competition provides shippers with the maximum revenue leverage and choice of services among competitive carriers.

There could be a price to pay, however. Since the shipper has fragmented the traffic, each railroad will switch the shipper's plant less often. This could result in a deterioration of the total service level because each railroad would be less interested in what now is less profitable traffic.

keting innovation and management. Rail-rail and intermodal competition was important to companies when deciding on plant location and marketing strategies. The shipper conference concluded, however, that effective competition did not require door-to-door duplication of competing facilities; if a railroad becomes indifferent to service, these shippers contended, that railroad will be punished by systematic short-hauling to other carriers. But once again, it is the large shipper that holds this trump card.

Shippers are fearful of finding themselves with no rail service if they should happen to be on the line of a single rail carrier which fails. Thus, rail-rail competition is sought actively by companies in making plant location decisions or setting marketing strategies and production decisions, because it ensures service continuity as well as a routing option and rate leverage. Users of rail transportation generally presume that rail-rail competition is essential to them, and that the burden of proof should fall on parties advocating lessened competition rather than on those urging retention of competition.

### Intermodal Competition

Intermodal competition serves many of the classic economic values achieved by intramodal (rail-rail) competition. To the extent that rail-rail competition is considered to be inadequate in the Region or to the extent that it might be reduced by consolidation, intermodal competition must be relied upon to pick up the slack.

Intermodal competition establishes an effective ceiling on rail rates and a floor under rail service quality. The marketability of railroad services is sharply constrained by intermodal competition, since no shipper



will pay a higher rate if comparable service is available elsewhere at the same or lower charge. Shippers may be willing to pay more for better service, and trucking companies can provide high quality service at cost competitive with rail over a wide range of commodities and distances. Barge lines transport bulk commodities between points on the inland waterway system at rates substantially lower than railroads can charge. Pipelines have captured nearly all of the market in long-distance transport of petroleum and petroleum products and threaten to take away coal traffic if slurry pipeline technology improves in the future. Mine-mouth power generation already has made inroads into the traditional rail business of coal transport. Great Lakes shipping has lost traffic to other modes, but still carries traffic which might have gone by rail. Table 3 shows the change in shares of the transport market realized by each of the major modes over the last half century.

There are two conflicting viewpoints from which to discuss intermodal competition. First is the broad policy issue of whether intermodal competition is effective in keeping transportation rates close to costs and ensuring good service to shippers in the absence of sufficient traffic density to warrant rail-rail competition. The second viewpoint emphasizes the marketing and financial outlook for railroad traffic and revenues; such prospects are highly dependent on the effectiveness of competition from other modes of transport.

Matters relating to intermodal competition are discussed in several other places in this report. Chapter 1 cites the rise of alternate modes and government assistance to them as one of the causes of the decline of rail-

roads; Appendix H provides estimates of the amount of such public assistance to other modes. Chapter 1 also presents an overview of the prospects for the industry. Chapter 7 introduces the possibility of substituted service by truck as a means of insuring transport service to shippers in lieu of light-density rail service. This theme is picked up in Chapter 10, "Availability of Service by Alternate Modes," where the costs of substituting trucks for rail service by the bankrupt carriers throughout the Region are estimated. Chapter 10 also provides further description of the transport capabilities of other modes. Chapter 9, "Marketing Rail Freight Service," describes the difficulty of generating rail freight revenues in view of the competition of other modes, and offers analysis of the prospects for improved service using more than one mode; Appendix F describes coordinated intermodal service more extensively. Chapter 9 and Chapter 14 incorporate traffic and revenue forecasts prepared for USRA by Temple, Barker and Sloane, Inc., as revised by the Association's staff. These estimates include consideration of expected changes in the freight modal mix.

#### Effects of Intermodal Competition on Railroad Rate Levels

Intermodal competition tends to result in lower freight rates. One piece of evidence is that rail average revenues per ton-mile (adjusted for inflation) are declining, yet the railroads are not winning but losing percentage shares of total traffic to other modes.

Motor carriers in particular have taken the more attractive traffic from the railroads, leaving the railroads with the so-called "railbound" commodities such as coal, grain, fertilizer and other bulk commodities.

TABLE 3  
MODAL SHARE OF INTERCITY FREIGHT TRAFFIC IN THE UNITED STATES  
IN BILLIONS OF NET TON-MILES

YEAR	RAILROADS		MOTOR CARRIER*		INLAND WATERWAY SYSTEM		GREAT LAKES		PIPELINES		AIR CARGO		TOTAL	REAL GNP (1958 \$) IN BILLIONS
	TON MILES	% OF TOTAL	TON MILES	% OF TOTAL	TON MILES	% OF TOTAL	TON MILES	% OF TOTAL	TON MILES	% OF TOTAL	TON MILES	% OF TOTAL		
1929	454.8	74.9	19.7	3.3	8.7	1.4	97.3	16.0	26.9	4.4	0.003	-	607.4	203.6
1939	338.8	62.4	52.8	9.7	19.9	3.7	76.3	14.0	55.6	10.2	0.012	-	543.5	209.4
1942	645.4	69.5	59.9	6.5	26.4	2.8	122.2	13.1	75.1	8.1	0.034	-	929.0	297.8
1947	664.5	65.3	102.1	10.0	34.5	3.4	112.2	11.0	105.2	10.3	0.16	0.01	1,018.7	309.9
1952	623.4	54.5	194.6	17.0	63.8	5.6	104.5	9.1	157.5	13.8	0.41	0.03	1,144.3	395.1
1957	626.2	46.9	254.2	19.0	114.6	8.6	117.3	8.8	222.7	16.7	.57	0.05	1,335.6	452.5
1962	600	43.8	309	22.5	133	9.7	90	6.6	238	17.3	1.3	.09	1,371	529.8
1967	731.2	41.4	388.5	22.0	174.0	9.9	107.0	6.1	361.0	20.5	2.59	0.15	1,765	675.2
1970	771.0	39.8	412.0	21.3	204	10.6	114	5.9	431.0	22.3	3.3	0.17	1,935.9	722.5
1971	746	38.2	445	22.7	210	10.7	105	5.4	448	22.9	3.5	0.18	1,954	746.3
1972	784.3	37.8	470.0	22.6	229.8	11.1	108.9	5.2	480.0	23.1	3.7	0.18	2,076.7	792.7
1973 (P)	860.0	38.7	510.0	23.0	237.0	10.7	114.0	5.1	495.0	22.3	4.2	0.2	2,220.2	839.2

\* Includes both for-hire and private carriers.  
(P) - preliminary figures

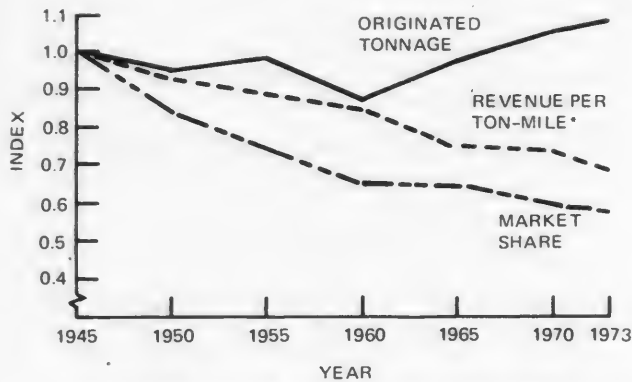
SOURCES: American Trucking Association, Inc., *American Trucking Trends - 1973*  
American Waterway Operators, Inc., *Inland Waterborne Commerce Statistics*  
Association of American Railroads, *Yearbook of Railroad Facts, 1974* edition  
and *Railroad Transportation, A Statistical Record 1921-1959*, Washington, December, 1960  
Interstate Commerce Commission, *Intercity Ton-Miles 1939-1959*, Washington, April 1961

Transportation Association of America, *Transportation Facts and Trends*, Tenth Edition, Washington, July 1973

Rails have lowered rates on even these commodities in an effort to prevent further erosion. As a result, total tonnage originated has been at a fairly constant level over the post-war period, but constant dollar average revenue per ton-mile has declined. These relationships are shown in Figure 8. To re-emphasize, declining average revenue per ton-mile is due both to changes in the mix of rail traffic and to decreases in rates on many bulk commodities kept by rail.<sup>4</sup>

FIGURE 8

U. S. CLASS I RAIL CARRIERS  
TRENDS OF ORIGINATED TONNAGE,  
MARKET SHARE AND REVENUE PER TON-MILE  
IN CONSTANT DOLLARS\*  
1945-1973



\*DEFLATED WITH THE 1967 WHOLESALE PRICE INDEX

SOURCE: AAR, FACTS AND FIGURES; TAA  
TRANSPORTATION FACTS AND TRENDS.

Economist Ann Friedlaender offers another piece of evidence on the efficacy of intermodal competition. In *The Dilemma of Freight Transport Regulation*,<sup>5</sup> Friedlaender gives examples from congressional testimony in which rail rates were 55 percent lower in the presence of water competition for numerous commodity classes than would be experienced in the absence of competition. These data are more than 10 years old, but the point remains valid. One extreme example involved aluminum billets from Riverdale, Iowa to points in Arkansas (rail only) and Texas (rail and water). Although the Texas destination was 94 percent farther than the Arkansas destination, the water-competitive rail rate was only 40 percent as large as the noncompetitive destination rate.

<sup>4</sup> Between 1953 and 1966 rail average revenue per ton mile decreased in absolute terms (current dollars). Since 1966, the rate level has increased gradually in current dollars but is hardly changed in constant dollars. For example, the 1973 average was 29 percent above the level prevailing in 1966. Even more striking, the 1973 average was only 12 percent above the 1959 level.

<sup>5</sup> Ann F. Friedlaender, *The Dilemma of Freight Transport Regulation*, (The Brookings Institution, 1969).

More recent evidence of the influence of competition in holding down the level of rates was made available to a USRA consultant by the U.S. Army Corps of Engineers, which is conducting an analysis of the extent to which waterway operations in the Southwest have served to hold down rail rate levels. Table 4 shows rail rates for selected iron and steel commodities in 1972 before and after the opening of waterway service competitive with railroads. Average reductions in the range of 15 to 20 percent were the rule.

#### Cost Advantages: Different Modes and Markets

Railroads function in the middle of a spectrum of transport costs. The lower end of the spectrum is inhabited by pipelines and waterway carriers. These modes are capable of accommodating shippers with cost structures lower than the rails and with different, generally slower, service characteristics due to limited route structure and commodity capability. At the higher end of the spectrum is the motor carrier: trucks generally charge rates higher than rail rates but offer faster point-to-point speeds, smaller loadings, some improvement in shipment loss and damage and route flexibility.

Alexander Morton has shown that major portions of present rail traffic are susceptible to diversion by motor carriers. Trucks are especially strong competitors for manufactures. Morton concluded that competition between the modes exists across a broad front of traffic. Either mode can divert substantial amounts of manufacturing traffic from the other.<sup>6</sup>

<sup>6</sup> Alexander L. Morton, "Intermodal Competition for the Intercity Transport of Manufactures" in *Land Economics*, Vol. XLVIII, No. 4 (Nov., 1972).

#### FULL DISTRIBUTION COSTS

Although rail transportation offers cost advantages for intermediate and long hauls, it has fallen short in service and reliability. Shippers have become more sophisticated with respect to understanding total production and distribution costs and as a result are willing to pay higher transport costs of motor carriers in order to achieve overall inventory or final distribution economies. In addition to these internal production cost relationships are the broader effects of changing raw material sources, marketing patterns and consumer demand. Many shippers already have designed their distribution systems so that higher-value, time-sensitive goods will move by truck, while a base volume of lower-value goods continues to move by rail. Accordingly, any programs or projects which could improve rail service and reliability will make rail service increasingly attractive to shippers.

TABLE 4.—Selected railroad rate reductions resulting from new waterway competition

Commodity	Origin-destination	Rate in cents/hundredweight		Reduction in percent
		Before competition	After competition	
Iron rods.....	Birmingham, Ala.-Fort Smith, Ark.....	90	72	20.0
Steel bars.....	Minnequa, Colo.-Tulsa, Okla.....	95	76	20.0
Steel plate.....	Elk Grove Village, Ill.-Jacksonville, Ark.....	97	77	20.6
Steel sheets.....	Allenport, Pa.-Tulsa, Okla.....	143	121	15.4
Rough iron castings.....	Wheeling, W. Va.-Tulsa, Okla.....	139	115	17.3
Coiled sheet steel.....	Chicago, Ill.-Fort Smith, Ark.....	105	85	19.0
Steel plate.....	Wheeling, W. Va.-Little Rock, Ark.....	125	108	17.6
Hot rolled sheets.....	Youngstown, Ohio-Tulsa, Okla.....	141	118	16.3
Coiled sheet steel.....	Pittsburgh, Pa.-Tulsa, Okla.....	143	121	15.4
Steel sheets.....	Cleveland, Ohio-Tulsa, Okla.....	133	121	17.3
Coiled sheet steel.....	Vicksburg, Miss.-Tulsa, Okla.....	82	67	18.3
Steel shapes, unfinished.....	Lone Star, Tex.-North Little Rock, Ark.....	48	40	16.7
Steel sheets.....	Shreveport, La.-Little Rock, Ark.....	46	37	19.6
Coiled sheet steel.....	Dallas, Tex.-Fort Smith, Ark.....	57	45	21.1
Steel plate.....	New Orleans, La.-Fort Smith, Ark.....	91	74	18.7
Steel beams.....	Birmingham, Ala.-Little Rock, Ark.....	67	60	10.4
Steel beams.....	Birmingham, Ala.-Fort Smith, Ark.....	90	76	15.6
Steel angles.....	Minnequa, Colo.-Muskogee, Okla.....	100	83	17.0
Steel beams.....	Kansas City, Mo.-Fort Smith, Ark.....	58	50	13.8
Steel plate.....	Crescentville, Pa.-Tulsa, Okla.....	181	152	16.0
Steel rods.....	Tulsa, Okla.-Chicago, Ill.....	105	101	3.8
Coiled steel sheet.....	Milwaukee, Wis.-Little Rock, Ark.....	105	89	15.2
Coiled steel sheet.....	Pittsburgh, Pa.-Fort Smith, Ark.....	141	121	14.2
Steel bars.....	Atlanta, Ga.-Tulsa, Okla.....	123	103	16.3
Steel rebar.....	Sand Springs, Okla.-New Orleans, La.....	68	61	10.3
Steel shapes.....	Chicago, Ill.-Tulsa, Okla.....	105	70	66.7

NOTE.—Selected commodities are a representative sample of many railroad commodities susceptible to intermodal competition from barge lines.

Source: Sample made available to USRA consultant Slat, Helleison & Eichner in worksheet form by U.S. Army, Corps of Engineers, Southwestern Division, Dallas.

Morton's study found motor common carrier rates averaged only 18 percent more than rail rates on shipments of manufactures of equal weight and length of haul; such shipments accounted for 30-35 percent of highway ton-miles. The study concluded that about 40 percent of manufacturing tonnage is subject to effective intermodal competition between regulated motor carriers and railroads, and that is a lower bound.

A study by the Association of American Railroads (AAR) compared truck costs with a sample of rail rates for certain commodity groups. On canned goods moving between 1,100 and 1,500 miles, the rail rates were 2.6 to 2.7 cents per ton-mile compared to a private truck cost of 2.4 cents per ton-mile with a 25 percent empty backhaul.<sup>7</sup> On steel moving distances of 900 to 1,050 miles, rail rates were 2.8 to 3.1 cents per ton-mile. This compares with the cost of an "owner/operator" truck of 2.3 cents with a 25 percent empty backhaul and 3.2 cents with a 75 percent empty backhaul. In all cases, the motor carrier costs would have been still lower if they had been computed at the 80,000 pound minimum weight limit recently authorized by Congress.

#### Competitive Advantages and Alternate Modes

This section describes various characteristics of the three modes most competitive with rail: trucking, water

<sup>7</sup> Association of American Railroads, *Selected Staff Studies Group Memoranda*. Rail rates can be compared with private truck costs because shippers large enough to operate private truck fleets will experience this level of transport expense, whether provided internally by truck or purchased from rail carriers.

transport and pipelines. Further discussion of these characteristics appears in Chapter 10. Table 5 displays modal market shares for 14 key commodities. This list excludes pipelines, which specialize and predominate in transport of petroleum and natural gas products.

#### Trucking

*Operating Characteristics.*—Motor carriers can be classified on many bases, among them the three operating characteristics—size, service area and service type. Their size can range from the individual owner/operator to the large well-known interstate common carriers. Their service area can range from a single small municipality to all of the United States. The type of service can range from special commodity haulers, such as cement or steel carriers, to common carriers of general commodities.

*Regulation.*—The motor carrier industry can be divided further on the basis of economic regulation—exempt, contract and common carriage. Carriage exempt from ICC regulation accounts for up to 60 percent of the ton-miles moving in interstate commerce. Exempt carriers are not constrained by rate or other economic regulation when carrying raw agricultural commodities, livestock, fish, newspapers, goods moving to and from agricultural cooperatives and certain other miscellaneous cargoes, or when operating within a single locality.

Private and contract carriage also do not fall under ICC regulation. Private carriage, another category of



TABLE 5.—*Domestic intercity freight tonnage*  
1970 Modal market share (percent)

	Railroads	Private and for-hire trucking	Water
Agriculture.....	34.8	56.6	8.3
Iron ore.....	52.6	7.3	39.9
Coal.....	78.0	9.1	12.9
Food and drugs.....	33.4	62.8	3.6
Textiles.....	6.7	92.4	.1
Lumber.....	46.9	18.5	34.5
Paper products.....	56.6	39.1	4.1
Chemicals.....	43.1	44.0	12.7
Stone, clay, glass.....	36.0	62.3	1.6
Iron and steel.....	36.6	53.1	10.1
Nonferrous metals.....	45.2	49.3	5.3
Fabricated metals products.....	22.9	75.8	.8
Motor vehicles.....	32.5	65.6	1.6
Scrap.....	82.6	5.5	12.0

Source: *Transportation Projections 1970-80*, U.S. Department of Transportation, July 1971.

exempt motor carriage, involves the operation of a truck fleet by firms for the movement of their own raw materials and products. Contract carriers operate under contract to one or more persons or firms to supply the exclusive use of vehicles or services to meet the purchaser's particular needs. They fulfill many of the same functions and often replace private carriage. In 1970 almost half of all intercity freight ton-miles moved by non-regulated for-hire carriers or by private carriers transporting their own goods. Of a total U.S. truck fleet of 21 million vehicles in 1972, the combination tractor-trailer units were the most competitive with railroads. There are about one million of these units, approximately 4.7 percent of all trucks, and more than half are in private fleets.

Common carriers engaged in interstate or foreign commerce are required to serve all shippers, under rules and regulations set by the Interstate Commerce Commission. The ICC grants operating rights to common carriers which may specify the routes, terminals and commodities allowed to each carrier. The regulated segment of the industry handled less than a third of the ton-miles of intercity truck transport in 1970.

Exempt and irregular-route common contract carriers typically haul full truckload traffic while regular-route common carriers usually handle less than truckload (LTL) traffic as well. The nonregulated and private carriers provide the strongest competition for the railroads.

There are approximately 25,000 owner-operators of trucks which haul both exempt and regulated commodities. Nearly half these operators achieve 125,000 miles per power unit per year, compared with regulated carriers which average approximately 65,000 miles per

year. Owner-operators maintaining no terminals, carrying no insurance and avoiding other services, have costs generally below those of large motor carrier companies.

*Use of Public Highways.*—New and improved highways provide shorter, faster routes between significant market areas, contributing to better equipment use and lower direct operating costs. Urban feeder highways are being improved along with the Interstate Highway program. These urban feeder changes will hold down truckers' pick up and delivery costs even more. In addition, dedicated rights of way for trucks and buses are a distinct possibility in the future.

The cost to the rail industry for the maintenance of its right of way and the interest charges it carries to own and upgrade that right of way have more than doubled over the last two decades and may double again within the next decade. If rail traffic volume cannot be increased sharply, rail unit costs will continue to rise rapidly, and the rail industry will become even less competitive for traffic which can be accommodated by trucks.

*Technical Improvements.*—The rail industry will be affected competitively by other changes in motor carrier efficiency. Technical improvements in truck engine performance, streamlining and the use of radial tires will result in lower motor carrier operating costs. But most important, potential legal changes which would permit higher operating weights would reduce truck costs and weaken the competitive position of the rail industry wherever both modes can handle the same products.

#### *Water Carriers*

The second major mode which competes with the railways is the water carrier, which moves approximately 80 percent of its tonnage through mid-America and along the Gulf intercoastal system. Federal funds have been spent for the direct benefit of the inland waterway system, including several billion dollars since the turn of the century. Locks and dams were built, sharp river bends minimized and channels dredged. In addition, major improvements, expected to cost several billion dollars, are currently under way within the Region.

Technological improvements such as improved hull designs, more powerful towboats and better navigational aids also are taking place. Operators are experimenting with 30 barge tows on the upper Mississippi system. On the Great Lakes system, bigger ships are being introduced, and the navigation season is being extended. There are reasonable prospects that year-round operation will be possible in the future.

Barge lines and railroads compete primarily on the basis of price. Given expected improvements in lock size and channel depth as a result of direct federal expendi-



tures and the expected growth of tow sizes, water carrier costs may be reduced by up to 25 percent.<sup>8</sup> Due in part to this form of federal support, it is significantly less costly to ship by water if shipments are in very large volumes and between points on or very close to the waterways.

Diversion of freight from rail to water is a response to changes in rates, and the potential for greater diversion has required lower water-competitive rates to retain certain rail movements. The financial condition of rail carriers in the Region, therefore, is affected by the generally low level of their own water-competitive rates and further competitive pressures seem certain.

Furthermore, declining barge transportation costs induce industry to relocate along the waterways and away from railroads. This has been particularly true of large manufacturing plants such as chemical and sugar refineries which are bulk shippers well served by water carriers.

### *Pipelines*

The pipeline mode, ideally suited to moving large volumes of liquid or gas, has exhibited rapid growth. Today there are 220,000 miles of oil pipelines and 250,000 miles of gas pipelines in the United States.

Although there are no slurry pipelines at present within the Region, interest has been shown in transporting solids, particularly coal, by this mode. Large deposits of coal, combined with adequate water supply suggests that this mode may increase in importance as a competitive force. Pipeline advantages are minimal environmental impact, reduced energy requirements, low unit operating expenses and high reliability.

### **Regulation**

Many economists and others believe ICC regulation has inhibited the railroads from adjusting their rates to reflect cost or service advantages and thus hindered their ability to compete effectively with the other modes of transportation. Recent proposed legislation would allow railroads to lower their rates so long as variable costs are covered. In years past, the ICC has at times protected water and motor carriers through "umbrella" rate making and has refused to allow railroads to take advantage of lower variable unit costs by reducing rates, even when long term variable costs indicated that rail was the more efficient mode.

As mentioned above, common carriers operate under a mandate to maintain proper standards of service (price, quality, frequency, etc.) while the franchises (i.e., restrictions on further entry) are supposed to help assure adequate profits and industry stability. Regulation, affecting as it does price and service competition between railroads and other modes of transportation,

<sup>8</sup> *Freight Transportation: Future Modal Competitiveness*, a study performed for USRA by Reebie Associates.

often is thought to thwart realization of the broad goals of common carriage—thus continuing misallocation of transport resources.

The ICC's early disinclination to approve railroad rate cutting efforts aimed at winning traffic back from the trucks has contributed to the present financial plight of the railroads. It then was believed that the trucks probably would match the railroads' rate reductions and continue to compete with the rails at the reduced rate levels by cutting back services or forcing rate increases to smaller shippers and areas of lesser traffic volume. If the trucks successfully lowered their rates to meet rail rate reductions, the rails would have lost revenue on this competitive traffic, and might try to compensate by increasing rates on routes not subject to competition. "As a result, the Commission often found such proposed rate changes, either truck or rail, to be destructively competitive and in violation of national policy."<sup>9</sup>

Common carriage has declined during the post-war years, led by the decline in railroads—the principal totally regulated surface mode.<sup>10</sup> At the same time, the combination of advantages inherent in trucking and frequently restrictive conditions on motor common carriers (routes, commodities and backhaul operations) has contributed to the rapid growth of private, contract and exempt motor carriage markets. As a result, the regulated motor carrier share of the trucking market has declined relative to private and contract truckers and motor carriage of exempt commodities.

Moreover, regulation has tended to aggravate the misallocation of transportation resources. Exempt and private truckers are free from economic regulation, but they are not allowed to carry payloads of regulated commodities when returning from their destinations. Common carriers may be hampered by restrictions limiting what they can handle and similarly may experience empty backhauls. These factors have increased highway congestion and energy use.

### **Conclusion**

There is a delicate balance between the perceived cost of transport service provided by rail and by competitive modes. This balance shifts with the type of commodities transported, length of haul and the climate created by public policy. Intermodal competition is an adequate substitute for rail-rail competition in many markets. As transport technologies and public policies change, the number and character of markets competitive between rail carriers and other modes also changes. In general the trucking mode is becoming competitive

<sup>9</sup> Robert A. Nelson and William R. Greiner, "The Relevance of the Common Carrier Under Modern Economic Conditions," in *Transportation Economics* (National Bureau of Economic Research, 1965), p. 369.

<sup>10</sup> The *ASTRO Report* noted that "an estimated 75 percent of today's rail traffic could move without such regulation on at least one other mode."

with rail for more and more types of shipments. If this trend continues, there will be less need for rail-rail competition as a guarantor against monopolistic abuses because trucking alternatives will be readily available. Increasing intermodal competition also hurts railroads' financial condition, leaving the rail industry less able to suggest multiple carrier service between any two market areas, at the same time that the need for rail-rail competition has diminished.

Intermodal competition may not be capable of producing some of the benefits associated with rail-rail competition, as discussed in the first section of this chapter. Those benefits probably can be derived from indirect rail-rail competition, however, as well as from direct competition. If that is the case, as it probably is, the steadily advancing efficacy of intermodal competition will reduce the benefits of having multiple rail-

roads exist in the same markets. These developments will strengthen the tentative conclusion that indirect rail-rail competition fulfills the Act's competitive mandate in most markets.

Much of the high rated traffic, the "cream" that the trucks and the rails have squabbled about, has been skimmed from the common carrier system altogether. The ICC must attempt to balance the competing interests of various regulated modes while recognizing the increasing competitive pressure from unregulated carriage, an effort which offers no hope for an easy solution. If such a balance cannot be achieved, with respect to both market access and rate levels, the ultimate responsibility for supporting the common carrier system will shift from the private consumer to the public taxpayer, and control of that system will shift from private enterprise to government.

# 9

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## Marketing Rail Freight Service

*Over the last 50 years, the competitive posture of the railroad industry has been declining, particularly in the Northeast and Midwest Region. ConRail, as a future participant in this market, must be able to reclaim lost revenues if it hopes to achieve financial self-sufficiency. The long-term growth prospects for the rail industry look moderately favorable. It is essential, however, for ConRail to build on its strengths, develop new markets and prepare to compete with alternative modes.*

*This chapter analyzes the existing and projected transportation market for the Region to be served by ConRail and details opportunities for service improvement and revenue expansion.*

*The Association believes significant gains can be made in both the long and short term by adopting an aggressive and reasoned rail marketing strategy. Such a program is crucial to ConRail's future. This chapter discusses those strategies, including particular reference to improved intermodal coordination of services—a topic presented in detail in Appendix F.*

The goal of all private corporations is to earn a profit sufficient to replace the assets consumed in production and expand the business in response to new market demands. Revenue generation, of course, is a key component of profitability. The Association, after a thorough review of the Northeast transportation market, has concluded that significant opportunities are available for improving the freight revenue of the six carriers who are potential members of ConRail.<sup>1</sup> Freight revenue of \$2,353 million in 1985 is forecasted for these six roads. This is an increase of \$454 million or 24 percent over 1973. During this same period tonnage is expected to increase from 352.2 to 416.79 million tons, an increase of 18 percent. This results in an annual growth rate of 1.41 percent.

The revenue growth projected for these carriers is not constant between 1973 and 1985. Revenue in 1975 and 1976 is expected to be 4.3 percent and 1.8 percent lower than 1973 because of the present downturn in the economy and the expected slow recovery.

The long-term growth predicted by the Association reflects a belief that the upward trend in rail revenue and tonnage which began in 1972 can be maintained through the 1980's. Between 1955 and 1971 Eastern District rail-originated tonnage with some exceptions, evidenced a fairly steady decline. In 1972, this trend was reversed and tonnage began a slow upward climb. Excepting major fluctuations in the economy, the Association believes this upward trend will continue in the future for several reasons:

- Normal economic growth of the Region.
- Aggressive marketing programs.
- Improved service.
- Projected price adjustment.
- Diversion of traffic to more profitable routes.

The longterm economic growth of the Region, particularly for rail-oriented commodities, is encouraging. Because of the current energy shortage and the proposed relaxation of air pollution regulations, national production of coal is predicted to increase 33.1 percent between 1973 and 1980 and 31 percent between 1980 and 1985 whereas over the previous eight years coal production only increased 7.4 percent. Coal accounts for over 50 percent of the expected growth in ConRail tonnage.

The tonnage increase in commodities other than coal will have a compound annual growth rate of .99 percent. This compares with an annual growth rate of approximately .85 percent for the previous five years. The major components of the increase are primary metals, automobiles, chemicals, paper products, food and TOFC traffic.

<sup>1</sup>The Erie-Lackawanna has not been included in this forecast. All revenue figures are in constant 1973 dollars. Tonnage figures contain some "double counts" of traffic moving between the six railroads.

The Association has made a thorough review of the marketing programs of the six carriers. This review indicates that vigorous application of the present rail marketing strategies can sustain the projected traffic growth. These strategies include the increased use of unit and mini-trains, the expansion of bulk distribution facilities such as Penn Central's "Flexi-flo" terminals and the continued development of piggyback traffic. Application of these strategies along with the service improvements made possible by the rehabilitation program discussed in Chapter 6 will be significant factors in traffic development.

Revenue growth will also be improved through the \$64.4 million in short-term rate increases that the Association has recommended. These increases are necessary to bring non-compensatory traffic up to a "break-even" basis. For the longer term, a thorough review of the rail price system to put it on a more realistic cost and competitive foundation will undoubtedly improve future profitability.

Additional revenue will also be generated through the diversion of traffic to the most profitable long-haul routes. For the Three Carrier System structure recommended in the report, it is estimated that ConRail will gain an additional \$32.8 million annually from diversion of traffic to the higher revenue routes.

In sum, the forecasted increases in revenue and tonnage can be achieved if the major strengths of the railroad are fully exploited, primarily its ability to provide low cost transportation over intermediate and long distances. The railroads have been particularly successful in exploiting this strength for the movement of bulk materials, such as coal, grain, iron ore, sand and gravel, pulp and paper products and lumber. The fact that railroads have over 56 percent of the market for motor vehicles and parts indicates that they can also compete effectively for time-sensitive commodities when they move in large volumes. The ConRail carriers must compete vigorously only in those markets where they have a price-service advantage.

### The Regional Transportation Market

The Midwest and Northeast Region occupies little more than one-seventh of the continental United States but accounted for over half of U.S. economic activity in 1970. This is due to the Region's high degree of specialization, manufacturing and the availability of a full range of services. In support of this activity, about 4.95 billion tons of freight movements originated in the Region, representing 44 percent of total domestic freight in the United States. Freight tonnage terminating in the Region is slightly higher because of the character of the Region's primary economic activity—transforming raw materials and farm or mining products into processed goods to be sent throughout the nation and the world.



Table 1 summarizes 1973 traffic data for the railroads which are candidates for reorganization under the Regional Rail Reorganization Act of 1973. (The Erie Lackawanna has not been included.) These carriers handled 6.9 million cars with over 350 million tons in 1973. This traffic produced freight revenues of approximately \$2-billion. Coal is the dominant commodity, accounting for 27 percent of the tonnage and 12 percent of the revenue. The other major commodities are transportation equipment (12.8 percent of revenue), food (10.5 percent), primary metal products (9.1 percent) and chemicals (8.0 percent).

The *Penn Central Transportation Company* is by far the largest potential member of the ConRail System, accounting for more than 90 percent of the revenue and tonnage. The Penn Central serves over 100,000 separate customers. However, the largest 125 firms furnish approximately 60 percent of its freight revenue. During 1973, the Penn Central had 294 customer accounts with gross freight revenues exceeding \$1 million annually. Thus, although the Penn Central serves an extremely large number of industries, a very small percentage of these firms generate the majority of Penn Central's revenue.

Penn Central is one of the largest coal-originating rail carriers in the United States. Coal accounts for approximately 29 percent of PC tonnage and 12 percent of its revenue. In 1973, 38 electric utility plants depended on delivery by Penn Central for a portion of their coal supply and 21 of these plants were served solely by the Penn Central. The next two largest commodities in its traffic base are metals (including scrap), which are 14 percent of both tonnage and revenues, and ores, which are nine percent of tonnage and four percent of revenue. Automobiles and auto parts are also very significant in the Penn Central traffic mix since they constitute 17 percent of revenues. Penn Central serves 20 of the 51 automobile assembly plants in the United States.

Only one-third of Penn Central's traffic originates and terminates on-line; almost two-thirds is interline with 35 percent originating and 23 percent terminating on another carrier. Ten percent both originates and terminates on other carriers (bridge traffic).

The *Reading Company* serves a much smaller territory than the Penn Central. Approximately 65 percent of its traffic is received from connections. Reading's on-line traffic base is derived from the steel industry. Two steel mills provided 22 percent of carloads handled and

TABLE 1.—1973 annual commodity statistics of the potential ConRail members

Commodity	STCC	Carloads	Percent	Tonnage	Percent	Revenue	Percent
Farm products.....	01	223,005	3.2	12,495,587	3.6	\$85,692,318	4.3
Forest products.....	08	5,563	~0	213,936	.06	2,297,418	.11
Fresh fish and other marine products.....	09	716	~0	26,342	.01	133,858	.01
Metallic ores.....	10	413,409	5.9	33,851,888	9.6	91,318,351	4.6
Coal.....	11	1,208,161	17.4	95,567,743	27.1	243,802,023	12.2
Crude petroleum, natural gas, and gasoline.....	13	320	~0	23,772	.01	121,042	.01
Nonmetallic minerals.....	14	272,485	3.9	20,771,810	5.9	56,662,937	2.8
Ordinance and accessories.....	19	4,392	~0	213,467	.06	3,096,948	.15
Food.....	20	627,794	9.1	25,621,499	7.3	210,567,943	10.5
Tobacco products.....	21	6,196	~0	181,359	.05	2,408,787	.12
Basic textiles.....	22	24,809	.3	409,024	.12	5,756,686	.29
Finished textile products.....	23	9,432	.1	219,195	.06	2,720,033	.14
Lumber and wood (except furniture).....	24	231,849	3.3	9,173,336	2.6	66,530,588	3.3
Furniture and fixtures.....	25	94,569	1.4	807,716	.23	16,528,301	.83
Pulp, paper.....	26	538,714	7.8	21,092,395	6.0	66,418,976	3.3
Printed matter.....	27	5,596	2.0	158,551	.05	2,252,674	.11
Chemicals.....	28	367,115	5.3	22,408,926	6.4	159,251,831	8.0
Petro and coal products.....	29	244,421	3.5	12,579,506	3.6	66,418,976	3.3
Rubber and miscellaneous plastics products.....	30	97,340	1.4	1,578,145	.45	24,631,555	1.2
Leather.....	31	1,470	2.0	22,823	.01	343,382	.02
Stone, clay, glass.....	32	313,245	4.5	16,946,184	4.8	81,040,259	4.1
Primary metal products.....	33	437,347	6.3	28,641,640	8.1	182,746,087	9.1
Fabricated metal (excluding machinery, transportation).....	34	131,870	1.9	4,717,380	1.3	38,710,005	2.0
Machinery (excluding electrical).....	35	46,590	0.7	1,042,433	.3	19,092,622	.95
Electrical machinery.....	36	115,800	1.7	1,698,595	.48	39,018,634	2.0
Transportation equipment.....	37	613,062	8.8	14,243,734	4.1	255,491,544	12.8
Instruments, watches, clocks.....	38	1,987	2.0	35,387	.01	792,206	.04
Miscellaneous products of manufacturing.....	39	24,249	0.4	320,074	.09	7,248,518	.36
Waste and scrap materials.....	40	342,342	4.9	17,521,807	5.0	83,001,950	4.2
Miscellaneous freight shipments.....	41	14,878	0.2	248,910	.07	3,723,690	.19
Empty containers.....	42	17,508	0.2	267,732	.08	3,298,028	.16
Freight forwarder traffic.....	44	81,959	1.2	1,244,422	.35	24,569,639	1.2
Shipper association traffic.....	45	139,952	2.0	2,347,973	.67	35,214,248	1.8
Miscellaneous mixed shipments.....	46	269,940	3.9	5,377,768	1.5	62,450,195	3.1
Small packaged freight shipments.....	47			32,455	.01	848,200	.04
Total.....		6,928,085	100.0	352,109,514	100.0	1,999,368,441	100.0

Source: 1973 Annual Commodity Statistics furnished the ICC by the PC, RDG, LV, CNJ and AA. The L&HR is not included because it is a Class II carrier and is not required to file this report with the ICC.

three of the company's top 10 customers are steel producers. In addition to steel, Reading's principal commodities are coal, ore and chemicals. Together, these commodities represent 60 percent of tonnage and 50 percent of total revenue.

The *Lehigh Valley* is a longer-haul mainline carrier connecting two major markets—metropolitan New York/New Jersey and the Buffalo/Niagara Falls area. Seventy-five percent of the LV's traffic is interline. Its major on-line sources include anthracite coal mines, limestone quarries, steel mills, cement producers, some food plants and one large volume paper manufacturer. In tonnage, the primary commodities are coal, ore, metals, paper and food. Combined, they constitute 60 percent of total tonnage and 55 percent of total revenue.

The *Central Railroad of New Jersey* is essentially a terminal carrier with a traffic base that is highly dependent upon its rail and water connections. The most important traffic-generating sources are sand from southern New Jersey, used for both construction and industrial purposes, and rock from northern New Jersey. Its principal assets are the large population centers it serves, the major port facility located at Port Newark, and the highly developed chemical industry located in north central New Jersey. Major commodities transported by this carrier are sand, gravel and chemicals which combined account for 40 percent of its revenue.

### Freight Revenue Forecast

A revenue and tonnage forecast is an essential element in railroad planning and budgeting. It is also the basis upon which profitable operating and marketing strategies are designed. Any forecast is also, of course, the best estimate at a particular time of what will happen in the future. At the time this forecast was prepared the economy was undergoing constant and dramatic change. Recently automobile and steel production have fallen sharply and housing starts are below normal. The

energy crisis and inflation continue to be problems and the public policy towards these areas is not yet clear. Because of these factors, the forecast discussed below should be viewed as preliminary. It will be modified as changes in the economy become more evident and public policy becomes more clearly defined.

Tables 2 and 3 contain the revenue and tonnage forecast for the six ConRail carriers for 1976 to 1985. The revenue is shown in constant 1973 dollars. The most important conclusions of this forecast are:

- Freight tonnage is expected to increase from 352.2 million tons in 1973 to 416.8 million tons in 1985, an increase of 18 percent. The compound annual growth rate is 1.41 percent.
- Coal tonnage accounts for over 50 percent of the growth.
- Commodities other than coal will have a compound annual growth rate of .99 percent. This compares with an annual growth rate of .85 percent for the previous five years.
- Freight revenue (in millions of 1973 dollars) is expected to increase from \$1,893 in 1973 to \$2,353 in 1985, an increase of 24 percent.
- Trailer-on-flat car (TOFC) revenue is expected to increase \$126 million from 1973 to 1985; coal revenue is expected to increase \$88 million in this period.
- Tonnage growth accounts for \$339.6 million of the additional revenue. Rate increases provide \$64.4 million and traffic diversion accounts for \$50 million. (This assumes all six carriers are combined into one company.)

The forecast shown in Tables 2 and 3 is a modification of a forecast prepared for the Association by Temple, Barker & Sloane<sup>2</sup> (TBS). TBS projected national production for 13 major commodity groups and TOFC

<sup>2</sup> Temple, Barker & Sloane, *Forecast of Traffic and Revenues 1974-1980 and 1985*, Oct., 1974, USRA Contract No. 50000.

TABLE 2.—USRA forecast of ConRail revenue 1973-85 (millions of 1973 dollars)

STCC and commodities	1973 actual <sup>1</sup>	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
01 Farm products.....	80.68	76.77	70.59	75.65	86.41	90.22	92.02	93.76	95.04	96.39	97.56	98.81	99.95
10 Metallic ores.....	86.39	82.98	81.23	81.76	88.44	89.26	89.53	89.53	89.53	89.53	89.25	89.26	89.26
11 Coal.....	230.81	228.08	226.64	232.02	242.36	262.74	270.15	279.16	286.67	294.38	302.29	310.43	318.68
14 Nonmetallic minerals.....	53.10	50.11	49.69	51.67	54.82	55.78	55.95	55.92	56.35	56.78	57.10	57.47	57.92
20 Food products.....	198.56	203.09	198.81	202.68	209.09	211.43	213.69	215.87	218.03	220.30	222.10	224.20	226.53
24 Lumber.....	64.26	57.98	57.98	62.55	70.19	71.72	72.89	74.35	75.25	76.21	77.09	77.97	78.93
26 Pulp paper.....	114.93	114.73	114.45	118.45	130.50	132.64	133.98	135.00	136.02	136.04	137.81	138.69	139.71
28 Chemicals.....	151.46	151.50	151.43	156.09	161.12	164.28	166.39	168.06	169.74	171.48	172.79	174.36	176.09
32 Stone, clay and glass.....	77.35	72.47	74.15	76.41	79.97	80.63	79.95	79.03	80.11	81.23	82.19	83.27	84.63
33 Primary metal.....	172.60	161.77	164.67	170.37	181.65	184.65	186.54	187.79	189.10	190.43	191.41	192.53	193.91
37 Transportation equipment.....	243.21	201.38	210.90	228.22	261.19	266.23	269.68	272.32	274.96	277.77	279.25	282.37	285.19
40 Waste.....	73.88	68.67	70.13	73.48	88.21	89.76	90.79	91.62	92.45	93.27	93.93	94.67	95.55
Coke.....	28.67	28.85	27.06	27.62	30.11	30.61	30.92	31.13	31.36	31.58	31.73	31.91	32.13
Other TOFC.....	152.40	157.06	160.14	143.27	167.75	181.29	195.87	206.62	218.75	233.01	247.47	262.45	278.66
Other non-TOFC.....	164.69	159.74	159.65	164.41	179.80	183.17	185.55	187.39	189.13	191.05	192.51	194.15	196.06
Total.....	1,892.99	1,813.18	1,817.52	1,864.65	2,031.61	2,094.41	2,133.90	2,167.55	2,202.49	2,239.45	2,274.58	2,312.54	2,353.20
Total less coal.....	1,662.18	1,585.10	1,590.88	1,632.63	1,789.25	1,831.67	1,863.75	1,888.39	1,915.82	1,945.07	1,972.29	2,002.11	2,034.52

<sup>1</sup> Annual commodity statistics revenue adjusted to remove absorbed switching payments and other miscellaneous revenues. The EL is not included in this forecast.

TABLE 3.—USRA forecast of ConRail tonnage, 1973–85 (millions of tons)

STCC and commodities	1973 actual	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
01 Farm products.....	12.4	11.80	10.85	11.49	11.64	12.10	12.33	12.59	12.78	12.98	13.18	13.38	13.55
10 Metallic ores.....	33.8	32.45	31.77	31.77	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
11 Coal.....	95.7	94.45	93.85	96.06	96.47	107.91	110.98	114.71	117.82	121.01	124.29	127.66	131.06
14 Nonmetallic minerals.....	20.5	19.31	19.15	19.81	20.63	20.90	20.90	20.79	20.95	21.11	21.27	21.43	21.60
20 Food products.....	25.5	26.09	25.54	25.90	26.14	26.19	26.39	26.66	26.93	27.21	27.49	27.78	28.07
24 Lumber.....	9.0	8.12	8.12	8.70	9.48	9.60	9.73	9.86	9.98	10.11	10.25	10.38	10.51
26 Pulp paper.....	21.0	20.96	20.91	21.29	21.68	21.86	22.03	22.21	22.39	22.57	22.75	22.93	23.11
28 Chemicals.....	22.5	22.50	22.49	23.06	23.41	23.65	23.88	24.12	24.36	24.61	24.85	25.10	25.35
32 Stone, clay and glass.....	17.1	16.01	16.38	16.79	17.24	17.18	16.94	16.70	16.98	17.17	17.41	17.66	17.95
33 Primary metal.....	28.5	26.69	27.17	27.94	29.30	29.51	29.72	29.92	30.13	30.34	30.56	30.77	30.99
37 Transportation equipment.....	14.3	11.84	12.40	13.26	14.88	15.03	15.18	15.33	15.48	15.64	15.79	15.95	16.11
40 Waste.....	15.7	14.59	14.90	15.53	16.34	16.51	16.67	16.84	17.01	17.18	17.35	17.52	17.70
Coke.....	6.8	6.37	6.42	6.52	6.99	7.04	7.09	7.14	7.19	7.24	7.29	7.34	7.39
Other TOFC.....	9.9	10.20	10.40	9.34	10.71	11.45	12.33	13.02	13.77	14.66	15.62	16.59	17.61
Other non-TOFC.....	19.5	18.91	18.90	19.29	20.29	20.49	20.70	20.91	21.11	21.33	21.54	21.75	21.97
Total.....	352.2	340.29	339.25	346.77	362.00	373.12	378.57	384.60	390.63	396.96	403.44	410.04	416.79
Total less coal.....	256.5	245.84	245.40	250.69	262.53	265.21	267.59	269.89	272.81	275.95	279.15	282.38	285.71

NOTE: Column totals are subjecting to rounding errors.

traffic. Using these production estimates, total Class I railroad tonnage was forecasted for each commodity group. This was then factored to develop Eastern District rail tonnage and finally tonnage for the six potential ConRail members. Revenue was derived by applying 1973 revenue per ton to the forecast tonnage.

The TBS forecast was based on projections of economic growth prepared in July 1974 by Chase Econometrics. Their projections indicated that Gross National Product would grow at an annual rate of 3.4 percent between 1973 and 1980 and at a rate of 3.5 percent from 1980 to 1985. Since July 1974, the economy has taken an unexpected dip as a result of rapid inflation and declining demand for and production of automobiles, steel and housing.

Because of these changes in the economy, the Association lowered the original TBS forecast for eight commodity groups: automobiles, steel, metallic ore, lumber, paper products, chemicals, waste or scrap and coke. Both the long-term forecast to 1985, as well as the short-term projections through 1977, were reduced.

The Association's present forecast has a compound growth rate for tonnage between 1973 and 1985 of 1.41 percent compared with 2.19 percent for the initial TBS forecast. Commodities other than coal have a growth rate of .99 percent in the Association forecast versus 2.02 percent for TBS. Revenue in the Association forecast is 3 percent lower in 1976 and 11 percent lower in 1985 than TBS.

The Association's current forecast, while significantly lower than the earlier forecast, appears to be slightly higher in the early years than a forecast based on the latest estimates of GNP. A subsequent analysis of economic growth was undertaken by Chase Econometrics for the Association in November 1974. It indicated that GNP would grow at a lower rate between 1973 and 1980, 2.9 percent compared to 3.4 percent, and at a higher rate between 1980 and 1985, 4.0 percent instead of 3.5

in the earlier projection. With minor differences, this later analysis substantiated the Association's adjustment of the TBS forecast. These revised GNP data are being utilized by TBS for an updated forecast which will be incorporated into the revenue figures to be utilized in the Final System Plan.<sup>3</sup>

### Opportunities for Improvement

An aggressive rail marketing program is essential to achieving the Association's tonnage and revenue forecast. The essence of such a program is the development of precise price/service/equipment strategies which satisfy the needs of the customer while earning a profit for the railroad. The development of these precise strategies by the Association for individual customers has not been feasible. However, it has been possible to identify certain areas where significant improvements can be made in the marketing areas. These are: pricing, quality of service, equipment, intermodal cooperation, routes, divisions, costs and regulation.

### Pricing

A firm's *price policy* is a reflection of its corporate objectives. Its pricing should be an extension of both its marketing and operating strategies. Any pricing strategy should generate rates which reinforce or support the actions, policies and objectives of the corporation.

The present financial condition of the Northeast rail carriers clearly indicates a substantial portion of rail traffic is moving at rates that do not cover the costs of handling the traffic. ConRail must adopt effective pricing policies relating to economically sound minimum and maximum rate levels.

<sup>3</sup> Both forecasts include the revenue and tonnage for the branch lines that are under consideration for abandonment. It has been assumed that the losses on these lines will be subsidized and that the traffic will remain on the railroads.



A thorough analysis and possible revision of the nation's rail price structure is, of course, beyond the scope and time limitations imposed on the USRA. However, the Association has analyzed marketing conditions sufficiently to determine that the profitability of the bankrupt carriers can be significantly enhanced through improved pricing strategies relatively soon after conveyance. The Association believes that profit improvement can be achieved in the short term as well as over a longer period of time. The following sections deal with pricing strategies for both the long term and the immediate future.

### Long-Range Pricing

The goals of the long-range pricing strategy are to:

- Assure a sound, profitable traffic base for ConRail with sufficient revenues to establish and perpetuate a viable railroad and secure the capital required to replace assets and meet changing demands of the transportation market.
- Provide for efficient utilization of ConRail's resources and flexibility to provide services on a compensatory basis to meet the transportation demands of the shipping public.
- Support the long-range service improvement, cost reduction and new marketing programs planned for ConRail.

Current rail pricing patterns in the Northeast must, of course, serve as a starting point for the development of changes necessary to implement ConRail's long-range pricing strategy. It is fashionable to talk about the existence of a "rail rate structure," but in reality there is no structure at all. What exists is a complex conglomeration of rates which reflect elements such as detailed commodity classifications, shipment volume-price differentials and specific origin and destination rate levels. There are numerous rates reflecting territorial, commodity, competitive and volume considerations.

Just as the present price system has evolved over time, any new system will have to be built on top of the existing system. Any price strategy designed to replace or supplement the present system must satisfy several diverse criteria. These criteria include:

- *Profitability.*—The pricing strategy should provide for the long-term profitability of ConRail and its establishment as a viable transportation company.
- *Dynamics.*—The pricing strategy should result in rates that move or change to reflect the dynamics of the investments or disinvestments being made in ConRail's physical plant and rolling stock.
- *Market flexibility.*—The pricing strategy should be flexible enough to produce a set of rates that reflect or capitalize on market conditions. The rates should be capable of being adjusted in reaction to changing demands imposed on the ConRail system by the market.

- *Efficiency.*—The efficient utilization of ConRail's resources should be promoted through the rates derived from the pricing strategy. To achieve this, the cost of resources required to provide service must be reflected in the price of the service.

- *Inherent advantage.*—The pricing strategy should reflect the inherent advantages of ConRail so as to assure retention and possible growth of traffic. The rate structure should also assist in attracting from other modes the traffic that railroads have a comparative advantage in handling.

- *Strategic planning.*—The pricing strategy should generate rates which reinforce or support the actions, policies or objectives of ConRail's marketing and operating strategies.

- *Simple/complex pricing.*—The pricing strategy should avoid complexity in the rate structure insofar as possible. Prices are key decision parameters for shippers. Complexities can cloud real issues and problems that lead to decisions that are damaging to ConRail and the freight service buyer.

The pricing strategy adopted by ConRail ultimately must be accepted by the marketplace and will be subject to evaluation by several external groups. These groups include competing railroads (those that serve the same territory as ConRail), complementary roads, intermodal competitors, shippers/receivers and the various regulatory agencies. These external constraints may inhibit the flexibility ConRail will have in adopting an effective pricing strategy.

### Short-Term Pricing

USRA's recommended short-term pricing strategy has two objectives:

- To identify opportunities for improving the profitability of the existing traffic mix and
- To develop a short-term pricing program to generate additional ConRail revenue in the formative years.

The Association contracted with a consultant to study the existing traffic base and present pricing practices of the potential ConRail members. The consultant has concluded that "major profit improvement can result from marketing correction of losses now being suffered in the current traffic base.<sup>4</sup> The potential net gain from correcting these losses was estimated to be \$120 million annually.

In addition to the consultant's study, Association personnel began an intensive analysis of the ConRail traffic base. Currently, approximately \$64.4 million of specific necessary rate actions have been identified. Table 4 contains a more complete description of the commodities deserving attention.

<sup>4</sup> Reebie Associates, August 14, 1974. Re: Contract No. USRA-5003, *Economic Overview*.



TABLE 4.—Potential added revenue from USRA specifically recommended rate adjustments

STCC 01—FARM PRODUCTS	
	<i>Millions</i>
1973 ConRail revenue.....	\$85.7
Additional revenue.....	9.0
Percent change.....	+11
<hr/>	
Rate actions:	
Completed:	
1. Increased transit charge on cereal (effective July 1974).....	\$0.35
2. Increased export rates on grain products (effective February 1974).....	0.15
In progress:	
1. Increased rates on fresh fruits and vegetables (I&S 8944).....	7.5
2. Increased rates on prepared cereal (under negotiation).....	1.0
Total .....	9.0
<hr/>	
STCC 10—METALLIC ORES	
1973 ConRail revenue.....	\$91.3
Additional revenue.....	0.1
Percent change.....	less than 1
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Rate actions:	
Future: 1. Increase dumping charge on iron ore .....	
	\$0.1
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STCC 11—COAL	
1973 ConRail revenue.....	\$243.8
Additional revenue.....	2.15
Percent change.....	1
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Rate actions:	
Future:	
1. Miscellaneous increases.....	\$2.0
2. Increased storage charge.....	0.15
<hr/>	
STCC 14—NON-METALLIC MINERALS	
1973 ConRail revenue.....	\$56.7
Additional revenue.....	0.1
Percent change.....	less than 1
<hr/>	
Rate actions:	
Future: 1. Increased point-to-point rates on sand and gravel to remedy non-compensatory situations .....	
	\$0.1
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STCC 20—FOOD	
1973 ConRail revenue.....	\$209.6
Additional revenue.....	1.1
Percent increase.....	1
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Rate actions:	
Future: 1. Increase non-compensatory rates on canned fruit juice, prepared flour mixes, dry bakery products, bagasse, macaroni, milled rice by-products and miscellaneous other items.....	
	\$1.1

TABLE 4.—Potential added revenue from USRA specifically recommended rate adjustments

STCC 22-23—TEXTILES AND APPAREL	
	<i>Millions</i>
1973 ConRail revenue.....	\$8.5
Additional revenue.....	0.3
Percent change.....	4
<hr/>	
Rate actions:	
Future: 1. Increased rates to remedy non-compensatory traffic.....	
	\$0.3
<hr/>	
STCC 24—LUMBER	
1973 ConRail revenue.....	\$66.5
Additional revenue.....	1.5
Percent change.....	2
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Rate actions:	
Completed: 1. Increased rates on pulpwood (½ of requested increase grant).....	
	\$0.1
Future:	
1. Increased pulpwood rates.....	0.1
2. Limit stop-offs and circuitry on lumber..	0.5
3. Increased rates on non-compensatory traffic (millwork, wooden containers, misc. wood products).....	0.8
Total .....	1.5
<hr/>	
STCC 25—FURNITURE	
1973 ConRail revenue.....	\$16.5
Additional revenue.....	3.5
Percent change.....	21
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Rate Actions:	
Completed: 1. Increase rates on furniture 4% (effective early 1975).....	
	\$0.6
Future: 1. Further increases to eliminate non-compensatory traffic.....	
	2.9
Total .....	3.5
<hr/>	
STCC 26—PAPER	
1973 ConRail revenue.....	\$121.6
Additional revenue.....	9.2
Percent increase.....	8
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Rate actions:	
In progress: 1. Increase rates 10% on light loading papers <sup>1</sup> (I&S 8978).....	
	\$1.3
Future:	
1. Further increases on light loading papers to eliminate noncompensatory situations .....	6.9
2. Altered transit privilege and 22,000 lb. "follow lot" provision in the 36,000 lb. rates .....	1.0
Total .....	9.2
<hr/>	
STCC 32—STONE, CLAY AND GLASS	
1973 ConRail revenue.....	\$81.0
Additional revenue.....	0.8
Percent increase.....	1
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Rate actions:	
Future: 1. Increase various point-to-point rates on cement, lime, limestone.....	
	\$0.8

<sup>1</sup> Light loading papers include: sanitary paper products, bags, fibre cans, pressed pulp goods, envelopes and baskets.

TABLE 4.—Potential added revenue from USRA specifically recommended rate adjustments

STCC 33—PRIMARY METAL PRODUCTS		Millions
1973 ConRail revenue.....		\$182.7
Additional revenue.....		0.13
Percent increase.....	less than	1
Rate action:		
In progress: 1. Increased lighterage charge on steel from Rhode Island to Harlem River, N.Y.....		
		\$0.13
STCC 34—FABRICATED METAL PRODUCTS		Millions
1973 ConRail revenue.....		\$38.7
Additional revenue.....		0.3
Percent increase.....		1
Rate actions:		
In progress: 1. Increase rates on metal cans..		
		\$0.3
STCC 35—NON-ELECTRICAL MACHINERY		Millions
1973 ConRail revenue.....		\$19.1
Additional revenue.....		0.5
Percent increase.....		3
Rate action:		
In progress: 1. Increased rates on farm machinery—I&S 8983.....		
		\$0.5
STCC 37—TRANSPORTATION EQUIPMENT		Millions
1973 ConRail revenue.....		\$255.5
Additional revenue.....		2.5
Percent increase.....		1
Rate actions:		
Completed: 1. Increased rates on freight cars moving on own wheels.....		
		\$0.5
Future:		
1. Increased storage charges on autos....		
		1.0
2. Increase some point-to-point rates on auto parts.....		
		1.0
Total .....		
		2.5
STCC 40—WASTE OR SCRAP		Millions
1973 Con Rail revenues.....		\$83.0
Additional revenue.....		9.6
Percent increase.....		12
Rate actions:		
Future:		
1. Increased rates on textile waste to remedy non-compensatory traffic.....		
		\$0.6
2. Overcome ICC hold-downs on recyclables .....		
		9.0
Total .....		
		9.6
MISCELLANEOUS SERVICES		Millions
1973 ConRail revenue.....		Unknown
Additional revenue.....		\$23.6
Percent increase.....		Unknown
Rate actions:		
Completed: 1. Increased protective service charge ex parte 300.....		
		\$0.1

TABLE 4.—Potential added revenue from USRA specifically recommended rate adjustments

MISCELLANEOUS SERVICES—Continued		Millions
In progress:		
1. Increased minimum charge per car (suspended) .....		
		8.6
2. Increased switching charges (suspended) .....		
		8.5
3. \$50 per car transit service charge (suspended) .....		
		4.0
4. Cancel marriage arrangements.....		
		0.3
5. Further increases in protective service charges (ex parte 300).....		
		0.3
6. Increased charges for providing mechanical heating of cars (Docket 35400) ..		
		0.2
7. Eliminate absorption of loading/unloading charges at ports and reduce port charges by 4¢/cwt. (I&S 8938) ..		
		1.6
Total .....		
		23.6

The rate adjustments recommended in Table 4 are necessary to bring present traffic up to a breakeven basis using very conservative cost data. The cost system used for this analysis (which was the only system quickly available) is based on Rail Form A and tends to understate certain costs, particularly maintenance of way, capital and equipment costs. Had these factors been more realistic, a far higher level of rate changes might have been proposed.

This analysis was also limited to identifying present traffic which is clearly non-compensatory. If the proposed rates result in substantial traffic losses, there will be no impact on net income because the reduction in costs will equal or exceed the lost revenue.

Table 4 shows three types of rate actions: completed, in progress and future. Completed rate actions are those which have been approved by the Interstate Commerce Commission with an effective date in 1974. These increases were not applicable in 1973 and hence were not in the revenue base used for the forecast. This category accounts for \$1.8 million.

Rate actions in progress are those that have been filed with the Commission or rate bureaus but have not been approved. This category accounts for \$34.23 million of which \$23.5 million involves miscellaneous services or charges. This includes an increase in the minimum charge per car (\$8.6 million), increased switching charges (\$8.5 million) and a \$50 per car transit service charge (\$4.0 million). Each of these pricing proposals has been suspended by the Commission pending an investigation of their "reasonableness." Each are important in reducing the losses of the bankrupt carriers and getting them on the road to profitability.

The major commodity rate change in progress concerns fresh fruits and vegetables. This was expected to increase future ConRail revenue by \$7.5 million. The Commission suspended these rates under I&S 8944. On December 30, 1974, an order disapproving this increase

was issued. Among other reasons given for rejecting the increase were three which are of primary significance to the future profitability of ConRail.

First, the ICC said that the theory of replacement cost of equipment was invalid because replacement cost is a corollary of reproduction value which the Commission has never accepted as a valid basis for ratemaking. While this policy may be appropriate for valuation purposes, failure to recognize replacement costs for rate-making purposes is extremely damaging to the railroads, particularly in a period when inflation levels are substantially higher than normal. The rail industry will fall further behind in equipment capacity simply because rates will not provide profits sufficient to call forth the capital necessary to acquire new equipment. No amount of exhortation to purchase can substitute for the decision of management to buy cars *only* when it is profitable to do so.

The second reason cited by the Commission was that the proposed rates would eliminate rail participation in many of the commodity movements, which would cause hardships on producers and consumers. The question to be addressed is whether ConRail or any other railroad should be forced to subsidize shippers by carrying traffic which does not contribute a profit to the railroad. Lack of railroad profitability will result in a gradual withdrawal from service and further prevents the railroads from handling those movements where they still have a comparative advantage.

The third reason for disapproving the rates was that the proposed TOFC rates are not reasonably related to the carload rates. There is no reason why TOFC rates should be related to carload rates. Entirely different services and costs are involved and the rates are aimed at a different competitive situation.

The third group of rate actions shown in Table 4 are those possible in the future. They have not yet been proposed but the Association's staff feels such increases are necessary to put present rail traffic on a compensatory basis. The category as thus far identified would increase revenue by \$28.35 million. The major commodities in this group are light loading paper products (\$6.9 million), furniture (\$2.9 million) and scrap (\$9.0 million). These rate increases are required to bring the revenue on these commodities up at least to a break-even basis with long-term variable cost.

The Association has also attempted to measure the price elasticity of certain commodities. The purpose of this research was to identify those commodities which, while making a positive contribution above variable cost, could support higher rates thereby lending support to the essential goal of improving railroad profitability. Unfortunately, the results of this research are not conclusive and further work will be necessary. This should be completed prior to the Final System Plan.

In addition to these specific suggested rate increases, the Association's staff is also studying the possibility

of a short-range general price increase. During the period following conveyance, ConRail should undertake programs to reduce costs, improve operating reliability and generally strengthen the organization's competitive position via new service opportunities and marketing programs. The short-term strategy must be an easily applied program of rate corrections which will supply needed revenues until ConRail's long-term programs can be developed and implemented.

The goals and objectives which the Association is using to evaluate various types of short-range increases are:

- The method must be capable of generating between \$50 and \$150 million in additional ConRail system revenues.
- The approach must be consistent with whatever industry structure is selected for ConRail.
- The short-term pricing strategy must be consistent with the long-term pricing strategy and related operating plans.
- The technique must be fairly simple so that it may be quickly implemented, easily understood and capable of efficient administration.

Short-term increases can be applied on one or more of the following bases:

*General increases* provide for percentage increases or per unit (i.e., car, ton, etc.) surcharges on the entire movement. The increase is apportioned among the railroads involved, according to agreed upon division percentages.

*Regional increases* provide for percentage increases or per unit surcharges on movements within a certain region (i.e., the Northeast Region).

*Cost coverage* increases would increase revenues to cover the cost of a particular class of traffic more completely.

*Specific increases* would be selectively based on a combination of factors including commodity, origin/destination and car type.

*Minimum rate per car* pricing is based on the assumption that the four major and most readily measured components of rail costs are mileage, car type, terminal costs and service type. A minimum rate per car would be determined based on these components. It has been alleged that the high terminal costs, particularly on the east coast, are responsible for the deficit operations of the ConRail carriers. Under this approach, terminals would be classified into three categories—low cost, medium cost and high cost. "Service types" could include regular, unit train, TOFC, multiple car, etc. The advantage of this method is that only low-revenue-per-car traffic, where the present revenue is below the proposed minimum, would be assessed a charge. High-revenue, truck-competitive traffic would not be affected at all. This type of charge will affect only the non-compensatory or marginally compensatory traffic.

USRA is currently reviewing each of these approaches and will have a recommendation in the Final System Plan.

### Service and Equipment

To determine the impact of freight car supply and service quality on revenue growth it is necessary to understand how routing decisions are made by shippers. While there may be exceptions, there appears to be a hierarchy in the normal routing decision:

1. The lowest applicable rate must apply.
2. The carrier supplying the equipment will be favored.
3. The best service route will be favored.
4. The originating and terminating carriers will get a long haul (as opposed to a switching charge).
5. Intermediate carriers will be avoided unless part of a "service" route.

Since railroads serving the same market or shipper usually have the same rates, the ability to provide an adequate car supply along with dependable service are the dominant factors in securing rail-oriented tonnage. These factors are also important for attracting tonnage from other modes.

There are significant opportunities for improving bankrupt carriers revenue—both through the acquisition of more equipment and the design of specialized freight cars. A special study made by the Penn Central estimated it lost over \$60 million in revenue in 1974 because of freight car shortages. Car types in critical supply were open hoppers, gondolas, 50-ft. box cars and TOFC trailers. The Association has developed a car acquisition program, discussed in Chapter 6, which should rectify this problem: The Association's car purchase program will provide an equipment inventory sufficient to satisfy normal demand while generating a satisfactory return on investment. USRA is also studying various rate and tariff changes which will improve equipment utilization and reduce the capital investment required for equipment.

Service on the bankrupt carriers has deteriorated in recent years as tracks and facilities have been under-maintained. Shippers state that substantially more tonnage would be available if service were improved. Preliminary studies by the Association confirm this in part.

Service in this context takes two forms: speed and reliability. Speed is the time it takes to get from A to B; reliability is the consistency or regularity of the transit time. Service is important for attracting tonnage from other railroads as well as other modes of transportation. Rates and car supply being equal, a shipper will choose the railroad with the best service.

While service is important for intermodal competition, railroads and motor carriers do not compete on the basis of service in all markets. Service is relatively less important for low-value, high-volume bulk commodities than for high-value, time sensitive commodities such

as perishables. Service levels, then, must be evaluated in view of specific market requirements.

ConRail must make a substantial improvement in service speed and reliability to compete effectively with the motor carriers. A USRA consultant<sup>5</sup> interviewed shippers concerning service expectations. The consultant concluded that improvements in transit time of 20 percent would increase non-bulk traffic by ten percent but total traffic by only two percent. In no individual commodity was the tonnage elastic with respect to transit time.

The consultant also found that improvements in reliability—measured in terms of increased on-time performance of 20 percent to 50 percent—would increase tonnage ten percent to 30 percent. A significant minority of the shippers, however, said that percentage increases in tonnage would exceed percentage changes in reliability.

On the other hand, the consultant found that increases in transit time up to ten percent would not have an appreciable effect on tonnage. If time in transit increased 20 percent, however, the loss in tonnage for some commodities would be severe. Decreases in reliability could have a significant impact on tonnage, ranging from ten percent to over 40 percent depending on the shipper. In the majority of cases, however, a percentage reduction in reliability leads to a less than proportionate loss of tonnage.

In summary, rail traffic appears to be more sensitive to time increases than to time decreases. A significant deterioration of rail service could result in a severe loss of traffic. Conversely, a significant improvement in transit time would result in significant but not commensurate traffic growth.

### Intermodal Service

Trailer on flat car (TOFC) and container on flat car (COFC) traffic are the two basic types of intermodal or piggyback service offered by the railroads. This service combines the flexibility of motor carrier pickup and delivery with the low costs of rail line-haul service and as such is among the favorable spots in the railroads' future. USRA is forecasting a compound annual growth rate of piggyback traffic of 6.25 percent between 1973 and 1985. A more comprehensive discussion of Intermodal Service is provided in Appendix F.

There are three ways to improve the market share of TOFC/COFC service:

- Gain greater control of the pickup and delivery function through expansion of the operating rights of rail-owned truck lines;
- Penetrate the small shipments market including the LTL (less than truckload—under 10,000 lbs.) and the PTL (partial truckload—10,000 to 30,000 lbs.) markets; and

<sup>5</sup> Temple, Barker & Sloane, "Forecast of Traffic and Revenue 1974-1980", USRA Contract No. 50000.



- Develop a rate structure that will attract shipper business and also foster intermodal (rail-motor carrier) coordination where possible.

It is almost axiomatic that the firm controlling pickup and/or delivery of a shipment also exerts control over the line-haul movement. Both Penn Central and Reading own motor carrier subsidiaries which perform these services, but they have not fully exploited the traffic-generating opportunities.

Most railroad piggyback marketing efforts have been focused on developing truckload movements with weights of 30,000 to 45,000 pounds. However, the Reebie Associates' Intermodal study indicates that 85 percent of the ton-miles of highway general commodity traffic consists of a combination of LTL and PTL shipments. This is obviously a large market in which the railroads have not been directly competing.

The importance of the small shipments market goes beyond its volume. First, this traffic is generally among the highest rated traffic available (albeit with high operating costs) and thus adds the most revenue. It also allows carriers to "top off" trailer load shipments which have approached the maximum weight but have not utilized the full cubic capacity of the trailer. This further increases revenue.

Second, a carrier which competes in all markets can select the traffic needed to obtain the high equipment utilization and low empty mileage required to achieve low unit costs in each traffic lane or terminal. These low costs in turn enhance the competitive position of the carrier.

Because of the financial losses suffered in the past when handling LCL traffic, the rail industry is understandably hesitant to enter the small shipments market. Only two railroads, the Missouri Pacific and the Western Pacific, are currently pursuing this market. Of course, such a decision cannot be made until after a thorough study of the operating costs and potential revenue to be derived from this traffic. USRA will attempt to quantify the cost/benefit relationships prior to the Final System Plan.

The present TOFC/COFC price structure in the Region is based on a series of "quantity discounts" which provide successively lower rates as the number of trailers tendered increases. From one to sixty trailers may be tendered at one time, the latter, popularly called "ship-a-train" rates, being the lowest. These quantity discounts have created a group of middlemen called shippers' agents or shipper associations whose prime objective is to gather enough trailers to take advantage of the discounts. Only part of the discount is passed back to the shipper. The argument is that these middlemen perform services which the railroads cannot provide. This is not necessarily true. A capable, aggressive rail sales and service staff can perform the duties of

these middlemen, often more efficiently and economically.

There are basically two types of pricing arrangements necessary to foster increased growth of piggyback service. One is a "wholesale" rate structure applying between terminals to shipper or motor carrier owned or supplied trailers. These would be one-way rates for single loaded or empty trailers. The shipper or motor carrier would provide the pickup and delivery. These wholesale rates would attract traffic from motor carriers or private carriers who now operate via highway if they have balanced traffic.

A balance in traffic avoids the occurrence of empty mileage expense. This low empty return mileage experienced by truckers is what produces lower unit costs via highway, even though the basic expenses per mile are higher than those of rail. The wholesale load-empty rates recommended by USRA would enable shippers and truck lines with balanced traffic to gain the same benefits via rail-TOFC that they now gain in their own highway operations. Such a pattern would avoid the current pricing practices which attract TOFC traffic mainly from shippers and truckers who have excess loads (i.e., more loads than drivers) or who have unbalanced movements between certain terminals. No quantity discount would be given. These wholesale rates would be very similar to the present Plan III rates.

Second, a set of single trailer "retail" rates in railroad-owned trailers needs to be developed. These rates would apply on one-way movements of either full-truckload or LTL and PTL movements. Pickup and delivery could be performed by the railroad-owned motor carrier. These retail rates would be similar to the present Plan II and II 1/2 rates and would apply primarily to shippers who do not own trailers and cannot perform the pickup and delivery functions.

Though the proposed set of rates is not radically different from the present system, it does provide many advantages. Elimination of the quantity discount would permit the railroads to compete with the middlemen who exert tremendous control over present piggyback traffic. The recommended rates give the railroads, that are risking their investment, the opportunity for more control over their service quality and profitability. This simplification of the rate structure makes it easier to understand and allows the shipper to deal directly with the carrier. A shipper survey performed by Reebie Associates indicates that many shippers would prefer to deal with the railroad directly.

#### Routing Patterns

When ConRail begins operation, it will inherit the routing patterns of six different carriers. Between distant city pairs, such as Newark, New Jersey and Los Angeles, a large number of alternative carriers and routes are possible. These include routes using the Read-

ing, Lehigh Valley, CNJ and the Penn Central. Table 5 is a list of the interchanges between the ConRail carriers and other railroads in the eastern region.

As Table 5 indicates, there are an almost infinite number of interchange points or combinations of interchange points. Retention of all these interchange points and alternative routes tends to promote inefficiency and to preclude ConRail from taking advantage of its most profitable haul. It also prevents ConRail from realizing its maximum revenue potential.

TABLE 5.—Freight connections and junction points

	PC	LV	CNJ	RDG	LHR	AA	EL	D. & H.	B. & M.	B. & O.	C. & O.	N. & W.
Penn Central.....		26	7	30	2	6	79	8	19	136	73	153
Lehigh Valley.....	26		5	5	1	0	13	3	0	3	1	3
Central of New Jersey.....	7	5		3	0	0	1	0	0	0	0	0
Reading.....	30	5	3		0	0	3	0	0	5	0	0
Lehigh & Hudson River.....	2	1	0	0		0	2	0	0	0	0	0
Ann Arbor.....	6	0	0	0	0		0	0	0	1	6	3
Erie Lackawanna.....	79	13	1	3	2	0		5	0	27	10	20
Delaware & Hudson.....	8	3	0	0	0	0	5		2	0	0	0
Boston & Maine.....	19	0	0	0	0	0	0	2		0	0	0
Baltimore & Ohio.....	136	3	0	5	0	1	27	0	0		19	46
Chesapeake & Ohio.....	73	1	0	0	0	6	10	0	0	19		33
Norfolk & Western.....	153	3	0	0	0	3	20	0	0	46	33	

#### Divisions

Divisions are the sharing of the freight revenue by carriers participating in a movement involving more than one railroad. Such divisions have a significant impact on the net profit of a company. Divisions are negotiated by the participating railroads and when there are disagreements, resolution is sought from the ICC in the form of a divisions proceeding.

Assuming equal managerial and operating efficiency, divisions are usually based on cost. That is, assuming that two railroads have essentially the same operating efficiency and management efficiency, but one railroad incurs a higher cost in the movement of a shipment, then that railroad should receive a greater share of the revenue. Northeastern carriers have alleged that the divisions between themselves and the southern and western carriers are inequitable and do not properly reflect costs. The northeastern carriers have estimated that an equitable split of revenues could improve their profitability by \$60 million annually. Conversely, the southern and western carriers claim that the additional costs incurred by the northern and eastern carriers are a result of inefficient management and operating strategies. The last north-south divisions case handled by the ICC continued for 13 years and was never resolved, among other reasons, because the efficiencies expected from the Penn Central merger were not included in the northern railroads' cost data.

The Association urges early Congressional action to provide a means of encouraging the prompt resolution of disputes involving divisions. This is a matter of extreme urgency to ConRail. It needs to be resolved as soon as possible.

The Association has made a thorough study of opportunities for improving ConRail's revenue by lengthening its haul. Under the Three Carrier System structure, ConRail could secure as much as an additional \$65.6 million of revenue annually by eliminating short hauls to the greatest extent possible. For forecasting purposes it has been assumed that ConRail achieves only half of this revenue potential or \$32.8 million through improved service and selective selling of the preferred routes.

#### Costs

Establishment of new rail rates will depend on the level of costs, both rail and alternate mode costs. Unfortunately, the railroad industry does not currently possess the capability of measuring the cost of performing a particular transportation service or set of services. As a result, present cost systems tend to apportion costs rather than trace cause-and-effect relationships.

Most rail carriers apply a modified ICC Rail Form A, Variable Costing System, to evaluate costs associated with the movement of a commodity between two points. The costs produced by Rail Form A are the average costs incurred by general cost centers of a railroad. These costs do not necessarily reflect the true costs of the individual movement. However, they are accepted by the Commission as the basis for cost justification for a proposed rail rate. The numerous deliberations concerning branch line abandonment and curtailment of passenger services, and the related costs and revenues of these operations, are excellent examples of the impact of the inadequate cost information.

The deficiency in rail industry costing is due to:

- Hesitancy of rail carriers to initiate innovative costing systems because the Commission has traditionally used the ICC Rail Form A costing as a basis for rate setting, and
- Relatively recent application of large scale management information systems to rail carriers. Data gathered to support cost research by many railroads are deficient, both in validity and degree of detail.

It is imperative that ConRail establish an accurate and timely cost information system. The cost/benefit

relationship is at the heart of most important management decisions. This is no less true of the railroads than of other industries. Reliable cost information is important not only for the pricing decisions, but also for operating capital investment, routing, line abandonment, and planning decisions.

#### **Rail Rate Regulation**

All rail rates are subject to review by either state or federal regulatory agencies. This would present no problem if all modes of transport were subject to the same kind and level of regulation. Almost two-thirds of truck traffic and ninety percent of barge traffic is exempt from rate regulation, and most agricultural traffic moving via motor carrier or barge is exempt.

Regulation tends to inhibit the flexibility of the railroads. Whereas trucks and barges hauling exempt commodities are free to set rates at any level and are free to enter and leave markets, railroads are subject to the frequently time consuming regulatory procedures and the other burdens they impose. This may inhibit the railroad's responsiveness to changes in the market place and ability to meet revenue needs and to compete successfully.

USRA will study this matter further and make appropriate recommendations for change in the Final System Plan.

#### **Conclusions**

ConRail must strive to maximize its profit in any given market, working from the present traffic base.

With the exception of the solid waste and LTL/PTL markets, there are no major markets that ConRail can enter through a simple adjustment of price and service. Instead, ConRail must compete vigorously in those markets where it has a competitive advantage.

This occurs with commodities of heavy density, where there is a good balance of traffic, where transit time is not essential and where shipment sizes will support carload volumes. ConRail must compete in these markets through a vigorous application of sensible and aggressive marketing strategies. These include unit and mini-trains, bulk distribution terminals and expanded TOFC operations.

To improve profitability, ConRail will have to scrutinize the present price structure and make changes where necessary. Certain limited rate changes have been suggested and, no doubt, this list can be expanded. In the long run, ConRail must adopt a pricing policy that will allow it to recover full operating costs and a reasonable return on investment. If this is not done, the current financial problems will be perpetuated.

ConRail must also adopt a rigorous program of service improvement and control. This will enable it to expand present markets and enter into the more service demanding markets where shipment sizes are smaller, transit time is critical and shorter distances are involved.

Implicit in this marketing program is the need for an organization dedicated to the goal of improving profitability. This organization must have an excellent cost system and traffic data base with which to define the problems and it must have the freedom to experiment with creative solutions.





# 10

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## Availability of Service by Alternate Modes

*The Regional Rail Reorganization Act of 1973 requires an analysis of the extent to which other modes of transportation can move the traffic now carried by railroads in reorganization and the relative economic, social and environmental costs involved in use of such alternate modes. This chapter represents a portion of USRA's response; environmental considerations are treated more extensively in Chapter 11.*

*Studies commissioned by USRA indicate that railways generally have cost advantages over trucks in providing long-haul high-density transportation, but rails take longer and are less flexible with respect to pick-up and delivery times and locations. Rails are more flexible than barges, but usually incur higher unit costs.*

*Shippers are willing to pay premiums for quality service by other modes, a factor to be considered in analyzing the desirability of maintaining certain rail services. In addition, recent legislation to increase truck sizes and weights expands the economic potential for truck competition. No combination of pipeline, truck and barge service, however, can replace fully the service railroads give the Region.*

*This chapter examines the effects of diverting substantial freight from railroads to trucks for 11 selected commodities. These effects encompass the increase in truck traffic volume such a diversion would generate, the increase in private shipper cost and the public costs of additional highway construction and maintenance.*

Section 202(b)(2) of the Act requires "an economic . . . analysis . . . of the extent to which available alternative modes of transportation could move such traffic as is now carried by railroads in reorganization; (and) the relative economic, social and environmental costs that would be involved in the use of such available alternative modes, including energy resource costs . . ."

The Region is served to some degree by all alternative modes, including trucks, waterways, pipelines, air cargo and small shipment services. In terms of substitutability, however, the major rail competition is the for-hire and private truck, although water and pipeline haulage is important in certain areas for bulk commodities.

A number of sources required for the assessment of alternate mode service availability and related costs are detailed in other sections of this report. Competition among the several modes of freight transport is discussed in more detail in Chapter 8. A first attempt at measuring cost structures for the competitive modes is also presented in Chapter 8. Additional information on substitutability of truck service for rail appears in Appendix F for intermodal service generally. Chapter 7 and Appendix J deal with the relative economic and social costs of alternate mode service to light-density points. The environmental costs of service by various modes are treated in Chapter 11.

One of the important determinants of comparative costs is the degree of public financial support received by each mode of transportation. Since competitive rate structures do not reflect costs borne by the government, true cost structures of the several modes are not readily apparent. Availability of alternate modes and existing modal splits of traffic are not based on true cost structures but instead on costs as perceived by carriers in each mode. Appendix H of this volume provides an approximation of the level of federal financial assistance provided to the chief modes of transportation.

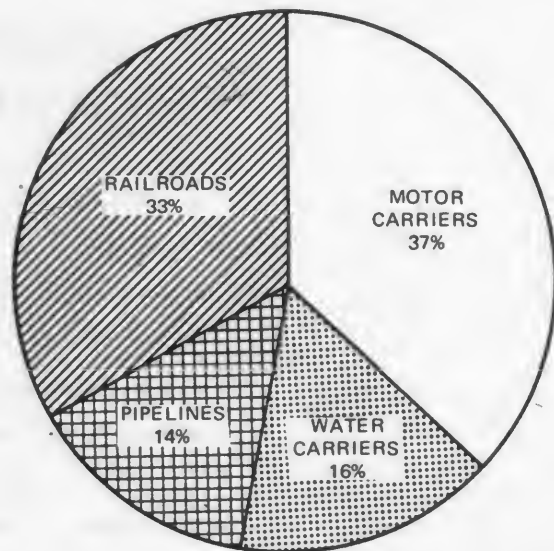
### Freight Traffic in the Region

The Midwest and Northeast Region occupies barely one-seventh of the continental United States but accounts for over half its economic activity. About 2.5 billion tons of intercity freight originated in the Region in 1970, representing 45 percent of intercity domestic freight tonnage in the United States. The rail-

competitive trucking industry is the leading mode of transportation in the Region, carrying 37 percent of total tons originated in 1970. Rail tonnage follows closely, contributing 33 percent of the total. Waterways carry 16 percent of tonnage, approximately half the volume carried by the railroads. Pipelines carry 14 percent of total tonnage, a little less than half the total tonnage carried by the entire rail industry in the Region.<sup>1</sup> (See Figure 1.)

FIGURE 1

MODAL SPLIT OF INTERCITY FREIGHT TONNAGE ORIGINATING IN THE NORTHEAST AND MIDWEST REGION - 1970



Railroads retain the traffic leadership if ton-miles rather than tonnage is used to measure freight shares, because rail average hauls are longer than average hauls for trucks. Railroads originate 38 percent of freight ton-miles in the Region, compared with 33 percent of total tons originated. Waterborne shipments; 16 percent of total regional freight measured in tons,

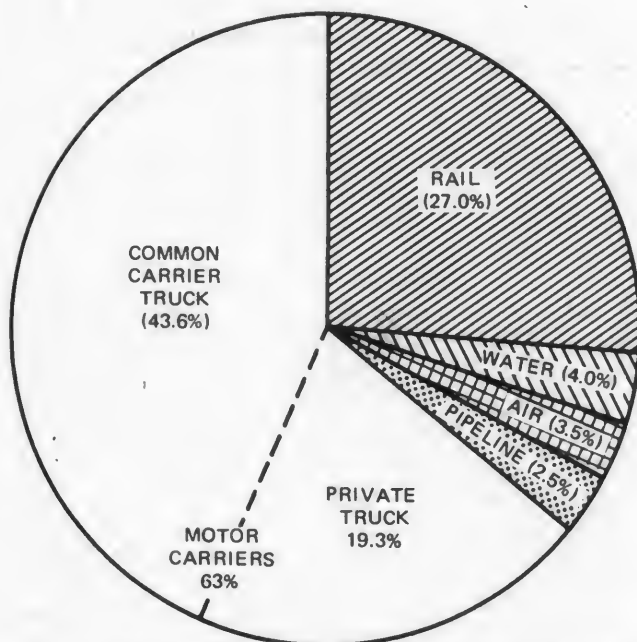
<sup>1</sup> Wilbur Smith Associates, Inc., *Economic Study of Alternative Modes for Rail Traffic and Their Costs: Final Report*, prepared for USRA, January 15, 1975. These are tons of output shipped in the Region. They are adaptations for the Region of national estimates by Jack Faucett Associates, *Transportation Projections 1970-1980*, prepared for the U.S. Department of Transportation, March 1978. For estimated shares, see Wilbur Smith, tables 1, 2, and 3, pages 8, 11 and 12.

amount to 26 percent of the Region's ton-miles. Pipelines increase slightly, from 14 to 15 percent. The importance of trucking declines when measured in ton-miles from 37 percent of total tons originated to 21 percent of total ton-miles. Both for-hire trucking and private trucking experience a decline.

Trucks are by far the leading freight transport mode in the Region if the comparison is made on the basis of revenues. Trucks originate 63 percent of intercity freight revenues in the Region, about \$15.5 billion in

FIGURE 2

ORIGINATED FREIGHT REVENUES  
IN THE REGION BY MODE  
1970



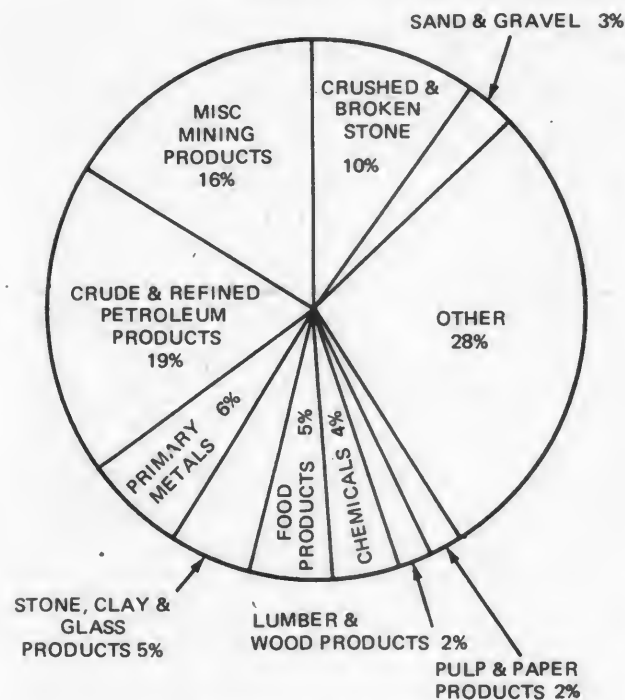
1970 (see Figure 2). A little less than one-third of this amount represents the costs of truck operations performed by industries which have private truck fleets; the remainder represents revenue earned by for-hire carriers. Railroads generate only 27 percent of total revenues, followed by water (4 percent), air freight service (3.5 percent) and pipelines (2.5 percent).

Manufactured products constitute about half of intercity freight tonnages originating in the Region, and the trucking industry is the predominant carrier of these products. Mining products constitute just under one-third of the tonnage originated in the Region. Only mining products, iron ore, nonferrous ores, coal and pulp and paper manufacturers use rail for more than half their freight shipments originating in the Region. Measured by ton-miles, most mining sectors except iron ores use rail for over half of their shipments; four-fifths of the ton-mile shipments of iron ore are by water. In

manufacturing, virtually all durable goods industries accumulate about half of their ton-mile shipments on the rails. (See Figure 3.)

FIGURE 3

PERCENT OF TOTAL INTERCITY FREIGHT  
TONNAGE BY MAJOR COMMODITY  
GROUP - 1970



SOURCE: WILBUR SMITH  
FINAL REPORT

Freight traffic carried by the bankrupt railroads represents between 10 and 12 percent of the total tons originated in the Region. Any major diversion of the traffic carried by these lines to alternate modes would have major and probably devastating implications for the regional and national economy. The physical properties of much of the traffic carried by rail and the geographic location of raw material sources and production facilities indicate that a wholesale shift from the railroads in reorganization to alternate modes would be very costly to the economy—a strong argument for preserving a major portion of the Region's rail system.

### Freight Via Alternate Modes

As discussed in Chapter 1, the railroad industry as a whole has experienced a significant decline in market share since the end of World War II. The rail share of all intercity transport ton-miles has declined from 56 percent in 1950 to approximately 38 percent in 1973. Traffic shares lost by railroads have been gained by motor carriers, pipelines and inland waterways other than the Great Lakes. Great Lakes shipping, despite opening

of the St. Lawrence Seaway, has lost half of its market share since the immediate post-war period.

The following is a brief discussion of the availability of modes other than railroads to provide freight service in the Region. More information on this subject can be found in the references cited in the footnotes to this chapter and in the Bibliography.

**Pipeline.**—Most of the former rail traffic in those commodities for which shipment by pipeline is highly competitive (liquids or flowables moved in large, continuous quantities) was diverted to pipelines 30 to 40 years ago. The small amounts of liquids still shipped by rail represent special commodities and quantities uneconomic for diversion to pipelines.

Potentially there is another major transfer of traffic from railroads to pipelines in the movement of coal as slurry. This could occur if rail costs continue to increase in relation to pipeline costs. It would be catastrophic to the rail industry in the Region if coal slurry pipelines were developed to any major extent. Coal is the most important rail commodity in the Region and is profitable to the railroads at this time. Though the bankrupt railroads are not as heavily dependent on coal shipments as are other railroads in the Eastern District, diversion of up to 20 percent of the coal tonnages originated on the bankrupt lines to coal slurry pipelines or to consumption at the coal mine site is possible.

This potential loss would only occur over a very long term, however, and would require substantial reductions in the cost of pipeline transport. For the short term, the worldwide shortage of crude petroleum is increasing the demand for coal and for movements of coal by rail. The immediate prospect is for increased coal shipments over the railroads in reorganization, not for diversion to pipeline transport.

**Waterways.**—For large-volume movements of dry bulk commodities over long distances linked by water, shipment by barge, lake or coastal vessels is a competitive alternative to movement by rail. The location of major waterways as boundaries of the Region partially limits this competition, causing it to be concentrated on freight movements to and from the Region. At present such movements are about 50 percent of the total tonnage originated and terminated on railroads in the Eastern District.<sup>2</sup>

Diversion of freight (almost entirely commodities transportable "in bulk" or in large tonnage shipments) from rail to water is quite sensitive to rates, and the potential for greater diversion has brought about lower water-competitive rates on certain rail movements. The financial condition of rail carriers in the Region, therefore, is affected both by the generally low level of water-

FIGURE 4



competitive rates and the low costs of barge service on specific segments of the inland waterway system.

**Air.**—Freight movements by air are shipments of high-value products in small quantities requiring very quick delivery. Little of the freight now carried by the railroads in reorganization is of this nature and any future shift from rail to air is insignificant to the future of the railroads.

**Highway Freight.**—The versatility and quality of service available through the use of trucks, coupled with the development of the Interstate Highway System, have made trucking the leading mode of transportation in the Region. With respect to costs actually paid by truckers versus railroads, the balance appears to be moving in a direction favorable to trucking, despite the recently legislated speed limit reduction to 55 m.p.h. Vehicle sizes were increased in the 1974 Federal-Aid Highway Act to encompass truck weights of 80,000 lbs. on the Interstate Highway System (20,000 lbs. on single axle and 34,000 lbs. on a tandem axle), a policy change made explicitly to compensate truckers for speed reductions and consequent productivity losses. Where states allowed higher weights in 1974 on non-interstate highways, such weights may now be allowed on the Interstate Highway System; 15 states had allowed these higher limits.

There are also limitations on the use of trucks due to their physical characteristics. Trucks have been able to capture virtually all of the intercity traffic in small parcels or in less-than-carload shipment lots formerly carried by rail. Trucks have made a few inroads into shipments over 30 tons but they can accommodate such larger shipments by using additional vehicles. For shipments of 5 to 30 tons, competition between rail and truck exists over a wide range of products. For most products the truck's advantages of flexibility and quality of service tend to fall off with distance so the average length of haul by truck is significantly shorter than rail.

<sup>2</sup> Figure 4 provides a comparison of "Eastern District" railroads as defined by the ICC, "Official Territory" which approximates the coverage of the Eastern District railroads—and the 17-state Region as defined pursuant to the Act.



*Dual or Multimode.*—Intercity freight movements involving two or more modes for major portions of the line haul constitute still another alternative to present all-rail movements on the railroads in reorganization. Piggyback service (trailers or containers on railroad flatcars—TOFC and COFC) has grown rapidly since World War II. This “new mode” has come about to take advantage of the strengths of both railroads and trucking. Railroads should excel in providing transportation of large, repetitive volumes between distant terminals, while trucks normally are better suited than railroads for “retail” collection and delivery service.

Many observers believe that growth of TOFC and COFC has been held back by a lack of cooperation between the modes, by lack of funds for investment in multimodal facilities and by inadequate public promotion and support; these observers believe that there is a great latent demand for dual mode, truck-rail service and that substantial cost and service improvements relative to present TOFC and COFC service can be achieved.<sup>2</sup>

Other multimodal services offer alternatives to all-rail freight transportation in the Region. Chief among these are truck-barge and slurry pipeline-barge.

### **Diversion of Rail Traffic to Truck**

The Act directs the Association to make findings with respect to the public costs that would be encountered if there were a large-scale shut-down of rail service in the Region. It is not possible to make a precise determination of this matter. However, some general indications of the magnitude of the impacts of such an occurrence are possible. As indicated earlier, the Act clearly contemplated alternative service by several modes, not simply trucks. In the near term, however, only an expansion of truck services could provide the capacity to offset a sharp reduction in rail services; therefore, USRA has limited its analysis to the extra costs of a shift from rail to truck.

If most rail service were forced to terminate, over a long period of time a series of innovative new combinations of transport services probably would be developed: truck-barge and slurry pipeline-barge are perhaps the best examples. Within trucking, new adaptations and specialization of services would improve truck costs—particularly in increasing size of trucks and trailers and development of dedicated highway facilities. There would be an expansion of inland waterways with deeper dredging and higher-capacity barge systems. Thus it is almost impossible to determine the actual consequences of a gradual termination of the preponderance of rail services on the basis of existing technologies or comparisons of traffic charges.

<sup>2</sup> See especially, *Improving Railroad Productivity*, Chapter IV, and the discussion provided in Chapter 8 and Appendix F of this report.

Eight manufactured commodities which are prone to truck-rail competition without any change in packaging requirements account for 19 percent of all rail freight originated in the Region, 18 percent of terminations, and 50 and 45 percent, respectively, of manufactured products. Morton has estimated that shippers of these products are willing to pay a premium of up to 20 percent for the quality of service offered by trucks.<sup>4</sup>

Analysis of average truck and rail costs suggests that, if the Region's rail traffic were shifted to truck in about half of these commodities plus farm commodities which account for 11 percent of total shipments in Official Territory, transportation costs to shippers would increase by 37 percent. This cost analysis confirms the general presumption that railroads have been able to hold many commodities which trucks are capable of carrying only because railroads move these goods at lower rates. The higher quality of service provided by trucks is important for much but not all traffic. A coordinated service that would utilize trucks for pickup and delivery and transloading to rail for the line-haul may well be the most cost-effective approach for many light and medium density movements.

The Association attempted to narrow the analysis by studying the increased shipper costs of a major diversion of freight from rail to truck in a six-state area comprised of New York, New Jersey, Pennsylvania, Ohio, Michigan and Indiana.<sup>5</sup> A consultant to the Association found that in these six states diversion of intraregional traffic in 11 commodities from the bankrupt railroads to truck would have increased transportation costs by an estimated half a billion dollars in 1970. This represents a 77 percent increase over existing transportation cost to shippers. Expanding this sample to the Region as a whole results, very roughly, in an increase in transportation costs amounting to \$600 million annually.

The Association's consultant also was asked to look at costs to shippers of substituted service by truck in two local areas. The resulting analysis of a relatively rural area in southeast Indiana (where a significant portion of the trackage has been designated as potentially excess by the Report of the Secretary of Transportation in February 1974) indicated that the most

<sup>4</sup> The eight commodities are grain mill products, sugar, miscellaneous food products, pulp and paper products, hydraulic cement, concrete, gypsum and plaster products, steel mill products and motor vehicles and parts. Wilbur Smith Associates, *Economic Study of Alternative Modes for Rail Traffic and Their Costs: Overview, A Preliminary Report*; October 4, 1974, Page 88. Also see A. L. Morton, *Truck-Rail Competition for Traffic in Manufactures*, Proceedings, Twelfth Annual Meeting, Transportation Research Forum, 1971.

<sup>5</sup> Wilbur Smith Associates, *op. cit.* p. 120. Intraregional freight for 11 commodities on railroads in reorganization accounted for one-fifth of total railroad tonnage in the Region. The 6 core states accounted for over four-fifths of the intraregional shipments of these 6 commodities on the railroads in reorganization in the Region. The 11 commodities studied include field crops, grain mill products, coal, iron ore, steel mill products, motor vehicles and parts, stone and gravel, manufactured building products, abrasives, paper products and industrial chemicals.

serious cost impact would fall on products now transported into the area by rail. Sixty percent of these movements consist of mining products, mainly coal and gravel and sand. These costs are likely to experience a 49 percent increase.

On shipments out of the area—61 percent of which consists of waste, household appliances and grain mill products, in that order of importance—the transportation cost increase would amount to about 23 percent. This would still represent a major burden on the industries that provide the economic base for this area. In all likelihood, these increased costs would seriously affect the ability of shippers to compete with similar industries elsewhere which were not forced to divert to a more costly form of intercity freight movement.

### Public Costs of Diverting Rail Traffic

It has not been possible to estimate the full range of social and environmental costs of a major shift of traffic of the bankrupt railroads to other modes. A very tentative estimate was made of the number of additional trucks and vehicle-miles necessary to haul the intra-regional traffic now being carried in the 11 basic commodities. In the 6-state core area, a diversion of these 11 basic products would increase the volume of rail-competitive trucking by 47 percent. Competitive trucking miles would increase 28 percent.

Additional vehicle-miles of combination trucks, due to the diversion of traffic from rail, ranges from an additional 14 percent in New Jersey to 70 percent in and through Pennsylvania. Since much of the additional highway traffic would occur in areas of concentrated demand, these additional vehicles would result in more congestion near larger urban areas. This is particularly significant because, in terms of highway capacity, highway planners generally equate one large truck with four to five automobiles.

As a measure of the social costs involved by such diversion to trucks, it is estimated that capital outlays for highways in the six states in 1970 would have been increased by \$105 million (4 percent) and maintenance outlays \$86 million (8 percent). By extension, it is estimated that such costs would increase on an annual basis by \$125 million and \$94 million respectively (or 3 and 6 percent) in the 17-state Region. Almost half of the total capital and maintenance outlays would have been required in Pennsylvania alone.

The estimated truck vehicle-miles required to move the intra-regional shipments of the principal commodities carried by the bankrupt railroads would have called for additional rural highway needs in the next 20 years of \$3.5 billion in the 6 core states and \$4 billion for the entire Region, or a 6 percent increase in rural area highway needs in the 6 states and a 4 percent increase

for the Region as a whole.<sup>6</sup> The additional capital outlays would have ranged in 1970 alone from a low of \$5 million for New Jersey to a high of \$48 million for Pennsylvania in the 6 states studied. The impact on increased maintenance expenditures in 1970 would have ranged from \$2.6 million for New Jersey to \$37.5 million for Pennsylvania.

The increased maintenance expenditures over the next 20 years would exhibit a similar pattern. These increased outlays represent only an estimate of what would be needed to handle the augmented highway traffic in the rural areas under the assumption of diversion to highways. With respect to congestion in metropolitan areas, offpeak traffic would increase by 5 percent in the 20 largest metropolitan areas in the Region.

Half of all U.S. highway maintenance and over 40 percent of capital expenditures are made in the Region. The capacity of existing secondary highways and bridges somewhat constrains further growth of trucking in rural areas. Testimony before the Rail Services Planning Office of the Interstate Commerce Commission indicated numerous instances in which it was believed that existing roadways simply could not handle additional bulk movements by motor carriers. Also, highway maintenance expenditures have become increasingly burdensome to the states. Further reclassification of highways which would result in reducing the mileage available for federal construction funds, as authorized by Section 148 of the Federal Aid Highway Act of 1973, would affect this constraint over a period of time.<sup>7</sup>

Some compensation for the functional reclassification of highways to remove mileage from federal-aid systems is provided in the 1974 amendments to the Federal-Aid Highway Act which authorizes \$200 million to be spent in fiscal 1976 on roads not on Federal-Aid highway systems—where a substantial amount of highway traffic and highway trust fund earnings originate. Department of Transportation proposals for fiscal year 1975 expand the spending flexibility for roads not on Federal-Aid highway systems.

As noted earlier, to illustrate more specifically the impacts that could occur from such diversion, two areas were selected for more detailed study, one a rural area, and the other urban.

<sup>6</sup> As estimated by the Federal Highway Administration, total rural highway needs for the Region as of 1970 (including rural arterials) amounted to almost \$100 billion for the next 20 years. An additional \$24 billion were estimated for maintenance requirements in rural areas in the Region. If one includes all urban needs these figures double in amount. See 1972 *National Highway Needs Report*, U.S. Department of Transportation, pp. IV-11 and IV-83. Reprinted as House Document No. 92-266.

<sup>7</sup> See Testimony of U.S. Department of Agriculture. Summarized in Rail Services Planning Office, *The Public Response to the Secretary of Transportation Rail Services Report*, Volume II, Mid-Atlantic States, October 1974, p. 123. Also, U.S. Department of Agriculture, *Transportation in the Countryside*. U.S. Congress, 93d Congress, 2d Session, Committee on Agriculture, House of Representatives, October 1974.

Richmond-New Castle, Indiana, was selected as the rural area. New Castle is the crossroads of four Penn Central lines and two Norfolk & Western lines which have been identified as "potentially excess" lines.<sup>8</sup> Four other Penn Central lines crossing this zone are also designated as "potentially excess." Regarding impact on this area's highway system, a possible peak of 400 trucks added to daily traffic counts on the interstate route traversing the area is unlikely to place any serious burden on highway capacity, although they will add to maintenance requirements. The annual increase in truckloads moving into or out of the area is estimated at about 64,000; this extra truck traffic would involve significant increases in fuel consumption and in pollution.

Toledo, Ohio, was selected for further analysis as a representative urban area. Toledo ranks eleventh in the generation of carloadings in the Region. Four of the lines of the railroads in reorganization, and three lines of the Norfolk & Western which converge upon entering the Toledo area, have been designated as "potentially excess." The 6.75 million tons originating and terminating in Toledo would require about 400,000 truckloads annually, or an average of 1,400 truckloads daily, into the area to handle this tonnage if it were all diverted from rail to trucks. These 1,400 trucks would represent about a 39 percent increase in the truck traffic flow on local streets and an increase of 8 percent in offpeak-hour truck operations. Although not a serious problem for traffic on the Interstate Highway System, this increased trucking to and from delivery points in the Toledo area would represent a serious increase in congestion.

### Alternate Mode Service to Light Density Lines

One of the key studies being performed by the USRA concerns service to light density locations. As fully described in Chapters 16 and 17 of Volume II, the study process involves analysis of two critical factors: the costs and revenues of providing rail service on each identified light density line, using 1973 data and various assumptions about traffic growth or rate changes; and employment and economic effects on local communities if they were to lose rail service.

The Association has posed the question, both as a policy matter and as a research technique, of what increase (or decrease) in transportation costs local shippers would experience if they were to use truck service instead of rail service. This extra (or reduced) cost is a key element in estimating the impact on the community of rail service discontinuance. Findings on this issue are presented in Chapter 7 and Appendix J. Related studies also provided the Association with estimates of the energy consumption and pollution impacts

<sup>8</sup> Department of Transportation, *Rail Service in Midwest and Northeast Region*, February 1974. For traffic estimates of diversion to truck in Richmond-New Castle, Indiana, and Toledo, Ohio, see Wilbur Smith, *op. cit.*, p. 176.

of substituting truck service for rail. Indications of the scale of those effects are presented in Chapter 11.

In considering the extra costs or savings from the use of substituted service for light density rail lines, the relevant costing technique is again total distribution costs. Branch line rail users are no different in this respect than shippers located on main lines. In both cases the shipper must calculate transportation costs as only one element in the range of production, inventory and final distribution costs. The private decision on mode choice between rail and truck is, therefore, very much like the public benefit/cost analysis associated with retention, subsidy or abandonment of light density rail lines in view of possibilities for substituted service by truck.

The community impact study results presented in Volume II indicate a smaller range of adverse effects at the county level than one might expect from examination of testimony presented to the RSPO. In many low-volume areas, truck service would be chosen over rail if total energy and economic resource consumption factors were considered. Chapters 7, 11 and Appendix J offer documentation of this finding.

There are many instances, to be sure, where light density rail lines will not be recommended for inclusion in the Final System Plan. Unless subsidy or sale is arranged for these lines, rail service will be terminated, and shippers will have to relocate or use truck service that probably is more costly than existing rail service. Communities, local shippers and consumers would have to bear these extra costs. Initial research indicates, again, that these extra costs are not onerous, except in a few specific cases (see Appendix J). If rail service is abandoned, changes in trucking service and cost levels will reduce even these limited impacts.

### Conclusions

The mature, industrialized communities in this Region require an assured flow of minerals, agricultural goods and bulk and heavy machinery shipments from other areas. If the facilities of bankrupt railroads were removed from service, the impact upon both urban and smaller local areas of the Region would be severe. In recent years, railroad strikes and truck stoppages have indicated the great dependence of the economy on reliable, coordinated freight transportation. Each mode contributes to the transportation system, but the nagging questions remain: Do we now have the best division of freight traffic among the modes? To what extent has unbalanced public financial support for the various modes altered optimum utilization of each mode? There is evidence that public financial support for other modes has had a substantial negative impact on railroads.

National transportation policy should have the overall goal of minimizing total resource consumption in the transportation of goods and people. If an alterna-



tive mode is available to areas now served by railroads, public costs should be considered in adopting a policy toward the competitive modes. There are social, environmental and energy costs involved in serving areas by truck or water which should be compared to the costs involved in various forms of assistance to the railroads within the Region. To the extent that total costs are lower for the other modes, the use of such other modes should be increased and vice-versa.

In the 17-state Region, rail competes with highway, water, air and pipeline transport. The ubiquity of the highway network and technical advances in road equipment make truck competition especially formidable. Railways generally have cost advantages over trucks in providing line-haul and long distance movement of car-load lots but are less able to provide quick delivery and are less flexible with respect to pickup and delivery times and locations. Rail is more flexible and faster than barges, but often at higher unit costs. No combination of pipelines, truck and barge service can replace fully the service provided by railroads.

Shippers have indicated a willingness to pay premiums for the quality of service provided by other modes, and this is a factor to be considered in analyzing the desirability of maintaining rail service or encouraging service by alternative modes. Railroads may not be the best mode of performing traditional terminal services. However, railways can rely on truck subsidiaries or contract truckers to perform some of the pickup and delivery service, with transfer to and from rail at appropriate terminals. While trucks are limited in what they can carry economically, recent legislation to increase the sizes of such vehicles will, absent other factors, expand the universe of truck-eligible traffic.

In cases where light traffic volume makes rail service uneconomical, and service continuation subsidy is not justified, some substitution of truck for rail service will take place. If existing highways are not able to handle increases in heavyweight trucking, additional highway expenditures may be necessary. No doubt there are cases where the costs of such highway expansion would exceed the rail continuation subsidy requirement.



# 11

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## Factors Affecting Environmental Assessment of the System Plan

*The Regional Rail Reorganization Act of 1973 recognizes that efficient and safe high-density rail service can play a vital role in conserving energy and protecting the environment. The Act directs the Association to assess the potential environmental and energy use advantages and disadvantages of providing transportation by railroads and other modes.*

*This chapter provides background for an assessment of the environmental consequences of any plan to restructure the rail system in the Region. USRA findings were drawn from internal and external sources, including studies prepared by federal, state and independent agencies, and testimony presented at Rail Services Planning Office hearings.*

*These findings have led to the conclusion that, although rail service is more efficient than other modes for long- and medium-haul traffic, the use of trucks for many short, light-density hauls would lower current levels of harmful emissions, decrease energy consumption and, most important, aid in providing a high quality rail system. The most significant environmental benefit associated with rail service is to insure the retention of quality rail service in major markets.*

All human activities require energy and affect the environment. The magnitude of these environmental consequences depends both on the aggregate *amount* of human activity (a function of population and consumption per person) and on the *type* of activities people engage in or the kinds of products they consume. The transport sector of the economy uses large amounts of land and energy and has manifold environmental effects. In 1973, all transportation accounted for 31 percent of the energy consumed in the United States, but freight and common carrier passenger transportation consumed only 12 percent. Transport facilities, including principally highways, roads and streets, airports, railroad yards and port facilities occupy 1.5 percent of America's land area.

Transport-related environmental impacts are more directly dependent on types of economic activities than on total growth of the economy. As noted in Chapter 1, transport demand is growing more slowly than GNP. At the same time, however, and as noted in Chapter 8 and Chapter 10, the mix of transport modes is changing dramatically. Railroads are losing market shares to trucking and inland waterways. Rail passenger traffic has shifted to private autos and airlines. These shifts have been made to accommodate the changing nature of economic activity and altered service requirements or preferences of shippers and travellers. In each example cited above, the environmental impact of the shift almost certainly has been negative.<sup>1</sup>

In sum, transportation causes a substantial part of the pollution-generation problem of a modern industrial society, and the rail contribution to that problem, while not insignificant, is only 3-4 percent of all energy used. It is clear that the growth of freight transport activity is less of a reason for environmental concern than the shift away from railroad transportation during the post-war period.

The Regional Rail Reorganization Act clearly mandates assessment of the relative environmental impact of railroad service versus transport by alternate modes. This chapter presents a foundation for such an assessment, by discussing relative energy consumption and pollution emissions of the various modes—with qualifications based on types of transport services provided. Battelle Memorial Institute of Columbus, Ohio, under contract to the Association, will prepare an environmental assessment of the Final System Plan that will incorporate findings of other studies.

Congress intended that the plan for restructuring rail service in the Northeast and Midwest achieve several environmental goals. Section 206(a)(6) of the Act directs that the Final System Plan be formulated to achieve:

attainment and maintenance of any environmental standards, particularly the applicable national ambient air

<sup>1</sup> Barry Commoner, Michael J. Corr and Paul J. Stamler, "The Causes of Pollution," *Environment* (Apr. 1971), p. 3.

standards and plans established under the Clean Air Act Amendments of 1970, taking into consideration the environmental impacts of alternative choices of action.

Section 202(b)(2) indicates that the Association should investigate:

the extent to which available alternative modes of transportation could move such traffic as is now carried by railroads in reorganization; and the relative social, economic, and environmental costs that would be involved in the use of such available alternative modes, including energy resource costs.

Other references to environmental, social and energy considerations appear elsewhere in Sections 202 and 206.

Although the Association must consider the environmental effects of railroad operations in the course of its planning process, Section 601(c) of the Act specifically exempted the Association from the preparation of an Environmental Impact Statement (EIS) during the planning stage. After the effective date of the Final System Plan, various activities of the restructured railroads may be subject to the provisions of the National Environmental Policy Act.

This chapter seeks to provide a general appreciation of the type and magnitude of environmental consequences that are likely to flow from restructuring rail service in the Region. In so doing, it provides initial answers to such important questions as these: If operations of the railroads in reorganization were to be dramatically curtailed in scope, perhaps eliminated, what would be the environmental impact? What will be the effect on local environments of discontinuing rail service on light-density lines? How do the environmental effects of railroads compare with those of competing modes of transportation?

The material in this chapter draws heavily on previous studies of transportation effects on the environment conducted by the Environmental Protection Agency, Council on Environmental Quality, the Departments of Commerce, Interior, and Transportation and other federal and state agencies. Findings made by these agencies, in conjunction with federal regulations and state and local ordinances, have modified the activities of Commerce, Interior, and Transportation and other this trend will continue. In addition to reviewing previous studies and testimony presented to the RSPO, the Association sponsored several studies directed at an environmental assessment of the Final System Plan. Some of the preliminary findings of these studies are described in this chapter.

### Environmental Effects of the Modes

The various modes of transportation differ with respect to their impact on the environment. This section discusses those differences in the categories of energy consumption, air pollution, noise and water pollution, concentrating on mainline traffic movements.

Successful restructuring of the Midwest and Northeast rail system under the Final System Plan would prevent an abrupt change in the mix of transport modes that would substantially alter fuel consumption patterns. If the Final System Plan were to result in a significant increase in truck traffic through urban areas where pollutant concentrations are already high, the Plan might impinge upon transportation control plans adopted by some air quality control regions. Any switch from rail to truck transport for longer distances would increase pollutant emissions from truck engines substantially more than the corresponding decrease in locomotive emissions. Presumably, a small incremental increase in truck traffic along rural roads replacing minimal rail traffic along branch lines would not produce enough change in pollution emissions to violate air quality standards.

Other aspects of the restructured rail service are also potentially significant. For example, increased rail electrification would increase the amount of fuel being consumed by electric generating stations with an attendant growth in particulate and sulfur-oxide concentrations of the air down-wind of these power plants, but would reduce rail diesel emissions enroute. Increased rail commuter service also would reduce the amount of internal-combustion engine emissions from the automobile in commuting areas.

#### Energy for Train Movement

Total U.S. energy consumption for 1972, in quadrillions of BTUs, is shown in Table 1. Within the transportation sector shown, about 74 percent of total energy use is for passenger movement. Another 23 percent of transportation energy consumption is for local and intercity trucking, rail freight movements and air-passenger transportation. The balance of 3 percent is consumed by water, pipeline and air-freight carriers. Over the past decade, transportation energy use has been increasing by 4 to 5 percent annually, a higher rate than traffic growth. This reflects shifting modal shares and perhaps operating practices which are less energy efficient than those used in the past.<sup>2</sup>

TABLE 1.—U.S. energy consumption

Sector	Consumption	Percent
Household and commercial.....	18.0	30
Industrial.....	22.9	39
Transportation.....	18.3	31
Total.....	59.2	100

Source: Federal Energy Administration.

Energy sources for the transportation sector in 1972 are shown in Table 2.

<sup>2</sup> Peat, Marwick and Mitchell, *Industrial Energy Studies of Ground Freight Transportation*, July 1974.

TABLE 2.—Energy sources for transportation

Source:	Trillions of BTUs consumed
Coal.....	4.3
Oil.....	17,496.5
Gas.....	789.9
Electricity from utilities.....	15.5
Total.....	18,306.2

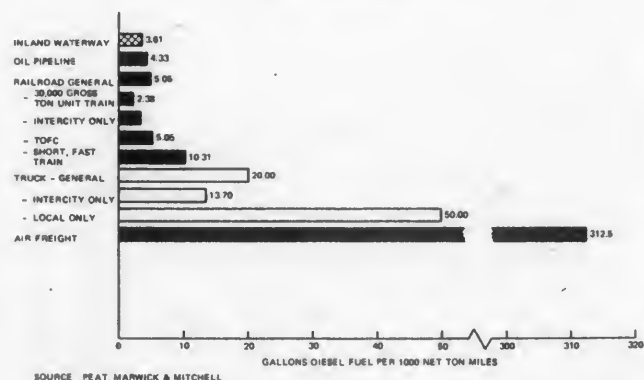
Source: Federal Energy Administration.

Plainly, oil is the mainstay of the transportation sector: 54 percent of the Nation's petroleum fuel consumption is used to produce transportation services.<sup>3</sup> World oil reserves fluctuate with exploration activity and discovery, but should not be considered inexhaustible. It is imperative—even without considering import uncertainties and rising prices—to conserve the use of petroleum to the extent that this can be done without economic and social disruption.

Figure 1, based on the findings of Peat, Marwick and Mitchell, shows relative energy consumption by transport mode. According to these data, the ratio of fuel used per ton-mile moved is substantially lower for railroads than trucks. Inland waterway and pipeline energy consumption per ton-mile is slightly better than for all railroads, but if the comparison is drawn with heavy-unit trains—the type of service which if necessary could substitute for barge and pipeline movements—railroads are more energy efficient than these modes as well.

The findings for energy intensiveness of railways compared with trucking are of particular relevance because these are the two ubiquitous modes. Rails and trucks compete for carload traffic in almost every town of the Nation. It was largely for this reason that Chapter 10 concentrated so heavily on the rail-truck trade-off. Similarly, testimony before the RSPO frequently addressed the relative energy savings of service by rail compared to truck.<sup>4</sup>

FIGURE 1  
ENERGY INTENSIVENESS



<sup>3</sup> Wilbur Smith and Associates, *Economic Study of Alternative Modes and Their Costs: Final Report*, p. 149.

<sup>4</sup> For example, Rep. Barber B. Conable, Jr. (N.Y.) testified: "The substantial energy efficiency advantages of railroads in long-haul freight service are well recognized and should be encouraged . . ."

TABLE 3.—Variations in energy intensiveness by mode

	Btus per net ton-mile			Ton-miles/gallon			
	Rand Corp. "Methods for est. vol. energy and demand of freight transportation"	Battelle Laboratories "Energy required for movement of intercity freight"		Oak Ridge National Laboratories	(Btu/ton-mile at 138,690 Btu/gal)		
		Emissions analysis basis	Fuel-use basis		Carnegie- Mellon U.	DOT	FEA
Freight.....					20		
Inland Waterway.....	500			680	240 (578)	300 (463)	276
Oil pipelines.....	1,850			450	287 (519)		307
Air freight.....	63,000			42,000	110 (13,500)		5
Railroad:							
30,000 gross ton unit train (200 cars) at 25 mph.....					420 (330)		
3,000 gross ton train (40 cars) at 90 mph.....					97 (1,430)		
Total freight.....	750			670		180 (771)	197
Intercity.....		475	500				
Trucking:							
Total freight.....	2,400		2,800	2,800		50 (2,774)	53
Intercity.....		1,730	1,870				
Local urban trucking.....							19

<sup>1</sup> Kerosene at 135,000 Btu per gallon. <sup>2</sup> Excludes fuel spillage and waste.

Table 3 represents an effort to show that the Peat, Marwick and Mitchell findings displayed in Figure 1 are corroborated in several other studies. These studies use different bases and arrive at various different estimates, but there is a remarkable degree of uniformity in their findings.

To be sure, the comparisons shown in Figure 1 are based on ton-miles and thus do not reflect different values in the goods. Furthermore, ton-mile calculations for railroads usually fail to include the additional transportation to and from the rail head. Accordingly, the number of ton-miles required to move goods between points intermediate to rail terminals can be greater than if the shipment moved entirely by truck. This is particularly important for shipments moving relatively short distances. These drawbacks noted, no better index is available.<sup>5</sup>

Many factors affect the relationship of fuel consumption to ton-mile production. The principal physical resource consumed in both train and truck operation is diesel fuel. Fuel consumption is a function of engine efficiency and power requirements and diesel engine efficiency varies with engine size. In this respect, railroads are favored over trucks because rail diesels have large displacement and hence generate less friction per unit of tractive effort. Of course, the performance of any engine depends upon the maintenance programs designed to maximize engine efficiency over the long run.

Power requirements of the two modes differ considerably. Generally they relate to mass and speed. The energy required for traction increases with speed. Frequent changes of speed produce kinetic energy requirements, and trucks are more sensitive to this than trains,

although accelerating, decelerating, changing grade and braking characterize both modes.

Comparative power requirements are also affected by load factors and optimum cargo densities—which are higher for railroads than trucks. Other considerations are circuitry, empty equipment movement, the relationship between gross weight and payload and the horsepower-to-weight ratios of the tractor and locomotive.

An ideal comparison between rail and truck would use engineering functions to relate differences in operational characteristics to energy usage. Unfortunately, this approach is not possible because the necessary data are not available; the complexity of the issue has so far defied investigation.

#### Electrification and Energy

Railroads are the only surface mode of transport for which the substitution of other fuels for petroleum is technically feasible. Although the overall energy efficiency of electric rail propulsion may be about the same as that of the modern diesel, the source of energy can be coal, nuclear, hydroelectric, solar or other sources. A study<sup>6</sup> has estimated that electrifying the 6,200 miles of main line railroad with the highest density traffic would cost almost \$900 million (excluding power plants) and would shift the movement of about 200 billion net ton-miles (1973) of freight away from oil dependency. At 200 net ton-miles per gallon, this could save up to 1 billion gallons of fuel (1973), or 24 percent of all the diesel fuel used in 1973 by Class I railroads, 5 percent of all petroleum used for ground

<sup>5</sup> American Trucking Association. *Debunking the Rail Energy Efficiency Myth*, August 1974, and *The Ton-Mile, Does It Properly Measure Transportation Output*, January 1975.

<sup>6</sup> Pan-Technology Consulting Corporation, Inc., *Cost-Effectiveness Review of Railroad Electrification*, prepared for Federal Railroad Administration, Department of Transportation, Washington, D.C., April 1973.



freight transportation or 0.4 percent of total petroleum consumption in the U.S.

The electrification of a rail line requires 3 to 5 years. A minimum of 1 year is required to design the system, including safety and signal change requirements, and at least 2 years is required to construct and test the system. Construction of the electric transmission system without interference to traffic is a further complication.

The major disadvantage of electrification has been its marginal economic return in view of the cost of capital. Investment of \$125,000 to \$200,000 per route mile (not including power stations or transmission facilities) would be required.<sup>7</sup> Moreover, the recent energy shortage has tested the ability of the utilities in general to meet even existing demand, much less added demand. Environmental concerns and the renewed demand for coal may cause generating capacity and fuel supply problems in the short term.

#### Air Pollution

Direct engine exhaust emissions have been identified as a major factor in the degradation of the environment. The principal pollutants resulting from diesel-fuel combustion are carbon monoxide, unburned or partially burned hydrocarbons, oxides of nitrogen and sulfur, smoke, other particulates and odor.

Comprehensive data on diesel-engine exhaust emissions are not readily available. However, the Battelle Columbus Laboratories estimated that in 1970 American railroads generated 800,000 tons of gaseous emissions (particulates excluded) and 26,000 tons of smoke emissions. Figure 2 puts this in perspective.

Figure 3 shows Battelle Columbus Laboratories estimates of air-pollutant emissions from all transportation sources in a recent year.

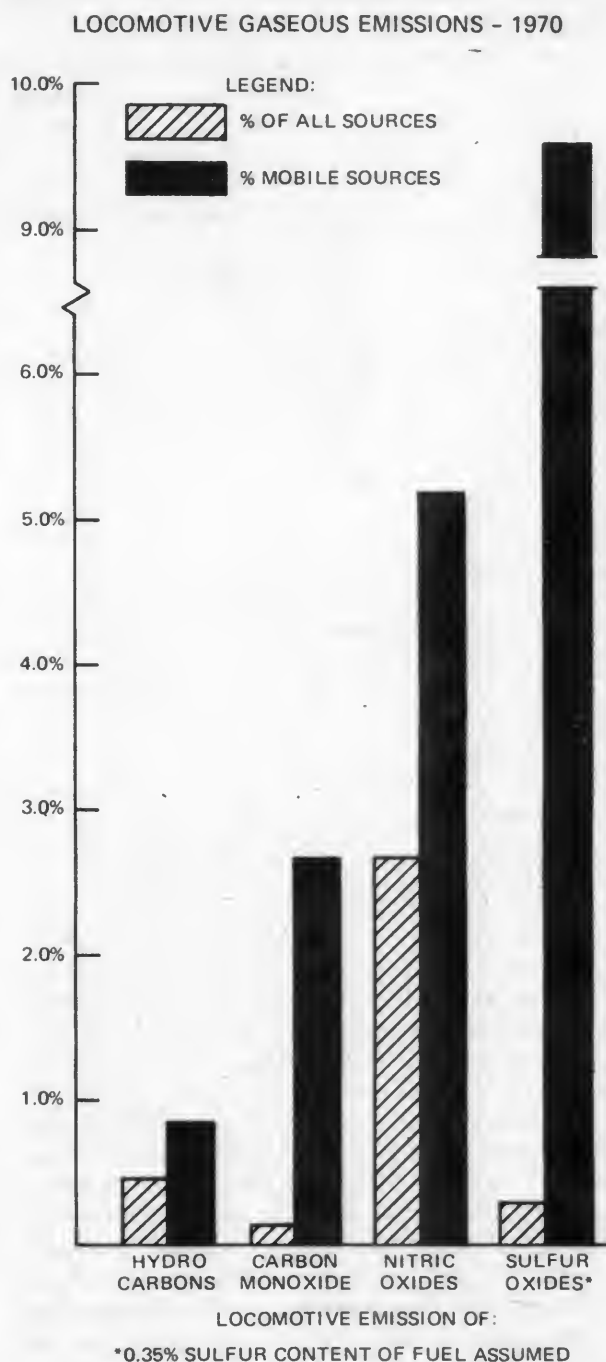
Clearly, light-duty gasoline engines such as those used in automobiles and panel trucks are the principal source of emissions, but the significant comparison for freight service is the fact that diesel trucks produce almost half again as many tons of emissions as do railroads, while all trucks (both for hire and private, and mainly diesels) produce only a little more than half as many intercity ton-miles of freight movement as railroads do.

The relationship between energy input and pollution output is the same as the energy consumption ratios for intercity freight movement by truck and rail—about four to one. A study for the year 1970<sup>8</sup> indicated that, with trucks carrying almost half as much freight traffic as railroads, truck emissions were approximately double those of the railroads. This finding

<sup>7</sup> Peat, Marwick and Mitchell, *Industrial Energy Studies of Ground Freight Transportation*, July 1974, pp. ix-15.

<sup>8</sup> Battelle Columbus Laboratories, *A Study of the Environmental Impact of Projected Increases in Inter-City Freight Traffic*, AAR, August 1971.

FIGURE 2



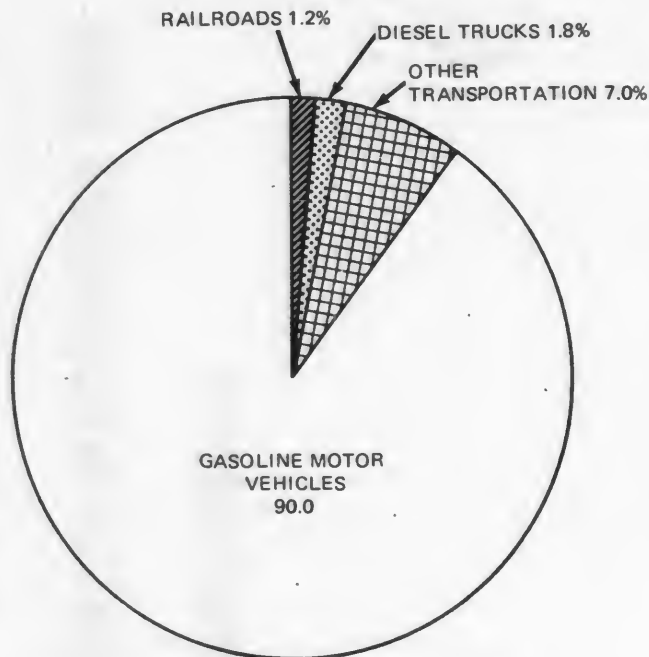
SOURCE: Study by Southwest Research Institute for the U.S. Environmental Protection Agency.

agreed with those of a study performed for the Department of Health, Education and Welfare in 1968.<sup>9</sup>

<sup>9</sup> *Nationwide Inventory of Air Pollutant Emissions, 1968*, National Air Pollution Control Administration, DHEW, August 1970.

FIGURE 3

## PERCENT OF AIR POLLUTANT EMISSIONS FROM ALL TRANSPORTATION SOURCES - 1968



SOURCE: BATTELLE COLUMBUS LABORATORIES, A STUDY OF THE ENVIRONMENTAL IMPACT OF PROJECTED INCREASES IN INTERCITY FREIGHT TRAFFIC TO ASSOCIATION OF AMERICAN RAILROADS, AUGUST 1971, p. 18

A comparison of Tables 4 and 5 illustrates that energy consumption and air pollution output are directly proportional. Use of a thousand gallons of fuel in a locomotive produces, on the average, 688.5 pounds of emissions. The comparable figure for trucks is 678 pounds. Essentially, this one-to-one relationship yields the four-to-one modal pollution relationship. Although trains and trucks produce approximately the same amount of emissions per thousand gallons of fuel, the composition differs. The rail mode produces significantly more particulates, sulfur oxides and hydrocarbons, while truck emissions concentrate carbon monoxide. Whether one combination is more deleterious than the other is unknown.

Two specific considerations are imposed upon the Final System Plan by Section 601(c)(1) of the Act with respect to air pollutant emissions. First, the emissions must meet the requirements of all State Implementation Plans (SIPs), which set forth control strategies to achieve air quality standards between 1975 and 1978. The SIPs include emission standards for stationary sources, such as power plants. In some air quality control regions (AQCRs) transportation control plans call for reduction of highway traffic. Plans for main-

TABLE 4.—Average locomotive emission factors based on nationwide statistics

Pollutant	Average Emissions*	
	lb/10 <sup>3</sup> gal	kg/10 <sup>3</sup> liter
Particulates†	25	3.0
Sulfur oxides‡ (SO <sub>x</sub> as SO <sub>2</sub> )	57	6.8
Carbon monoxide	130	16
Hydrocarbons	94	11
Nitrogen oxides (NO <sub>x</sub> as NO <sub>2</sub> )	370	44
Aldehydes (as HCHO)	5.5	0.66
Organic acids‡	7	0.84
Total	688.5	

\*Based on emission data contained in Table 5.2 and the breakdown of locomotive use by engine category in the United States in C. T. Hare and K. J. Springer, "Exhaust Emissions from Uncontrolled Vehicles and Related Equipment Using Internal Combustion Engines."

†Data based on highway diesel data from T. C. Young, Unpublished Data from the Engine Manufacturers Association, Chicago, Ill., May 1970.

‡Based on a fuel sulfur content of 0.4 percent from G. P. Hanley, *Exhaust Emission Information on Electro-Motive Railroad Locomotives and Diesel Engines*, General Motors Corp., Warren, Mich., October 1971.

Source: C. T. Hare and K. J. Springer, "Exhaust Emissions from Uncontrolled Vehicles and Related Equipment Using Internal Combustion Engines," Part I, *Locomotive Diesel Engines and Marine Counterparts*, Final Report, Southwest Research Institute, San Antonio, Tex., prepared for the Environmental Protection Agency, Research Triangle Park, N.C., under Contract Number EHA 70-108, October 1972, as quoted in U.S. Environmental Protection Agency, *Compilation of Air Pollution Emission Factors*, April 1973, p. 3.2.2-1.

TABLE 5.—Emission factors for heavy-duty, diesel-powered vehicles\*

Pollutant	Emissions	
	lb/10 <sup>3</sup> gal	kg/10 <sup>3</sup> liter
Particulate	13	1.6
Sulfur oxides† (SO <sub>x</sub> as SO <sub>2</sub> )	27	3.2
Carbon monoxide	225	27.0
Hydrocarbons	37	4.4
Nitrogen oxides (NO <sub>x</sub> as NO <sub>2</sub> )	370	44.0
Aldehydes (as HCHO)	3	0.4
Organic acids	3	0.4
Total	678	

\*Data are based on weighting factors applied to actual tests conducted at various load and idle conditions with an average gross vehicle weight of 30 tons (27.2 MT) and fuel consumption of 5.0 ml/gal (2.2 km/liter).

†Data based on fuel with average sulfur content of 0.2 percent.

Source: Young, T. C. Unpublished emission factor data on diesel engines. Engine Manufacturers Association Emission Standards Committee, Chicago, Ill., May 1971, as quoted in U.S. Environmental Protection Agency, *Compilation of Air Pollution Emission Factors*, April 1973, p. 3.1.5-2.

taining air quality at the standards for the next decade are being evolved as part of the SIPs.

SIPs require that emissions of sulfur dioxides, particulates, carbon monoxide, nitrogen oxides and hydrocarbons meet specified standards. Where stationary source emissions are now greater than the specified amount, control devices or methods must be employed to reduce the emissions. Plans for maintenance of air quality standards will restrict the introduction of new air pollution sources where the pollutant concentrations may violate standards.

The second consideration with respect to emissions that is relevant to the Final System Plan is the federal

standard calling for the reduction in air-pollutant emissions from new diesel engines. For instance, exhaust smoke opacity of model year 1973 diesel engines must not exceed 40 percent during the engine acceleration mode and 20 percent during engine lugging mode. As a result of new engine performance standards such as these, objectionable aspects of both truck and locomotive diesel engines will decrease. Introduction of these new engines will temper the adverse environmental impact of increases in use of both transportation modes.

#### Noise Impact

In recent years, there has been increasing awareness of noise as a significant factor in the quality of life. For the most part, concern has focused on occupational noise rather than community noise, to which railroad operations contribute. According to the Commerce Department's Panel on Noise Abatement, "The various modes of transportation, taken collectively, represent the major cause of complaints about noise. Aircraft noise has received the most publicity in recent years and is unquestionably the major source of annoyance for millions of Americans who live near airports. Although the sound levels involved are much lower, many more people are annoyed by surface transportation noise, especially from trucks, buses, motorcycles, and sports cars."

No mention is made of railroads, and the Association does not consider the noise produced by their operations to be of significance except, perhaps, in a few local circumstances. The proximity of tracks and residential housing can produce unpleasant intermittent noise levels. Such conditions do exist, but they are rare in terms of overall rail activity. Moreover, they may be decreasing due to movement of both population and high-density rail traffic away from central cities where these atypical circumstances are usually found.

The amount of noise produced by train operations depends upon the following factors:

- The location of rail lines relative to residential or other frequented areas.
- The location of major highways and streets.
- The type of equipment in use.
- The number of grade crossings and state laws concerning audible warnings.
- The number and age of motor vehicles replacing rail.
- The types of motor vehicle engine in use—diesel vs. gasoline.
- The age of the motor vehicles in use.
- The overall level of background noise.

Adverse community reaction may be expected when the energy level of an intruding noise exceeds the resid-

ual noise level.<sup>10</sup> The degree of reaction depends primarily on the amount of the excess and, secondarily, on such additional factors as season, personal attitude and characteristics of the noise. A USRA consultant<sup>11</sup> concluded that widespread complaints generally may be expected when the energy equivalent levels exceed the residual level by approximately 17 decibels (dB), and vigorous community action is likely when the excess is approximately 33 dB. Daytime outdoor residual noise levels vary widely, depending on the type of community, and can be grouped into the following approximate ranges:

• Wilderness and rural	16-35 dB(A)
• Suburban residential	36-45 dB(A)
• Urban residential	46-55 dB(A)
• Very noisy urban residential and downtown city	56-75 dB(A)

Intermittent noises created by multiple single events—such as infrequent passage of a diesel locomotive, aircraft overflights and diesel trucks on the highway—constitute an important source of noise pollution. Presumably, people living in quiet rural communities are likely to be more affected and irritated by these events than residents of cities.

In addition to the noise generated by the freight cars and diesel locomotives, the siren or horn can produce high noise levels. Passage of trains across local streets and highways may produce additional noise if the crossing is protected with warning bells. Switching of freight cars can produce loud sounds during coupling operations, and automatic car retarders in some classification yards produce an objectionable squeal. Normal freight operations cause a loud series of bangs when the drawbar slack is pulled out or contracted as the train accelerates or decelerates. Where continuous welded rail is not used (virtually all branch lines fall into this category), noise is emitted as car wheels cross the rail joints. On lightly used rail lines, these noise levels would only be bothersome to residents living or working in close proximity to the line.

In communities where the rail line adjoins warehouses or other structures, trees and shrubbery, sound transmission may be blocked or effectively muffled. Interior noise levels are normally lower as a result of the sound absorbing characteristics of buildings, so the greatest impact is likely to be felt by those residents who spend the most time outdoors.

In general, the sound levels from both trains and trucks can range from 75 to 100 dB, with values around 80 to 90 dB being common for 50 feet away from a vehicle moving 50 m.p.h. Sound levels at the upper end of this range are critical if there is extended exposure,

<sup>10</sup> Environment Protection Agency, *Community Noise*, Office of Noise Abatement and Control, WR 71-17, Washington, D.C., November 1971.

<sup>11</sup> Consad Research Corporation, *Community Impacts Resulting From Loss of Rail Service*, Vol. IV, p. 66.

while sound levels at the lower end are characterized as "annoying" by many people.

The Railroad Noise Emission Standards document published by the United States Environmental Protection Agency in July 1974 deals primarily with noise from locomotives and flat wheels on rolling stock. Compliance with these requirements will reduce noise from railroads. The requirements for locomotive noise, for example, would have the effect of doubling the distance between the listener and the locomotive.

#### Water Pollution

Water quality can be affected by railway operations and maintenance as a result of accidental spills of chemicals or other harmful substances from train wrecks, herbicide use, drainage disruption and leakage of oil and lubricating fluids. The seriousness of the situation is dependent upon ground water levels, proximity to water surface seepage and the biodegradability of the foreign substances.

Railroad causeways can interfere with normal water flow, thus affecting marshes and other ecologically sensitive areas. Any resulting artificial impoundment of water could lead to atrophication and degradation of water quality. There is at present no systematic method by which such pollution can be measured.

A more serious threat to water quality is posed by the wide application of pesticides to railroad rights-of-way for weed and brush control. Railroad vegetation control is usually performed on an 8-to-24-foot-wide strip centered on the rails. This control zone constitutes a firebreak to protect adjacent properties from sparks emitted during running or braking operations by the wheels of railroad cars. Normally, the faster a train travels through an area, the wider is the required weed-free area.

Application of herbicides is not uniform. It is a function of the terrain and vegetation, and loadings per acre are generally determined by the manufacturer's specifications. A detailed investigation of the environmental degradation caused by weed and brush control is not possible owing to the indeterminate nature of potential runoff of chemicals into surface waters.

Spillage of fuel—especially at railroad fueling stations, shops and terminals—has environmental effects. However, the percentage of spillage in relation to the quantity used is infinitesimal.<sup>12</sup> Railroads in general have introduced concrete and steel service platforms, with basins and connected sewer systems, to minimize the principal problem associated with spillage—the generation of fuel-water emulsions and sludge. The USRA endorses this practice and anticipates its continuance by ConRail.

In 1973 all forms of transportation used about 0.7 to 1.0 billion gallons of lubricating oil products. Of this

amount, the railroads used about 86 million gallons, local trucking 138 million and intercity trucking about 83 million—totalling 307 million gallons.

About 15 to 25 percent of lubricating oils are consumed by vehicles during operation, some of which enters the environment as air pollutants. The balance is generally recovered and sold to reclaimers who remove undesirable suspensions and recycle the product. About 10 to 20 percent of waste oil is reclaimed as a lubricant. Thirty percent is reduced to nonusable sludge, and the balance is used in other oil products or sold as fuels.

#### Freight Car Dismantling

When a freight car is condemned, certain reusable parts, scrap iron and steel are recycled. A visible environmental impact of the recycling of freight car scrap is the air pollution and aesthetic degradation caused by the open burning of freight cars to remove wood. Some 70,000 freight cars are dismantled each year and it is estimated that half these cars contain three to seven tons of wood each.<sup>13</sup> This translates to the burning of approximately 200,000 tons of wood per year. However, anti-pollution regulations have restricted this activity, and the Region's railroads have largely switched to mechanical means of wood removal.

The Environmental Protection Agency has been studying environmentally superior substitutes for open burning. These are said to include semi-enclosed incinerators and water jets. The Association endorses the development of these alternate means and will support their application when development has progressed to the point of practicability.

#### Light-Density Lines

Discontinuance of rail service on light density lines will affect the physical and aesthetic environment as well as produce the socioeconomic changes discussed in Volume II. The specific impacts in each community and along rights-of-way depend upon the nature of rail operations prior to discontinuance of service and the nature of substituted transportation operations. These impacts are discussed below.

#### Energy

It is not possible to generate county-by-county estimates of the energy impact of light density line service discontinuance of the kind developed for employment and income consequences in Appendix J. The change in the total energy requirement for the entire movement will be a function of the degree of substitution of truck for rail—whether truck is substituted for the entire light-density segment or only for the haul from the nearest remaining rail head to the destination.

<sup>12</sup> Peat, Marwick and Mitchell, *op. cit.*

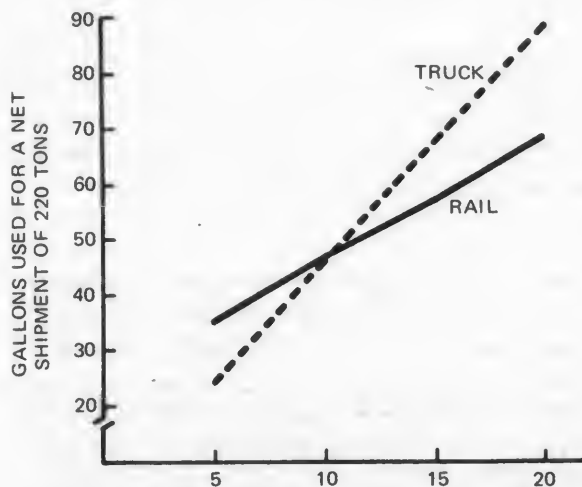
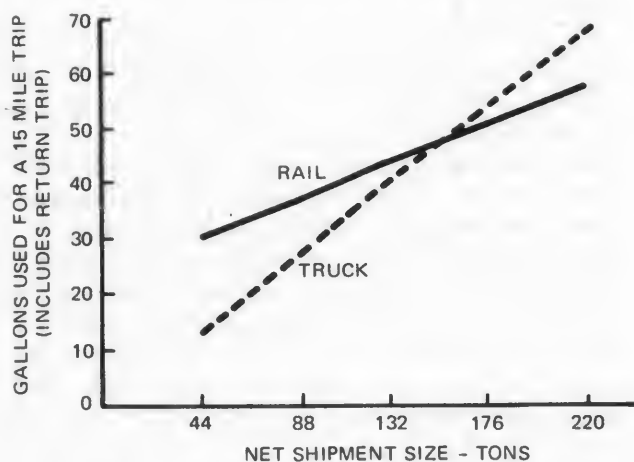
<sup>13</sup> Battelle Columbus Laboratories, *op. cit.*, p. 33.



To generalize, it appears that the shorter the trip distance and the lighter the load, the lesser the energy efficiency of rail compared to truck. Figure 4, which is based on assumptions that truck speed is 30 m.p.h., that train speed is 8 m.p.h. and that one rail car hauls twice the load of one truck, shows this graphically.

There is no single break-even point at which rail service becomes more efficient. Depending on factors such as vehicle speed, weight, route geometry, length of haul and idling time, the break-even point will change for every situation. Figure 4 provides only two examples drawn from an infinite number of possibilities. The extent to which trucks employed in substitute service obtain a back-haul will affect the comparative outcome, too.

FIGURE 4  
ESTIMATED FUEL USAGE  
FOR RAIL & MOTOR CARRIERS



SOURCE: US DEPARTMENT OF TRANSPORTATION  
THE ENVIRONMENTAL IMPACT STATEMENT  
ON "THE TRANSPORTATION IMPROVEMENT  
ACT OF 1973"

## Air Pollution

Figure 3 indicated that rail and truck operations together generate approximately 3 percent of pollutant emissions in transportation. Available statistics indicate that trucks produce approximately four times as much air pollution per ton-mile as trains in mainline service. Nevertheless, the effects on the atmosphere of service discontinuance are likely to be offsetting.

Specific air pollutant emission rates for each affected area will depend on the type of equipment being used, fuel characteristics and the nature of load operations. Gross measurements of energy use and emissions must be viewed with particular caution since the overall advantages of fuel efficiency and lower emission rates inherent in the rail mode are reduced when routes are particularly circuitous and idling time is high. Also, the four-stroke switch engines commonly used in branch line operations are particularly high in pollution emissions.<sup>14</sup>

## Noise

As pointed out in the discussion of noise pollution presented above, peak and average emanations from rail and motor carriers are similar. Nevertheless, motor-carrier operations can produce a greater level of noise impact on community residents because more trucks than rail cars are required to carry the same tonnage. A typical boxcar can carry from 1.6 to 2.8 times the load handled by trailers, as shown in Figure 5.

The problem of quantifying the magnitude of difference in noise effects between the two modes is quite complicated. The important factor in determining the trade-off between rail and motor carriers is the location of the highways and rail lines involved in relation to population centers.

With respect to the general effect of noise pollution, an estimated increase of 5 to 10 trucks per day in the use of adjacent highways should not be significant. Even if accurate methods were available for measuring the psychological distress caused by noise pollution, it is highly unlikely that such minimal increases in the general level of noise would cause measurable alteration in the stress level of individuals. Consequently, no significant effect on noise pollution of rail line discontinuance can be identified by the Association.

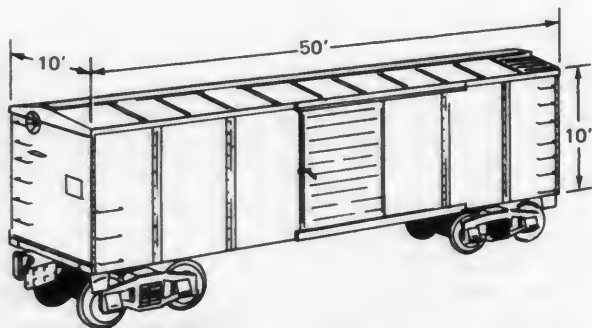
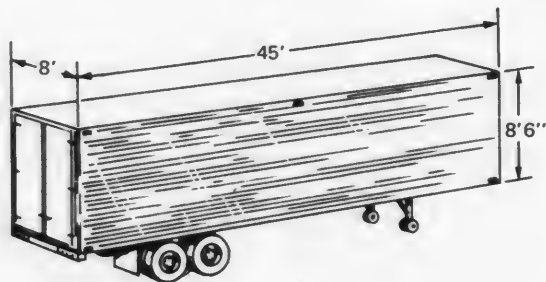
## Water Quality

In general, nonuse of a rail line within a community may produce some minute improvement in local water quality through the elimination of herbicide leaching and runoff. As data on the extent of this runoff are presently unavailable, there is no method for estimating its potential impact. Since the vast majority of branch lines have not had chemical weed and brush control application of herbicides, however, it is likely

<sup>14</sup> Willbur Smith and Associates, *op. cit.*, p. 65.

FIGURE 5  
COMPARISON OF TYPICAL BOXCAR  
AND TRAILER DIMENSIONS

TYPICAL DIMENSIONS	APPROXIMATE CUBIC CAPACITY	TYPICAL LOAD CAPACITY	RATIO OF BOXCAR TO TRAILER	
			CUBIC CAPACITY	WEIGHT OF LOAD
TRAILER 8'w x 8'6"h x 45'L	3060 FT. <sup>3</sup>	25 TONS	1.6	2.8
BOX CAR 10'w x 10'h x 50'L	5000 FT. <sup>3</sup>	70 TONS		



that the overall environmental impact on water quality resulting from discontinuance of service on light density lines is negligible.

#### Land Use

The discontinuance of a rail line has a number of land use implications for the surrounding area.<sup>15</sup> Railroad branch lines generally occupy a narrow strip of land, 60 to 100 feet wide, which may extend for many miles. Because trains are unable to climb steep grades,

the slope of this land will be gentle, and in hilly or mountainous areas the route is likely to be circuitous.

Re-use possibilities for this land generally fall into two broad categories: those that take advantage of the land's unique character as a right-of-way and those that involve breaking up the railroad property and joining its pieces to abutting parcels. Because rights-of-way, when desired, are expensive to assemble, attention will usually be given first to possibilities for maintaining the right-of-way.

In suburban areas, the right-of-way often will have substantial potential for mass transit use, either as a part of a rail or light-rail rapid transit system, as an exclusive use busway or perhaps for use by dual-mode "rail-buses" which can run on both rails and roads. Rights-of-way have been taken over for rail rapid transit use in Boston, Chicago, New York and Philadelphia. Although rail rapid transit is most feasible in high-density metropolitan areas such as these, medium-density metropolitan areas could use abandoned rights-of-way for rail-buses or pave them for exclusive bus use.

The right-of-way may also have some potential for conversion to a highway. Indeed, in some unusual cases it may be necessary to convert a rail line into a highway in order to preserve a means of freight access to an isolated rail user such as a mine. The narrow width of the right-of-way, however, usually will limit any new roads to two lanes. The circuitry of many rail rights-of-way would limit their desirability as highway routes.

Circuitry, on the other hand, may be an asset for recreational use as a hiking, bicycle, horseback, motorbike or snowmobile trail. For such purposes, those rights-of-way providing scenic routes (as many rail routes along river banks frequently do) would be ideal. Accessibility to population centers is an important consideration in evaluating a right-of-way's recreational potential. The light grades on rail rights-of-way are likely to make them particularly appropriate as bicycle trails. A U.S. Department of Interior report to USRA<sup>16</sup> listed nearly 200 of the potentially excess lines as having some potential for recreational use. The Interior Department report also discussed possible use of this land to enhance wildlife resources as an "edge effect" habitat, an impounding area for the creation of small marshes or an access road to or boundary for a game management area. Such adaptations presumably would be implemented by interested state wildlife and fish departments.

Power transmission lines and pipeline routes also have been mentioned as candidates for alternate use of rights-of-way. However, the former are unlikely to be installed along any but the straightest of rail routes

<sup>16</sup> U.S. Department of the Interior, *Report on Rail Reorganization in the Northeast and Midwest Regions of the United States*, Washington, D.C., August 15, 1974.

<sup>15</sup> Consad Research Corporation, *op. cit.*, p. 73.

because of the importance of minimizing installation costs and transmission losses. Railroad rights-of-way may be more suitable for pipelines, since the line-friction losses and higher construction costs of a somewhat indirect but relatively flat route are in part offset by savings in pumping costs. These uses are expected to be limited since abandoned rail lines do not often correspond to a pipeline system distribution pattern.

Even if rights-of-way not needed for rail service have no present re-use potential, the Association is aware of the possibility that alternatives may arise in the future. For this reason, individual states may wish to place restrictions on any future use of the right-of-way. "Land-banking" could be a mechanism to this end.

If a decision is made to obtain the right-of-way intact, then the first step will be to determine whether the railroad has title to the land or only a right-of-way easement. In the latter case, it still may be possible to retain the right-of-way for other transportation purposes, but this will vary from state to state and will depend upon legal precedent. Obviously, the strongest case for retaining the right-of-way for transportation uses can be made when it is needed in order to provide road access to a present rail user. It may even be possible to justify the maintenance of a railroad right-of-way easement for a bicycle or hiking trail, but the legal argument for doing so may be less persuasive.

### Aesthetics

Discontinuance of service on marginal branch lines generally has a positive aesthetic impact on the surrounding community or locality. In populated areas such lines frequently harbor an accumulation of litter, while in less populated areas they may be overrun with weeds. A new use of the land which is identical to that of the abutting uses, whether agricultural, residential or commercial, generally will assure that the land will be cleaner and blend more harmoniously with its surroundings.

A recreational trail, if well-designed and well-maintained, would be a most pleasant re-use aesthetically. Even a new transportation use for the right-of-way is likely to result in better sanitation and weed control than has been provided by the railroads in reorganization. The elimination of grade-crossing protection devices may also be considered an aesthetic improvement.

### Diversion of Rail Traffic to Truck

As discussed in Chapter 10, Congress intended for the Association to study the effects of a possible wholesale diversion of traffic from the bankrupt railroads to trucks. Among those effects would be energy and pollution consequences. The Association has not been able to prepare a definitive study, but it did commission Wilbur Smith and Associates to consider these impacts in their study of alternative modes. Wilbur Smith and Associa-

tes<sup>17</sup> made estimates of energy use and air pollution for six states within the Region assuming diversion of all intraregional rail traffic on railroads in reorganization, which accounts for one-fifth of all rail operations in the Region. Those estimates are that energy use would increase about 4 times and air pollution about 40 times over existing rail performance if trucks were the only alternate mode for these commodities. Air pollution findings are exceptionally tentative and difficult to interpret since they obviously depend upon the specific locale in which such air pollution would occur.

Table 6 presents the Wilbur Smith findings on a state-by-state basis, comparing present rail energy consumption with estimated truck energy consumption. Such a comparison involves both ton-mile relationships, load factors and the ratio of gross vehicle ton-miles to net ton-miles for each mode. In developing these figures, Wilbur Smith and Associates estimated rail uses of energy at 600 Btus per ton-mile and truck use at 2,700 Btus.

TABLE 6.—Approximations of energy and environmental costs of diversion, by state

State	Energy use (Btus in trillions)		Air pollution (tons annually)	
	Rail	Truck	Rail	Truck
All six.....	16.31	142.71	19.1	776.9
New York.....	1.74	15.21	2.0	82.8
New Jersey.....	.60	5.23	.7	28.5
Pennsylvania.....	6.71	58.68	7.9	319.4
Michigan.....	1.26	10.99	1.5	59.8
Ohio.....	4.24	37.10	5.0	202.0
Indiana.....	1.77	15.51	20.8	84.4

Source: Wilbur Smith and Associates, *op. cit.*

The extent of new highway construction and bridge augmentation would depend on the degree of saturation of the existing highway system and congruency of the rail and highway networks. Load limits of existing bridges and pavement would require consideration as well.

### Conclusions

The Association finds that discontinuance of selected light density rail services constitutes little danger to the ecosystem. The Association believes that it is possible to trim some uneconomic light density rail services from the railroads in reorganization with a small penalty in energy consumption and environmental impact and a large saving of total economic resources. Such a redirection of resources would help foster continuance of

<sup>17</sup> *Op. cit.* Estimates of the diversion from rail to truck of the intraregional shipments of 11 commodities on the railroads in reorganization in 6 states were prepared. These 6 states accounted for four-fifths of the intraregional shipments of these commodities on the railroads in reorganization in the 17-state Region. These intraregional shipments amounted to one-fifth of the total rail tonnage originating in the Region and one-half of the intraregional shipments of these commodities in the Region on all railroads.

essential rail services and thus would make a substantial contribution to environmental quality. The greatest environmental disaster from this standpoint would be for railroads as a whole to be unable to survive financially or to become grossly inefficient in doing what they do best—providing high density, mainline service.

The Title IV subsidy provisions of the Act are in-

tended to enable continuation of those services which are not remunerative to railroads subject to the Act but which are valuable from the broader perspectives of income, employment, energy and environmental impacts. Such subsidies will obviate the Hobson's choice between severe local impacts and burdening the Region-wide system with unsustainable deficits.



# 12

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## Manpower Requirements and Policies

*This chapter deals with plans to achieve a fair and efficient use of employees in the new system. It describes the employee protection features of the Regional Rail Reorganization Act of 1973 and emphasizes the need to assure that its provisions will be applied equitably to all employees.*

*USRA's efforts in the manpower area rely on communication with labor. The Association urges that the railroads in the Region to be reorganized as ConRail meet with labor representatives at the earliest possible date. These parties should discuss collective bargaining agreements and single implementing agreements consistent with industry practices. Under the latter, ConRail would enter into comprehensive system-wide agreements with labor, as opposed to individual agreements for each former railroad in the system.*

Successful reorganization of the railroads in the Region requires a highly trained, fully utilized and skilled work force. The Association's planning activities seek to make the most efficient use of employees entitled to protection under the Act while holding manpower expenditures to necessary costs. This chapter is not the final plan for manpower utilization and deployment in the new system. Much remains to be done.

The Association cannot develop a detailed plan for manpower utilization and deployment in the new system at this point. The manpower plan for both contract and noncontract employees will be refined when the final operating plan is adopted. The costs for protection of individuals from both groups will be projected at that time. The Association is also in the process of evaluating the practicability and manner in which an employee stock ownership plan could be used by ConRail. This is discussed more fully in Chapter 14.

This chapter deals with:

- Manpower planning goals established to guide decisionmaking affecting employees of the carriers under study,
- Identification of the manpower available to the new system, both at the time of conveyance and for the succeeding decade, and
- Nature of implementing agreements to provide for the orderly transition of employees to ConRail and the negotiation of single collective bargaining agreements.

### Railroad Employment and Labor Relations

Railroad employment in the United States has declined sharply in the last quarter-century. In 1947 there were 1.3 million workers in the railway labor work force. This shrank to 520,000 in 1973, a reduction of 60 percent. In 1947 the bankrupt carriers (not including the Erie Lackawanna) that are candidates for ConRail employed 335,000 people. This declined 73 percent to approximately 90,000 people by 1973. This total is nearly one-fifth of the workers employed in the industry.

The downward trend was caused principally by a loss in competitive position of the rail industry in freight services, and a dramatic decline in passenger services. The reduced work force is also a result of increased productivity due to improvements in rail technology, particularly the diesel-electric locomotive and mechanized track maintenance and mergers.

The average age of employees on the 6 bankrupt railroads is high, averaging 47 years. Based on age 65 retirement, it is estimated that 30,619 union employees of the roads will retire by 1985, 36.5 percent of the total. Recent changes in the Railroad Retirement Act now permit early retirement at age 60 with a supplemental annuity available to those who retire between that age and age 65. It is worth noting that all employee protection under Title V ceases at age 65. If all em-

ployees elect to retire at age 60, 45, 315, or 54 percent of the current force, would retire over the course of the next 11 years. (See Table 1). Thus, it is clear that 36.5 percent to 54 percent of union employees of the bankrupt railroads will retire during the next 11 years, before the rehabilitation program is completed. Normal attrition due to death and illness will cause total attrition to exceed these figures.

The railroad industry has long been the subject of special federal legislation affecting the conduct of its business and the welfare of its employees. Congress acted to safeguard the welfare of railroad labor as far back as the 1880's. In 1916, the Adamson Act established an 8-hour day for railroad workers covered by labor contracts. During the period of federal operation of the railroads from 1918-20, the U.S. Railroad Administration issued a number of General Orders establishing various work rules, many of which remain in existence today. In 1969, Congress revised the Hours of Service Act to lower the permissible hours on duty of operating employees from 16 to 12 hours.

The Railroad Retirement Act, the industry's counterpart to social security, was enacted prior to the Social Security Act in the 1930's. Railroad workers have had their own statute governing unemployment and sickness benefits for many years. Certain provisions of the Interstate Commerce Act mitigate the potential adverse effect on rail personnel of mergers or abandonments.

The cornerstone of collective bargaining in the rail industry is the Railway Labor Act, originally enacted in 1926 and subsequently amended. The Railway Labor Act provides for freedom in the choice of representation, for the orderly settlement of disputes concerning rates of pay, rules and working conditions and for the handling of grievances arising out of such settlements.

Twenty-six individual unions represent the employees on one or more of the six railroads in reorganization. (See Figure 1). The complexity of labor relations is illustrated by the fact that 140 individual collective

TABLE 1.—Union-represented employees of the railroads in reorganization<sup>1</sup> reaching age 60 and 65, 1975 to 1985

Year	Age 65	Cumulative	Age 60	Cumulative
1975.....	1,726	.....	<sup>2</sup> 14,074	.....
1976.....	1,983	3,709	3,214	17,288
1977.....	2,251	5,960	3,250	20,538
1978.....	2,469	8,429	3,410	23,948
1979.....	2,696	11,125	3,170	27,118
1980.....	2,949	14,074	3,501	30,619
1981.....	3,214	17,288	3,426	34,045
1982.....	3,250	20,538	3,241	37,286
1983.....	3,410	23,948	3,099	40,385
1984.....	3,170	27,118	2,643	43,028
1985.....	3,501	30,619	2,286	45,314
		30,619 (36.5%) <sup>3</sup>		45,314 (54%) <sup>3</sup>

<sup>1</sup> Excluding the Erie Lackawanna.

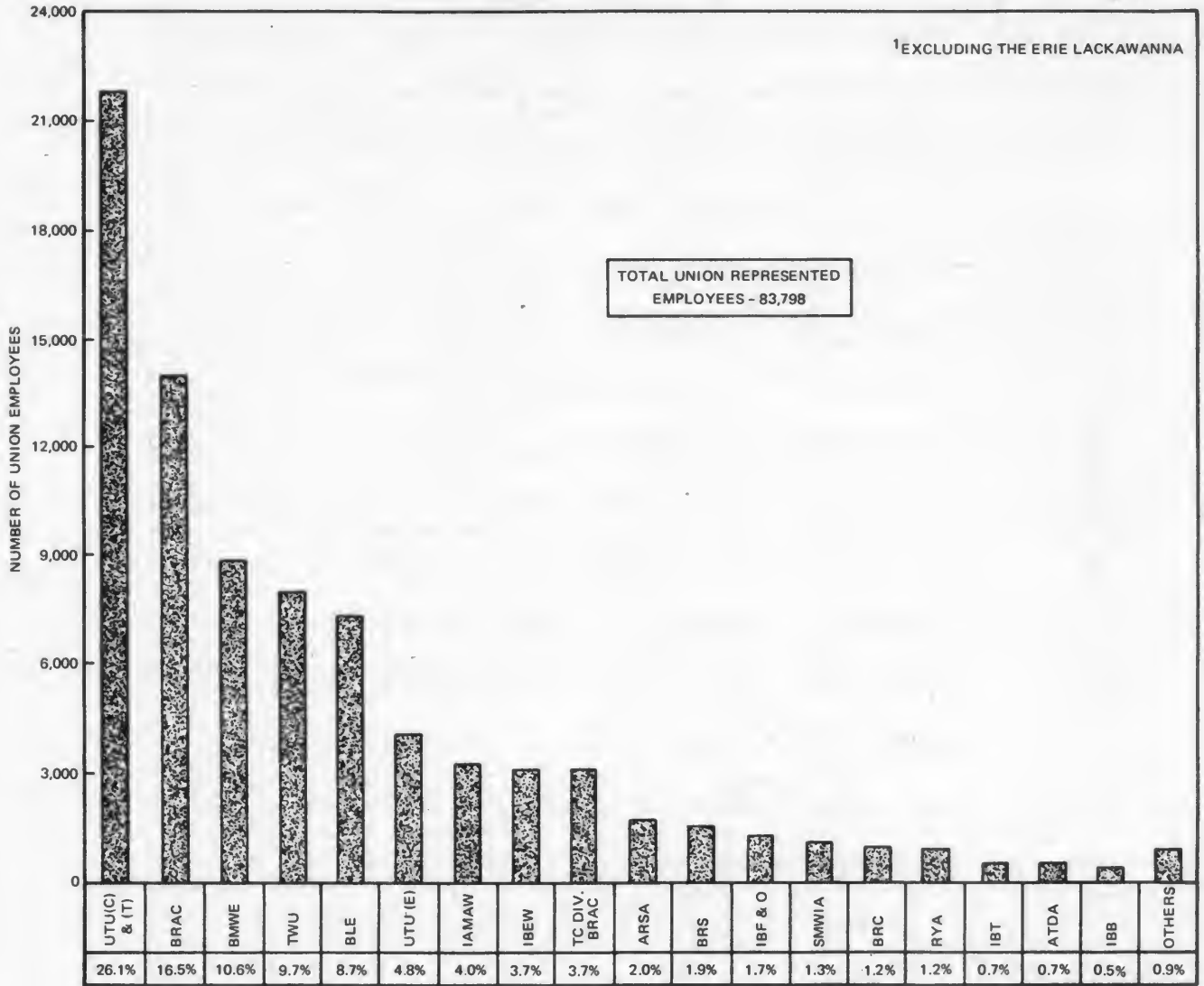
<sup>2</sup> Includes employees born 1910-1915.

<sup>3</sup> Percent of total union represented force—83,798.

Source: Employee Data Sheets, 1/2/74, U.S. Railway Association.

**FIGURE 1**  
**EMPLOYEES OF RAILROADS IN REORGANIZATION<sup>1</sup>**  
**BY UNION REPRESENTATION**

Figure 1



SOURCE: EMPLOYEE DATA SHEETS, 1/2/74  
 U. S. RAILWAY ASSOCIATION

NOTE: SEE KEY TO ABBREVIATIONS FOLLOWING:

TABLE 2.—Employee age and years of service, by union—Railroads in reorganization, 1975

Union <sup>1</sup>	Total employees	Less than 2 years' service	3 or more years' service, under age 60	Age 60 to 65	Over 65 <sup>2</sup>	Age in 1975										Under 20				
						65	64	63	62	61	60	55 to 59	50 to 54	45 to 49	40 to 44		35 to 39	30 to 34	25 to 29	20 to 24
BLE.....	7,316	206	5,289	1,659	182	165	201	254	314	332	373	2,160	1,037	550	316	264	249	212	87	0
UTU (E).....	4,013	518	3,087	363	45	41	64	66	76	66	60	370	373	326	291	352	628	949	315	1
UTU (C)&(T).....	21,848	2,063	16,208	3,262	315	396	419	488	623	696	770	4,657	3,415	2,439	1,763	1,360	1,716	1,897	1,021	3
RYA.....	1,015	16	866	128	5	16	18	20	16	28	31	191	241	183	105	82	43	34	3	0
UTU (YDM).....	78	0	65	12	1	2	3	3	1	2	2	18	24	14	6	3	0	0	0	0
ATDA.....	545	2	475	60	8	11	8	9	11	8	13	93	123	120	48	42	29	21	1	0
BRAC.....	13,847	1,013	10,255	2,234	345	274	339	362	391	431	437	2,481	2,728	1,605	1,031	809	968	1,175	471	0
TC DIV.....	3,089	365	2,352	332	40	46	46	52	50	65	73	419	607	499	257	201	225	323	194	2
ASD, Redcaps.....	15	2	7	4	2	2	1	0	0	1	0	4	2	2	0	0	0	0	1	0
ASD, Police.....	91	36	46	9	0	2	3	1	0	3	0	1	10	11	6	8	10	25	5	0
IBT.....	581	142	311	117	11	12	21	20	22	21	21	79	44	53	31	67	89	79	11	0
ASM.....	16	0	12	3	1	0	0	2	1	0	0	3	4	3	0	0	1	1	0	0
BMWE.....	8,922	1,547	5,391	1,720	278	239	309	298	298	333	1,517	1,364	947	570	504	546	868	617	5	5
BRS.....	1,562	82	1,285	178	17	20	28	25	36	34	35	225	290	321	156	141	99	105	31	0
ARSA.....	1,686	44	1,310	287	45	43	44	46	44	53	57	333	384	271	121	73	84	79	9	0
SF 72 Foremen.....	34	0	27	7	0	0	2	1	1	1	2	2	6	3	0	1	1	0	0	0
SF 109 Foremen.....	88	0	82	4	2	0	0	1	0	1	2	28	19	21	6	1	6	3	0	0
LAMAW.....	3,332	376	2,278	607	71	91	103	92	95	110	116	698	555	312	169	157	277	341	145	0
IBB.....	413	37	277	123	16	17	20	22	22	19	23	99	55	38	20	11	22	20	9	0
IBEW.....	3,141	445	2,104	519	61	72	80	100	96	110	110	544	537	430	183	137	196	344	177	1
IBFO.....	1,391	338	302	50	50	46	45	51	65	65	53	249	188	121	61	52	249	124	185	0
SMWIA.....	1,112	149	715	216	32	36	37	39	29	34	41	295	184	126	60	58	74	84	53	0
BRC.....	1,041	129	669	222	21	26	30	32	26	57	42	228	246	142	48	25	28	35	45	1
TMU—Carmen.....	7,701	970	5,208	1,453	160	177	198	234	251	282	311	1,741	1,549	898	406	272	354	552	404	2
TWU—Purch.....	16	0	14	2	0	0	1	0	1	0	0	6	5	2	0	0	0	1	0	0
TWU—Food Wks.....	208	134	46	101	17	22	16	21	11	16	15	49	25	5	14	19	30	31	7	0
BSCP.....	120	44	30	38	8	3	5	12	6	8	4	24	15	3	6	9	5	10	2	0
HREIU.....	89	33	30	24	2	5	5	2	6	2	4	22	13	9	4	2	7	4	2	0
TWU—Marine, N.Y.....	37	0	25	11	1	1	1	0	2	4	3	12	7	4	1	1	0	0	0	0
TWU—Marine, CNJ.....	13	0	7	6	0	0	0	0	3	0	3	4	2	0	1	0	0	0	0	0
TWU—Marine, Nor.....	2	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
IO MMP—N.Y.....	9	0	5	3	1	0	2	0	1	0	0	4	0	1	0	0	0	0	0	0
IO MMP—Nor.....	7	0	3	4	0	0	1	0	1	0	2	3	0	0	0	0	0	0	0	0
SIU—N.Y.....	57	0	37	19	1	0	5	2	3	3	6	14	12	6	5	0	0	0	0	0
SIU—Nor.....	22	1	15	5	1	2	0	1	1	0	1	3	7	4	0	2	0	0	0	0
SIU—AA.....	32	5	20	6	1	0	3	2	0	1	0	6	5	4	1	1	4	4	0	0
ILA.....	12	0	4	7	1	0	0	2	0	3	2	3	1	0	0	0	0	0	0	0
ILA—Ashta.....	70	37	16	16	1	0	2	3	5	4	2	10	9	2	3	0	10	4	5	0
NMU.....	19	1	10	6	2	1	0	2	0	2	1	5	1	0	0	2	2	1	0	0
NMEBA.....	17	0	12	3	2	0	1	1	1	0	1	5	3	4	0	0	0	0	0	0
Miscellaneous.....	11	0	9	2	0	0	1	0	0	0	1	4	1	1	1	2	0	0	1	0
Total.....	83,788	8,735	59,235	14,074	1,744	1,726	1,983	2,251	2,469	2,696	2,949	16,545	14,995	9,493	5,690	4,667	5,708	7,526	3,791	15

<sup>1</sup> Excluding the Erie Lackawanna.  
<sup>2</sup> See Key to Abbreviations on next page.  
<sup>3</sup> Most of these employees would have retired during 1974.  
 Source: Employee Data Sheets Jan. 2, 1974.



## KEY TO ABBREVIATIONS—FIGURE 1 AND TABLE 2

BLE	Brotherhood of Locomotive Engineers
UTU (E)	United Transportation Union (Enginemen)
UTU (C) (T)	United Transportation Union (Conductors) (Trainmen)
RYA	Railroad Yardmasters of America
UTU (YDM)	United Transportation Union (Yard Masters)
ATDA	American Train Dispatchers Association
BRAC	Brotherhood of Railway, Airline and Steamship Clerks Freight Handlers, Express and Station Employees
TC DIV	Transportation-Communication Div. of BRAC
ASD	Allied Services Division of BRAC
IBT	International Brotherhood of Teamsters
ASM	Association of Station Masters and Assistant Station Masters
BMWE	Brotherhood of Maintenance of Way Employees
BRS	Brotherhood of Railroad Signalmen
ARSA	American Railway Supervisors Association
SF 72	System Federation 72, Railway Employees De- partment
SF 109	System Federation 109, Railway Employees De- partment
IAMAW	International Association of Machinists and Aerospace Workers
IBB	International Brotherhood of Boilermakers, Iron Ship Builders, Blacksmiths, Forgers and Helpers
IBEW	International Brotherhood of Electrical Work- ers
IBFO	International Brotherhood of Firemen and Oil- ers
SMWIA	Sheet Metal Workers' International Association
BRC	Brotherhood of Railway Carmen of the United States and Canada
TWU	Transport Workers Union of America
BSCP	Brotherhood of Sleeping Car Porters
HRE	Hotel and Restaurant Employees and Bartend- ers International Union
IOMMP	International Organization of Masters, Mates and Pilots
SIU	Seafarers' International Union of North Amer- ica
ILA	International Longshoremen's Association
NMU	National Maritime Union of America
NMEBA	National Marine Engineers' Beneficial Asso- ciation

bargaining agreements exist between these 26 unions and the roads. These agreements cover employees holding seniority rights on more than 3,000 basic rosters. This profusion of collective bargaining agreements and representation poses a difficult problem for those who must negotiate the implementing agreements required under the Regional Rail Reorganization Act and the new collective bargaining agreements.

### Manpower Planning Goals

The USRA planning process will result in the conveyance of properties from the bankrupt railroads to ConRail or profitable railroads. The manpower planning portion of that process is a complex undertaking involving the transfer of employees as the properties are conveyed. The livelihood and material security of many people are affected by decisions that USRA will

make and ConRail or other railroads will implement. It is important, therefore, to state the specific goals which are being used in making decisions about manpower in the new system. These goals are:

- To achieve and maintain an optimal system manning level
- To minimize expenditure for employee protection costs (given a particular level of employment)
- To minimize the effect of unemployment on terminated and displaced employees
- To consolidate labor agreements
- To establish communication with and maintain understanding of organized labor about manpower planning process

The purpose of these particular goals and the importance of achieving each are discussed below.

- *Achieve and maintain optimal system manning level*

For ConRail to achieve financial success, it must use all its resources, including labor, as efficiently as possible. Thus, the first goal of manpower planning activities in USRA is to define an optimal system manning level for the new railroad.

However, there are some constraints on ConRail in attaining such an optimal manning level. Most important is the fact that the new carrier is required by statute to become a party to existing collective bargaining agreements until new contracts can be negotiated. For this reason, the present agreements are used in calculating manpower requirements for the new system. The consolidation of facilities should nevertheless allow some economies of scale to be achieved. This increased labor productivity will help achieve the Act's goal of creating a financially self-sustaining rail company.

- *Minimize expenditure for employee protection costs*

After determination of the optimal level of manpower resources needed in the consolidated rail system, the Association will program and ConRail will implement the manpower plan, utilizing the employee protection options provided by the Act to reduce future protection costs. Under the following provisions of Title V of the Act, employee protection funds will be used for:

*Monthly displacement allowances* for any protected employee deprived of employment or adversely affected with respect to earnings as a result of implementing the Final System Plan. Such allowances continue to age 65 for employees with more than 5 years of railroad service as of the effective date of the Act. (Sections 505(b), (c))

*Separation allowances*, if offered, in a lump sum at the option of a protected employee who elects not to continue employment with ConRail. Such allowances are based on a formula involving age and

length of service and are subject to a \$20,000 maximum. (Section 505(e))

*Termination allowances* of up to 180 days' pay are provided for protected employees with less than 3 years of service as of the effective date of the Act. These allowances are payable should ConRail choose to terminate such employees. (Section 505(f))

*Moving expense benefits* for employees required to change residence due to a transfer occasioned by the Final System Plan. (Section 505(g))

Because the cost of compensating employees under these provisions will vary substantially according to the age and service of the railroad employee involved, it is important to devise a plan that will hold protection costs to a minimum and at the same time be equitable to the employees involved.

- *Minimize the effect of unemployment on terminated and displaced employees*

In keeping with responsible corporate practice as well as congressional intent, USRA intends to investigate the possibility of developing programs to assist employees who are displaced in the process of restructuring and reorganizing the bankrupt carriers. Such programs could provide, among other things, for the relocation and retraining of individuals to help place them in either rail or nonrail jobs.

USRA does not have the resources to undertake this kind of retraining activity. Instead, the Association will initiate discussions with interested parties, including rail labor organizations, the Department of Labor, other federal government agencies and appropriate state and local authorities, to foster creation of programs that will achieve this goal.

- *Consolidate labor agreements*

Labor agreements on the railroads in reorganization are more complicated than need be, largely because of the multiplicity of labor agreements in force. For example, there are several collective bargaining agreements for identical classes and crafts of employees on the Penn Central alone. USRA urges both ConRail and the various unions to work expeditiously to develop a single agreement for each class and craft of employees as soon as possible.

This can be accomplished by consolidating existing agreements and reconciling conflicting provisions on similar issues. If this is done, it should bring needed clarity to the overly complex railroad labor relations environment. USRA personnel are analyzing the various existing labor agreements to assure that the manpower plan conforms to current labor agreement requirements. This analysis will be available for use by the negotiators.

- *Establish communication and maintain understanding with organized labor about the manpower planning process*

It is important for ConRail to develop and maintain confidence among its employees that Title V of the Act will be fairly and impartially implemented. Hence, it is necessary and desirable to keep labor informed about USRA manpower planning activities and to receive labor inputs to the process of reorganization.

This information exchange should create an atmosphere of mutual understanding between the Association and labor that will be conducive to a successful ConRail startup in 1976.

### **Manpower. Plan**

Until establishment of the Final System Plan, including acquisitions by viable carriers, it is not possible to develop a detailed manpower plan for placement of labor in the right place at the right time. Once an operating plan is established, it will be possible to create a more definitive manpower plan for both contract and noncontract employees and to estimate the employee protection costs involved in such a plan.

The first step in the development of the manpower plan for the new railroad system has been to collect a data bank of basic information covering the employees of the six railroads in reorganization. This is a large and complex task involving a considerable amount of manual and computer effort. Basic personnel information such as age, class and craft, geographic location where possible, length of service, seniority district and certain payroll data will be gathered for each employee.

The data bank also will contain information on the composition of the work force as a means of assuring that equal employment opportunity rights are respected. The program will serve as a basis for determining present manpower availability and, given historical attrition rates, will make possible a projection of manpower availability for the future.

The second step will be to generate the manpower requirements of the new ConRail system under the proposed operating plan. These manpower levels will be consistent with existing collective bargaining agreements. When the two tasks are completed, USRA will be able to project, for given areas, either a surplus or a shortage of employees of a particular craft and class.

ConRail will need more employees than currently are employed by the bankrupt carriers in certain classifications, particularly those affected by the extensive rehabilitation program. On the other hand, over a period of time fewer employees will be needed in certain other skills.

As provided in the Regional Rail Reorganizational Act, imbalances in labor forces will be corrected, to the extent possible, by transferring employees within the railroad system. Such transfers will help minimize job loss in the new company.

*Seniority.*—The historic practice on all railroads has been to defer to seniority within the class and craft of

represented employees. USRA's manpower plan will respect this practice. Consequently, in the course of compiling employee data from all of the bankrupt railroads, it is necessary to identify their seniority position on the several thousand rosters and the location or district covered by each roster.

This task requires the coding of all seniority rosters of the individual railroads and is necessary to preserve the seniority concept when accounting for addition or loss of work within crafts and classes of employees. Changes in existing operations or facilities that may be proposed by USRA in the Final System Plan will in all likelihood necessitate changes in existing seniority districts.

The Association is developing a method whereby the analysis of current seniority rosters on all bankrupt railroads may be assisted by computer in one or more of the following ways:

- Consolidation of two or more seniority rosters
- Partial consolidation of two or more seniority rosters
- Expansion of an established seniority roster(s) on one railroad to include employees from one or more seniority rosters of another railroad.

In addition to compiling the personnel information of employees represented by labor organizations, similar information is being developed of all noncontract employees, identifying them by departments, title and work location. It has been necessary to acquire such information as employee identification number, social security number, birth date, title, department, employment date and the status of the employee on the effective date of the Act. This information has been prepared for computer assisted analysis and a uniform code has been established to identify departmental responsibility by railroad and to classify all management employees, regardless of their present railroad affiliation. A computer assisted analysis of payroll data and the manpower inventory data will complete the employee analysis.

*Calculation of labor protection payments.*—In section 206(a) the Act directs that one goal of the Final System Plan would include not only the development of a financially self-sustaining system, but also be the minimization of job losses and associated increases in unemployment and community benefit costs in areas in the region presently served by rail service. These losses, insofar as most employees are concerned, are offset by certain protective features of the Act. Under Title V, USRA must have available computerized data on average monthly compensation. To accomplish this, it is contemplated that the bankrupt railroads will retain and make available to USRA detailed payroll tapes for the 12 months immediately preceding conveyance of the properties. When requested, the data thus developed will be used to determine, for each employee, the aver-

age monthly compensation and average monthly time paid for as a basis for computation of his monthly displacement allowance. This will be combined with the seniority roster data.

Employees with less than 3 years' service as of January 2, 1974, who are subject to termination under Section 505(f) of the Act, will be identified, as well as employees who may be offered severance payments because of age. Using this data, a forecast will be made of the year that all present employees are eligible for retirement, and this information can be made available by job classification as well as by union. (See Table 2.)

This information will be of significant value to those responsible for negotiating implementing agreements and negotiating the new collective bargaining agreements required by the Act.

### Implementing Agreements

One of the most important steps in activating ConRail is the transfer of employees from the bankrupt carriers to the new railroad. The process will be accomplished through implementing agreements to be negotiated by representatives of ConRail and the representatives of the various classes and crafts of employees of the railroads in reorganization.

Section 504(b) of the Act stipulates that negotiations for a single implementing agreement for each class and craft of employee will begin on or before the date of adoption of the Final System Plan by the Board of Directors of USRA. The Act requires that five specific items be included in the implementing agreement:

1. *The identification of the specific employees of the railroad in reorganization to whom the Corporation offers employment.*

The Act requires under Section 502(b) that each employee of a railroad in reorganization who has not accepted employment with USRA or with an acquiring railroad be offered employment with ConRail. As defined in Section 501(2), an employee of a railroad in reorganization is a person who is employed by a railroad in reorganization as of the date of conveyance of the rail property. Exceptions are made for certain officers of the carriers. Thus, virtually all of the employees of the railroads in reorganization will be offered employment with ConRail and will then be subject to the employee protection provision of Title V of the Act. Because of continuing employment changes, the identification of employees who qualify for the offer of employment is an ongoing process.

2. *The procedure by which those employees of the railroad in reorganization may elect to accept employment with the Corporation.*

This requires that a procedure be defined for the acceptance of an offer of employment. Because virtually



all of the contract employees on the railroads in reorganization will receive the employment offer, it is anticipated that they will be considered as having accepted the offer unless they specifically decline.

*3. The procedure for acceptance of such employees into the Corporation's employment and their assignment to positions on the Corporation's system.*

This provides for the assignment of employees to positions to assure smooth continuity of operation subsequent to conveyance. It is anticipated that each employee who joins ConRail will remain in the same position on the day of conveyance that he held immediately prior to conveyance.

Exceptions will be those positions that are not in existence after conveyance because of service discontinuance, properties not included in the Plan, properties conveyed to an acquiring carrier where the employees may not have followed the work or immediate consolidation of facilities of former carriers. Employees in these categories will be subject to the exercise of seniority under seniority rules applicable at the time of conveyance.

As the consolidations of facilities occur over a period of time, the number and location of positions on the railroad will change. The reassignment of employees as these changes take place will be accomplished in the following ways:

- By the employee exercising seniority (seniority on the ConRail system will be provided for in the implementing agreement)
- By the transfer of employees under the provisions of Section 505(d) of the Act
- By subsequent agreements, permitted by Section 505(d)(4)(C) of the Act, providing for the transfer of employees.

This procedure will assure a smooth transition, with continuity of operation, while at the same time providing for subsequent changes in operation and facilities as the operating plan is placed into effect.

*4. The procedure for determining the seniority of such employees in their respective crafts or classes on the Corporation's system which shall, to the extent possible, preserve their prior seniority rights.*

This is designed to provide for the orderly transition of employees and to protect acquired rights to work positions of their choice in their craft or class on the new system. In many cases, employees now hold seniority in very narrowly defined areas, such as in one office of a railroad. This restricts management's flexibility in the use of employees and the employees' ability to take advantage of new or better jobs.

To the extent possible, the narrowly defined areas will be consolidated and new seniority boundaries developed. In some instances, new boundaries may cover

the entire ConRail system. This will provide for greater flexibility in the use of employees and at the same time provide employees with more job opportunities.

Seniority rosters covering the craft and class in the newly defined boundaries will be consolidated and, where possible, dovetailed. This entails ranking all involved employees solely by their earliest retained seniority date regardless of their prior employer or prior seniority district. In this way prior seniority will be preserved and, at the same time, employees will be permitted a wider choice of assignment. The approach to be taken in determining revised seniority districts and the method of establishing the employees' seniority therein may differ through negotiation for each craft and class of employee.

*5. The procedure for determining equitable adjustment in rates of comparable positions.*

Rates of pay for operating crafts generally are standardized, but the need for equitable adjustments in rates of comparable positions may arise where the work of nonoperating employees is consolidated. The implementing agreement should provide for uniformity to the extent practicable so that employees doing essentially the same work would receive the same pay.

### **Collective Bargaining Agreements**

Section 504(d) of the Act requires that, no later than 60 days after the effective date of any conveyance, the representatives of the various classes or crafts and representatives of ConRail commence negotiations of new collective bargaining agreements for each class and craft of employee. Adoption of a single collective bargaining agreement for each class and craft will:

- Provide equal treatment of all employees in the particular class and craft on the system
- Assure greater understanding on the part of transferred workers, both supervisory and craft employees, of their rights and obligations
- Result in fewer contract violations because of greater familiarity with agreement provisions by supervisory and craft employees.

The aggregate effect of these advantages should be to foster a higher level of efficiency in ConRail, by creating a more stable and clarified labor relations environment.

### **Conclusions**

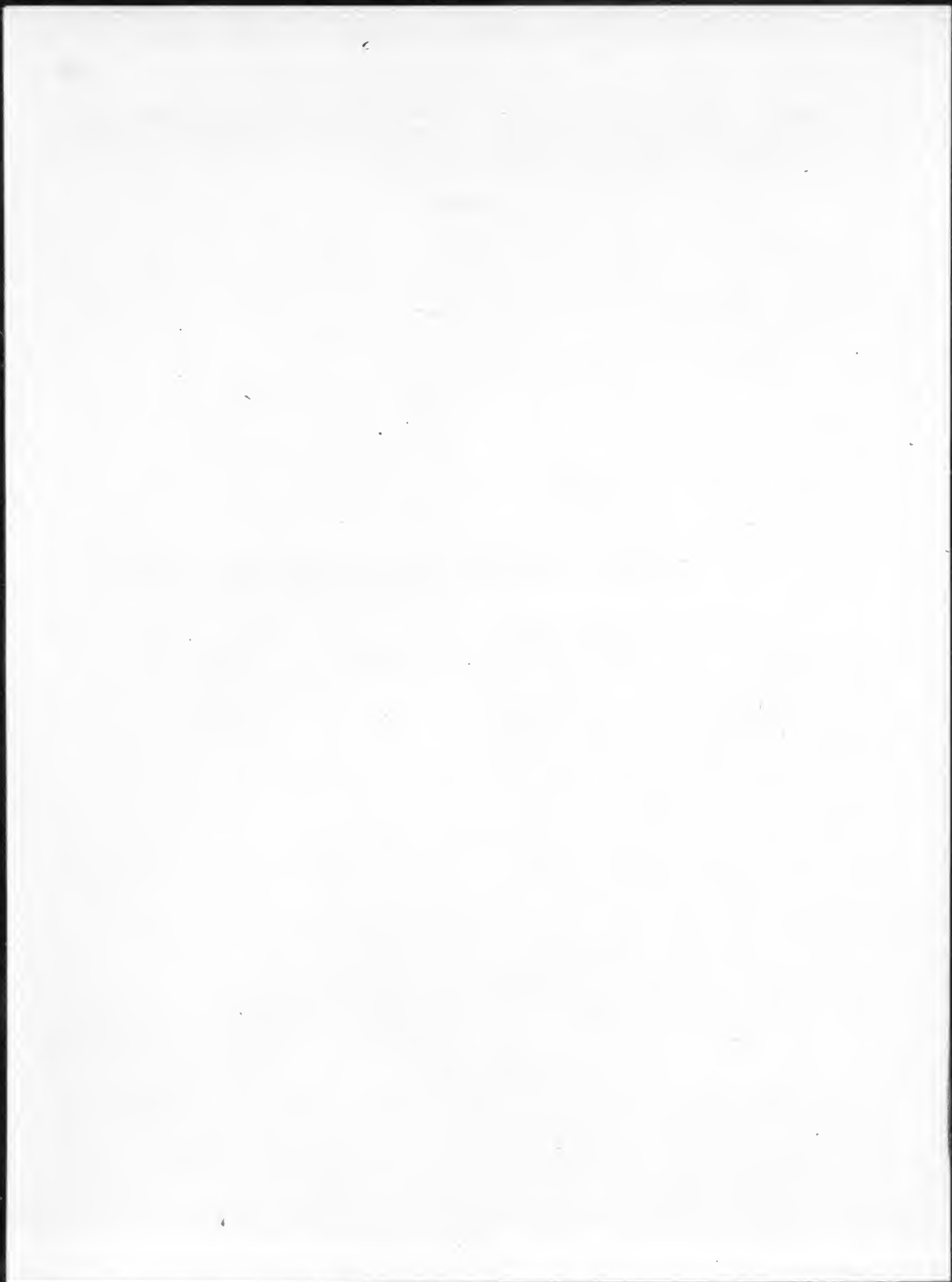
ConRail is responsible for negotiating both the implementing agreements and the single collective bargaining agreements described in Section 504 (b) and (d) of the Act. There is no statutory bar to an early start of these negotiations. The Association concludes that ConRail should appoint, at the earliest possible



date, representatives empowered to negotiate the implementing agreements. This will assure completion of the required agreements prior to the date of conveyance. The Association also concludes that negotiation

on the new single collective bargaining agreements for each craft or class should commence as soon as possible so that the benefits to be obtained can be achieved at an early date.

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# 13

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## Passenger Service in the Region

*Most of the Region's intercity rail passenger transportation is provided by Amtrak over lines of the railroads in reorganization. Cities in the Northeast Corridor receive frequent, high-speed service, while service outside the Corridor remains slower and less frequent. Suburban services also are provided extensively by carriers in reorganization, usually with the sponsorship of state and local governments.*

*Very high speed service should be limited to the Northeast Corridor in the near future, although 16 additional corridors were identified as candidates for new or improved service in the Region. Service on these 16 corridors should be limited to speeds compatible with upgraded freight services, since the proposed passenger network by and large would use the same rights-of-way used by freight trains.*

*As a general policy, facilities control and management of right-of-way should rest with the predominant user. Both freight and passenger services should pay proportionate shares of all costs directly attributable to their respective operations.*

*Potential conflicts between the priorities of intercity and suburban passenger and freight operators in the Northeast Corridor represent a special situation. To minimize freight-passenger conflict, ConRail*

*through-freight service in the Corridor should be moved, insofar as possible, to a separate right-of-way. Management and financial responsibility for the Corridor should not be vested in ConRail.*

The revival of railroad passenger service is receiving substantial popular and political support in the United States. One decade ago, the outlook for improved rail passenger service was exceedingly grim. Today, the prospects for more and better service are brighter than they have been at any time since the immediate postwar period. This improved outlook may be traced directly to two causes: growing concern for the social costs associated with expanded use of the private automobile, and establishment of a single institution, Amtrak, to provide substantially all of the intercity rail passenger service in the Nation.

The Act in Section 202(b)(3) directs the Association to "prepare a study of rail passenger services in the region, in terms of scope and quality." Among the mandatory goals of the Final System Plan listed in Section 206 of the Act are:

- Establishment of improved high-speed rail passenger service in the Northeast Corridor (Boston-Washington, D.C.), consonant with the recommendations of the Secretary of Transportation in his report of September 1971.
- Efficient movement of both passengers and freight in the Region in a manner consistent with safe operations.
- Efficient and safe commuter rail service as well as intercity service.
- Coordination with the National Railroad Passenger Corporation and similar entities.
- Identification of all short-to-medium distance corridors in densely populated areas in which major upgrading of rail lines for high-speed passenger operation would return substantial public benefits.

USRA's role is to analyze future prospects for rail passenger services and to make certain that rail facilities required for a proper development of rail passenger service are taken into account. The responsibilities for operation of passenger service reside with the National Railroad Passenger Corporation (Amtrak). As a rule, state and local agencies have the responsibility for development of rail commuter services.

Since the inception of Amtrak, Congress and the Department of Transportation have determined the level and extent of rail passenger service to be provided in this country. Amtrak assumed responsibility for virtually all rail passenger services on May 1, 1971. The legislation which created the National Railroad Passenger Corporation had three apparent goals: (1) to create a nationwide system which could achieve im-

proved service and cost savings through economies of equipment utilization, reservations and ticketing, maintenance, advertising and management; (2) to preserve essential rail passenger services in the face of accelerated discontinuances; and (3) to relieve the freight-oriented railroad industry of the managerial and cost burdens of operating passenger trains. It is fair to conclude that the second and third of these goals have been substantially accomplished; progress toward the first goal has been mixed—good in some areas and fair or poor in others.

Amtrak was conceived as a for-profit corporation, a goal that has not been met. Amtrak's annual deficit now runs about \$300 million, and a deep controversy exists over whether operating subsidies to rail passenger service ought to be continued, expanded or eliminated. On the one side are those who decry the large federal subsidy per passenger mile for Amtrak service in comparison with air, bus or auto. On the other side are those who believe in the essentiality of a core rail passenger network because of rail's advantages in fuel consumption, pollution effects and ability to expand capacity rapidly in the future.

Since the establishment of Amtrak, Congress generally has placed less emphasis upon immediate financial success and more emphasis on the reestablishment of an integrated network of rail services. All of Amtrak's original routes have been preserved. Amtrak was required to initiate additional experimental routes from time to time, and states may ask for rail passenger service if they are willing to provide partial funding. The Association has prepared its preliminary recommendations for rail passenger service in the context of continued public interest and financial support for rail passenger service.

Public involvement in suburban services preceded Congressional action on intercity services. Faced with abandonment and general deterioration of services, the major cities in the Region moved at either a local or state level to stop this process through infusion of public monies for equipment and/or operating subsidies. Ultimately a federal responsibility was created with passage of the Urban Mass Transportation Act of 1964. That legislation, as amended, provides significant federal funding for capital improvement programs, acquisitions of assets and now operating subsidies. Even with this major federal involvement, however, the primary responsibility has remained with state and local government.



## Role of Rail Passenger Service

Most intercity travelers have a choice of private auto, bus, air and, in a small but growing number of cases, rail service. In certain markets passenger trains offer the opportunity to carry travelers at lower total resource costs than any other mode. Energy efficiencies for various modes of transportation are shown in Table 1.

TABLE 1.—Energy efficiency for various modes of passenger transportation

Vehicle	Seat miles per gallon
Rail: U.S. current, includes allowances for engine idling between runs:	
3,000 hp locomotive, turbocharged, 0.5 mpg, 9 coaches per locomotive, 60 to 80 seats each (Amtrak data). Relatively new Amtrak locomotives....	270-360
Rail turbine train, 0.33 mpg, 320 seats (296 plus 24 snack bar) (Amtrak data) (Amtrak's French RTG). Delivery test at 80 mph average.....	110
Autotrain, 0.37 mpg, 3,600 hp locomotive, 18 cars per locomotive, 30 automobile miles per gallon, at 5 seats per auto.....	150
Bus: U.S. current.	
Intercity, 6.0 mpg (Greyhound), 47 seats (TSC industry average). Over-the-road test of Greyhound and Trailways buses by TSC indicated 8.8 mpg at 50 mph, 8.1 mpg at 60 mph.....	282
Automobile: FHWA data.	
Intercity subcompact, 4 seats, 30 mpg.....	120
Intercity compact, 5 seats, 22.5 mpg.....	112.5
Intercity standard, 6 seats, 18.0 mpg.....	108
Intercity luxury, 7 seats, 12.0 mpg.....	72
Air: NASA data.	
Twin engine turbofan, 68 to 106 seats, 500 mile stage, 0.44 to 0.54 mpg.....	37-47
3 and 4 engine turbofan, 131 to 200 seats, 500 mile stage, 0.21 to 0.29 mpg.....	35-41
3 and 4 engine turbofan, widebody, 256 to 385 seats. Wide-body jets use new high bypass turbofan engines with low specific fuel consumption. 500 mile stage, 0.11 to 0.19 mpg.....	44-51

Source: Secretary DOT, Report to the Congress on the Rail Passenger Service Act, (July 1974) pp. 41-42.

Trains cannot capitalize on their potential resource efficiency without ridership. If ridership is light, train benefits will be minimal. If intercity rail passenger service does not attract substantially more riders in the future, Amtrak's deficits will continue.

To win a greater share of the market, rail service must be able to compete with other modes with respect to speed, comfort and reliability. Although it is clear that rail services consume fewer resources for heavy volume travel than rival modes, that is not the reason any single customer chooses rail over travel by automobile, air or bus. The relative environmental efficiency of the railroad has little to do with the choice of mode by the potential traveler.

Rail service today is limited and able to attract only a small share of the travel market. There are several reasons for this level of service; first, both equipment and roadbeds are old and expensive to maintain. Second, with low ridership, equipment utilization is poor.

Third, the railroads which operate train services have had little incentive to economize because of "cost-plus" contracts which Amtrak is now negotiating to provide performance standards, together with appropriate penalties and incentives.

In the future, rail cost patterns should be favorable for the rail mode in point-to-point markets ("corridors") which have a substantial traffic volume. If passenger trains can become competitive with the private automobile in cost and service, they will attract more riders and unit costs will drop. Should future national policy require a significant shift away from highway or air travel, quality rail passenger service will provide an acceptable travel alternative. Furthermore, with properly controlled right-of-way and flexible train size, rail capacity can be expanded without the level of expense, disruption and public resistance characteristic of urban highway and airport construction.

There are many ways in which train travel can become more competitive with other modes. Current technology offers near-term potential for improved speed and comfort compared to the private automobile. In contrast, automobile travel is expected to encounter higher costs and deteriorating service patterns as congestion occurs in certain corridors. Although train speeds will never approach those of aircraft, high speed rail service can be directly competitive with the airplane for distances of up to approximately 250 miles. For example, if rail travel time on Washington-New York trips can be cut from 3 to 2½ hours, the total realized door-to-door travel time begins to compare favorably with the airplane and the cost to the passenger would be substantially less, particularly when total cost of travel, including taxi fares, is included.

Rail passenger service outside the high speed corridor area also holds the potential for significant growth if performance with respect to speed, ride quality and safety is improved. As track conditions are improved in the Region, passenger service will benefit from increased operating speeds and reliability.

## Service in the Region

Rail passenger service in the 17-state Region can best be described by dividing the Region into two areas: Northeast Corridor and non-Northeast Corridor (Figure 1). The Northeast Corridor, extending from Boston through New York City to Washington, D.C., covers less than 2 percent of the total land area of the U.S., but contains about 20 percent of the population. Because of this heavy population concentration, the character of rail operations in the Corridor differs significantly from operations in the remainder of the Region and the rest of the country.

The primary difference lies in the high frequency of passenger trains, both intercity and suburban, which on principal arteries share track with numerous freight



TABLE 2.—Daily traffic density on Northeast Corridor segments

Line segment	Number of miles	Number of main tracks	Number of trains				
			Inter-city		Suburban	Freight	Total
			Metro <sup>1</sup>	Conventional			
<b>North of New York:</b>							
Boston to Providence.....	44	2-3	4	18	28	2-6	56
Providence to New Haven.....	113	2	4	18	2	4	28
New Haven to Stamford.....	39	4	6	24	60	6	96
Stamford to New Rochelle.....	16	4	6	24	162	4	198
New Rochelle to New York.....	20	2-4	6	24	420	4	450
<b>South of New York:</b>							
New York to Newark.....	10	2	30	58	120	-----	208
Newark to Rahway.....	11	4-6	30	58	196	34	318
Rahway to Trenton.....	37	4	30	58	76	36	200
Trenton to Philadelphia.....	33	4	30	11	<sup>2</sup> 41	<sup>2</sup> 18	100
Philadelphia to Wilmington.....	27	4	30	21	<sup>2</sup> 48	<sup>2</sup> 18	117
Wilmington to Perryville.....	32	3-2	30	21	-----	20	71
Perryville to Baltimore.....	36	4-2	30	24	-----	28	82
Baltimore to Washington.....	40	3	30	30	4	22	86
<b>West of Philadelphia:</b>							
Philadelphia to Bryn Mawr.....	7	4	-----	30	111	16	157
Bryn Mawr to Paoli.....	10	4	-----	30	72	16	118
Paoli to Downingtown.....	12	4	-----	30	2	40	72
Downingtown to Harrisburg.....	71	4	-----	30	-----	40-16	46

<sup>1</sup> Includes turbotrains north of New York.

<sup>2</sup> Freight and suburban trains on separate tracks through Philadelphia.

Source: Current freight, Amtrak and suburban timetables.

TABLE 3.—Average daily ridership in the Northeast Corridor

End-points:	Average daily ridership
Philadelphia to New York.....	9, 675
Boston to Washington.....	7, 030
New York to Washington.....	6, 700
Philadelphia to Boston.....	985
Springfield to Washington.....	755
New York to Boston.....	560
New Haven to Washington.....	530
New Haven to Hartford.....	265
New Haven to Springfield.....	210
<b>Total, Northeast Corridor.....</b>	<b>26, 710</b>

(Represents total number of passengers served by trains operating between noted end-points.)

Data source: Secretary, DOT, *Rail Service in the Midwest and Northeast Region*, vol. 1, February 1974, p. 84.

Amtrak provides turbotrain and conventional train service in the Corridor at somewhat lower fares. Between New York and Boston, limited-stop service is provided by turbotrains. Limitations caused by poor roadbeds and equipment failures have reduced the maximum speed of these trains well below their design speed, making travel time from New York to Boston four hours. Conventional trains, which provide the bulk of service, operate at top speeds of 80 m.p.h. on four and one-half to five hour schedules between New York and Boston.

The major metropolitan areas in the Northeast Corridor are provided with suburban services by railroads under contract to various commuter authorities. New York and northern New Jersey, Philadelphia and Boston are the centers of suburban rail activity in the Corridor, though some additional suburban traffic is gen-

erated at other locations. Table 4 summarizes operations in each city.

Commuter trains are operated in large numbers and in strict adherence to schedules. At some points, train headways are as short as 90 seconds. Suburban opera-

TABLE 4.—Daily Northeast Corridor suburban operations

City	Contracting authority	Operating railroad	Number of routes	Number of daily trains <sup>1</sup>	1973 weekday passenger trips <sup>2</sup>
Boston.....	MBTA.....	PC.....	5	74	14, 600
		BM.....	7	229	20, 000
New York.....	N.J. DOT.....	CNJ.....	3	65	15, 600
		RDG.....	1	4	400
		NYLB (CNJ, PC).....	1	54	23, 000
		EL.....	7	240	72, 000
		PC.....	3	124	40, 600
Philadelphia.....	SEPTA.....	PC.....	2	267	76, 000
		PC.....	4	160	59, 000
		LI.....	8	363	245, 000
		RDG.....	8	355	46, 000
		PC.....	6	394	67, 000
		PC.....	2	8	500
Washington, D.C.....	-----	PC.....	1	4	900
		BO.....	2	16	2, 700

<sup>1</sup> Sum of 2 directions—deadhead moves not included.

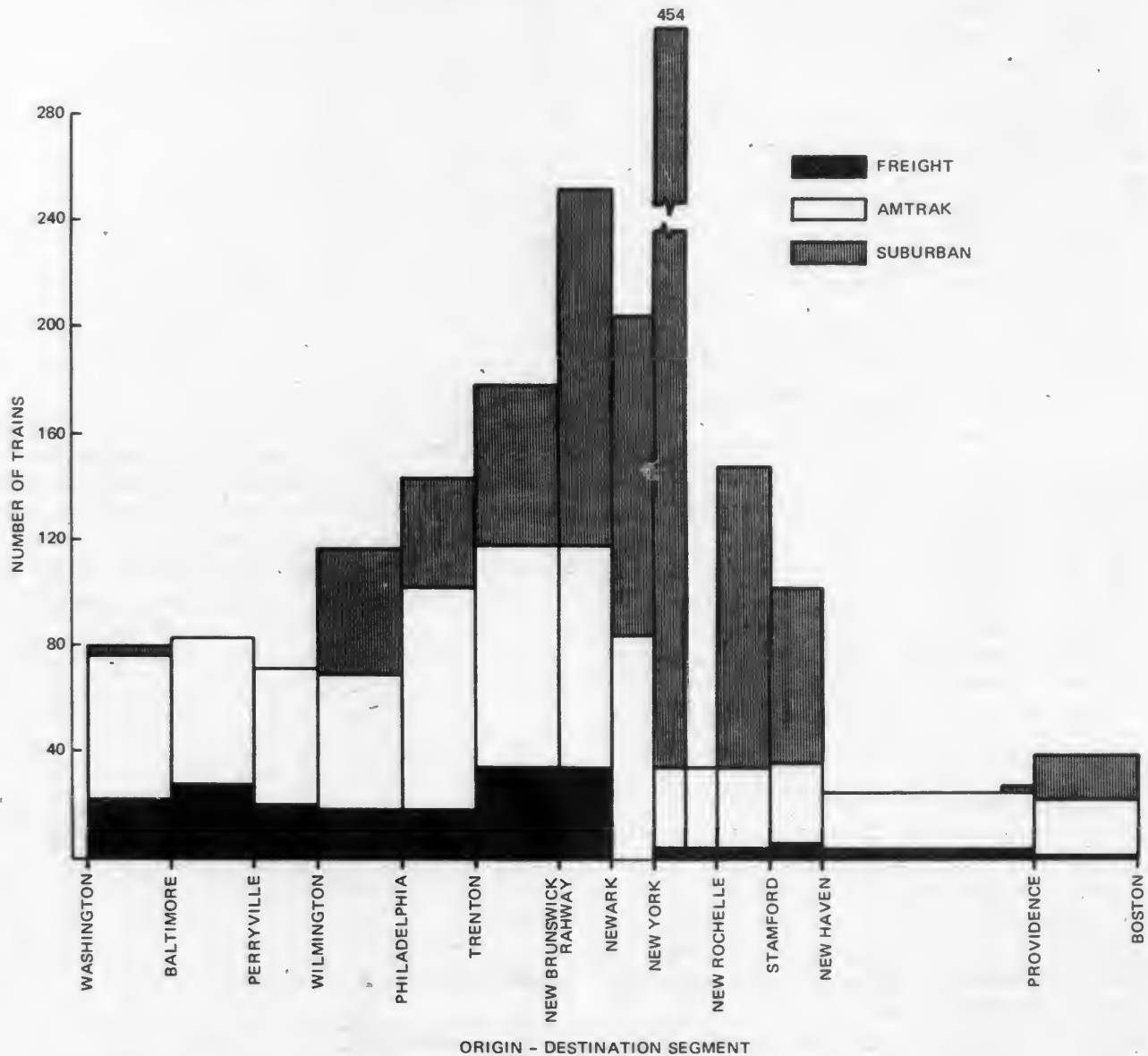
<sup>2</sup> Secretary, DOT *Rail Service in the Midwest and Northeast Region*, vol. 1, p. 84.

Source: Current suburban timetables.

tions in the Corridor are expected to increase in the future. Operating larger numbers of commuter trains, Amtrak trains and freight trains over the same facilities will cause some congestion and scheduling conflicts unless sufficient track capacity is provided. Figure 2 provides a summary of rail operations in the Northeast Corridor: daily Amtrak, suburban and freight densities are displayed for segments of the Corridor.

FIGURE 2

AVERAGE DAILY TRAIN DENSITY ON NORTHEAST CORRIDOR SEGMENTS



SOURCE: CURRENT FREIGHT, AMTRAK AND SUBURBAN TIMETABLES.



## THE AUTO-TRAIN

Another intercity service that operates into the Region and deserves some note is provided by Auto-Train, a private corporation which began operations in December, 1971, seven months after the inception of Amtrak. This apparently profitable service without government aid carries passengers and their automobiles on two routes between Lorton, Va., (a suburb of Washington, D.C.) and Sanford, Fla. (near Disney World), and between Louisville, Ky. and Sanford. It involves no new technology; it simply adds enclosed bi-level railroad auto carrying cars to conventional long-haul passenger equipment.

Auto-Train operates two trains a day, one in each direction, between Washington and Florida. Trains

have been expanded to a typical consist of 39 cars. Often the demand for reservations exceeds available capacity, and some dates are sold out almost a year in advance.

It is not difficult to understand the reasons for the popularity of this new mode of travel; it offers an attractive compromise between the alternatives of air/car rental and auto for the traveler who needs a car at the other end of the journey. Jet aircraft coupled with rental cars at destination offers the quickest and most convenient method of travel for long distances, but it is relatively expensive. At the other extreme, travelers may choose to drive because it is cheaper, but in so doing endure long travel times and highway dangers or inconveniences.

The area outside the Northeast Corridor is characterized by significantly lower population densities, metropolitan areas outside the Corridor being both smaller and farther apart than those in the Northeast Corridor. Associated with the lower population density is a different market for both intercity and suburban pub-

TABLE 5.—Intercity passenger service in the Region outside the Northeast Corridor

Route	Number of miles	Number of daily trains	Operating railroad
<b>Amtrak:</b>			
New York-Kansas City.....	1,329	2	PC/MP.
New York-Chicago.....	907	2	PC.
Washington-Cincinnati-Chicago....	908	2	Chessie. <sup>1</sup>
Chicago-Louisville-Florida.....	1,594	2	PC/LN/SCL. <sup>2</sup>
Washington-Montreal.....	670	2	PC/BM/CV.
New York-Florida.....	1,752	6	PC/RFP/SCL.
New York-Albany.....	141	6	PC.
New York-Syracuse.....	286	2	PC.
New York-Buffalo.....	436	4	PC.
New York-Montreal.....	381	2	PC, DH.
Detroit-Buffalo.....	238	2	PC.
Chicago-Detroit.....	279	4	PC.
Washington-Cumberland.....	146	2	Chessie.
Chicago-New Orleans.....	924	2	ICG.
Chicago-St. Louis.....	284	6	ICG.
Chicago-Port Huron.....	319	2	PC/GTW.
Chicago-Champaign/Urbana.....	130	2	ICG.
Chicago-Carbondale.....	310	2	ICG.
Chicago-Dubuque.....	182	2	ICG.
Chicago-Quincy.....	262	2	BN.
Chicago-Milwaukee.....	85	14	MILW.
<b>Non-Amtrak:</b>			
Washington-New Orleans.....	1,154	<sup>3</sup> 4	SOU.
Washington-Lynchburg.....	172	2	SOU.
Chicago-Peoria.....	161	2	CRIP.
Chicago-Rock Island.....	181	2	CRIP.
Washington-Florida.....	856	2	Auto-Train. <sup>4</sup>
Louisville-Florida.....	1,008	( <sup>5</sup> )	Auto-Train.
Buffalo-Toronto.....	102	2	PC/THB/CP.

<sup>1</sup> Normal routing is PC west of Cincinnati.

<sup>2</sup> Normal routing is PC via Kankakee; at present, routing is PC via Logansport.

<sup>3</sup> Daily service between Washington and Birmingham with triweekly service between Birmingham and New Orleans.

<sup>4</sup> Train is operated by Auto-Train Corp. over the RFP and SCL.

<sup>5</sup> Train is operated weekly by Auto-Train Corp. over LN and SCL.

Source: Amtrak system timetable, November 1974.

lic transportation. Amtrak's service outside the Northeast Corridor is typified by long-distance trains. Some corridor-type traffic exists in this area, but train service is primarily long-haul. Through trains may pass over several short "corridors" in the course of one trip.

Table 5 lists Amtrak's service between various cities. In all cases the level of service is lower than in the Northeast Corridor. Schedules are slower, and some cities receive service only in the middle of the night. All operations are provided by conventional trains except between Chicago and St. Louis where French-built turboliners capable of high speeds are utilized.

The bulk of Amtrak's operation outside the Corridor is operated by the Penn Central. Most suburban service outside the Northeast Corridor is provided by solvent railroads in four cities: Chicago, Detroit, Cleveland and Pittsburgh. Table 6 lists these services by city. Chicago's suburban operations have the same characteristics as those in the Corridor—high volume service peaking during morning and evening rush hours.

The three other cities have only skeletal, rush-hour services. Since Amtrak's intercity service has a much lower frequency of operation in these areas, conflicts between the two services are minimal. Interference between passengers and freight operations can be a problem, however.

Most non-Corridor suburban services use conventional locomotive-hauled trains. Cleveland and Detroit trains consist of converted long-haul equipment; Pittsburgh trains use long-haul equipment plus rail diesel cars. Cars used in Chicago are of special design for suburban service. Those on Burlington Northern, Chicago & Northwestern and the Milwaukee road are high density bi-level units pulled by new or recently reconditioned locomotives. On the Illinois Central Gulf and South Shore lines, electric self-propelled cars are used exclusively.

TABLE 6.—Daily suburban operations outside the Northeast Corridor

City	Contracting authority	Operating railroad	Number of routes	Number of daily trains <sup>1</sup>	1973 weekday passenger trips <sup>2</sup>
Pittsburgh.....	PAT <sup>3</sup> .....	Chessie	1	14	1,000
		PLE	1	2	400
Detroit.....	SEMTA..... Mich. DOT <sup>4</sup> .....	GTW	1	8	2,000
		PC	1	2	200
Cleveland.....	RTA.....	EL	1	2	300
		BN	1	62	43,000
Chicago.....	RTA.....	ICG	4	205	60,000
		MILW	2	75	29,500
		NW	1	2	1,600
		CNW	4	193	85,000
		PC	1	4	1,200
		CRIP	2	63	26,000
		CSSSB	1	39	10,600

<sup>1</sup> Sum of two directions—deadhead moves not included.

<sup>2</sup> Secretary, DOT, *Rail Service in the Midwest and Northeast Region*, vol. 1, p. 84.

<sup>3</sup> Scheduled to become effective Feb. 1, 1975.

<sup>4</sup> Amtrak 403(b) suburban service.

Source: Current suburban timetables.

### Quality of Service

During the late 1950's and throughout the 1960's, the image of rail passenger service suffered continuous deterioration in the eyes of the traveling public. Service became characterized by faulty equipment, poor on-time performance and records, inadequate reservations services, out-moded terminal facilities and unresponsive personnel. At the same time, airlines were winning a larger share of the passenger market by providing an attractive service which became a standard for the traveling public.

As the number of rail passengers was declining rapidly during the 1950's and 1960's, many Americans were traveling in Europe and Japan where they found high-quality rail services. This small but articulate and influential segment of the public increasingly became aware that good rail transportation could be provided by existing technology.

Congress passed the National Rail Passenger Act in October, 1970, establishing the National Railroad Passenger Corporation, better known as Amtrak, in the hope that a completely new organization, free from the encumbrances of operating both freight and passenger services, would be able to provide a service commensurate with public desires. One of the major advantages of the Amtrak concept was that a single entity would have centralized control of passenger operations and could set uniform service standards thereby creating a better image for rail service. It was hoped that with improved service, the traveling public would find rail transportation an increasingly attractive alternative for intercity travel.

The history of suburban service in the Region is much the same. Railroads first provided suburban services because they could move large volumes of passengers at a profit. As other modes of transportation developed, however, ridership declined, costs increased and profits be-

came losses. As the operating losses increased and equipment became older, railroads began to seek abandonment of these services. Metropolitan areas, already faced with increasing vehicular congestion, had the alternative of losing rail transportation or of subsidizing it, and many areas chose the latter. As a result, most suburban service now offered in the Region is subsidized at various levels by some government entity.

### Quality of Amtrak Service

The Act in Section 202(b)(3) requires USRA to study the quality as well as the scope of rail passenger service in the Region. The Amtrak Annual Report for 1973 indicates considerable public dissatisfaction with the service. Table 7 lists the number of favorable and unfavorable passenger comments Amtrak received concerning each service between August and December 1973. Ridership volumes affect the *number* of comments concerning particular trains, but the *ratio* of unfavorable to favorable comments provides a meaningful indication of the relative levels of satisfaction with particular services.

From inspection of Table 7, it is apparent that, in spite of high ridership levels, the traveling public is far less satisfied with services within the Northeast Corridor than outside the Corridor. Table 8 shows that the major areas of dissatisfaction are heating and air conditioning, equipment condition, on-time performance, reservation systems and station facilities. Table 8 summarizes more recent complaints to the Interstate Commerce Commission and indicates that the same problems continue to trouble Amtrak customers.

TABLE 7.—Consumer comments received by Amtrak by route, August-December 1973,

Routes	Criticism	Praise	Ratio:C/P
<b>Northeast Corridor:</b>			
Conventional.....	628	112	5.58
Metroliners/turbos.....	175	48	3.64
Harrisburg-Philadelphia.....	14	8	1.75
<b>Non-Northeast Corridor:</b>			
Chicago-New Orleans.....	116	26	4.46
Washington-Cincinnati-Chicago.....	108	30	3.60
Washington-Cumberland.....	6	2	3.00
New York-Florida.....	846	288	2.93
New York-Chicago.....	321	135	2.37
Chicago-St. Louis.....	72	32	2.25
Chicago-Florida.....	248	111	2.23
Washington-Montreal.....	160	109	1.46
New York-Buffalo.....	51	36	1.42
Chicago-Detroit.....	47	36	1.30
New York-Kansas City.....	149	155	.96

Source: 1973 Amtrak annual report.

Several factors underlie Amtrak's service deficiencies. The first is *equipment failures*. The corporation's initial efforts were commendable but limited by the equipment it inherited from the rail industry. Amtrak did choose the best one-third of the equipment fleet available from member railroads. The Corporation launched a coordinated marketing program encompassing new in-

TABLE 8.—Number of consumer complaints, by category, August-December 1973 vs. April-August 1974

Categories	August-December 1973 <sup>1</sup>		April-August 1974 <sup>2</sup>
	Criticism	Praise	Criticism
Airconditioning/heating.....	717	29	1575
Equipment condition.....	712	313	578
On-time performance.....	692	90	405
Personnel.....	525	749	(?)
Reservations.....	486	35	581
Schedules.....	437	159	37
Food and beverage.....	296	404	134
Consist.....	266	37	482
Standees.....	254	0	
Station services.....	230	65	84
Fares and ticketing.....	182	44	(?)
Other marketing.....	173	34	(?)
On-board services.....	167	406	240
Roadbed.....	132	16	(?)
Checked baggage.....	103	15	14
Other general.....	95	21	(?)
Smoking.....	73	11	36

<sup>1</sup> Source: 1973 Amtrak annual report.  
<sup>2</sup> Source: Interstate Commerce Commission.  
<sup>3</sup> Not available.

terior and exterior color schemes on the cars and promotion of the "Tracks are Back" slogan. Unfortunately, major overhaul work was not done, and the passenger cars could not be operated with full reliability. As car miles accumulated under Amtrak's operation, equipment failures became an increasing problem. Passengers often were afflicted with inoperative heat in winter and inoperative air-conditioning in summer.

Equipment problems are attributable to two major factors; age and inadequate refurbishing. The average age of the active fleet is 25 years, and even though the best available cars were selected for Amtrak service, they were not in good condition, and Amtrak did not overhaul the mechanical, structural and electrical systems on most of the cars.

The high rate of equipment failure not only causes passenger discomfort and train delays, but also results in reduced equipment supply and thus shortages because of lower utilization. In many cases, the need for cars to meet service requirements has become so acute that even "bad order cars" (those in need of repairs) are returned to service before they can be repaired fully or properly. The equipment supply problem is compounded by the fact that Amtrak originally purchased too few cars, misganging its potential market.

Equipment used in long-distance trains such as the *Broadway Limited* and *National Limited* has, because of the longer running times, been a particular problem since it is more vulnerable to failure than the equipment in short-haul Corridor service. Passengers also become less tolerant of discomfort as they travel longer distances. Amtrak has made great efforts to increase the scope and quality of its repair and refurbishment work,

but with such old equipment, no program can produce entirely satisfactory results. Amtrak's marketing program has been impeded accordingly.

Utilization rates are a fairly good measure of equipment availability. The rate of utilization is defined as the ratio of hours of revenue producing service in a week to total hours in a week (168). Table 9 shows utilization rates for four different types of equipment. In the Northeast Corridor, the low utilization rate on conventional coaches is especially noteworthy.

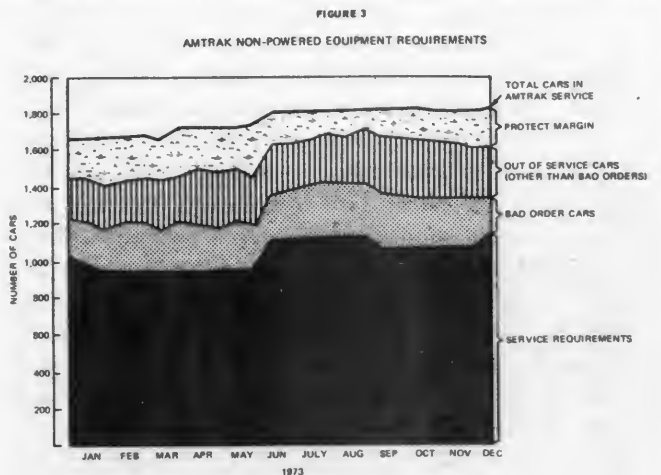
Although Amtrak's newest equipment is operated in the Corridor, the vast majority of seat miles in the Corridor is provided by conventional equipment. Most of this equipment was downgraded from long-haul service after deteriorating with age. In addition, controversy at Amtrak's inception as to whether Penn Central or Amtrak was responsible for 200 and 600 Series (New York-Philadelphia and Philadelphia-Harrisburg respectively) conventional train service delayed inclusion of this equipment in a refurbishment program.

TABLE 9.—Amtrak equipment utilization, 1973

Type	Number of cars	Average age (years)	Utilization factor (percent)
Sleepers.....	350	25	44
Coaches.....	920	24	30
Diners, lounges, parlors.....	360	27	30
Baggage and dormitory.....	215	23	40
Active fleet.....	1,845	25	34

Source: Secretary DOT, "Report to Congress" (July 1974, p. 28).

Another indication of equipment problems is shown in Figure 3. At present levels of service, approximately

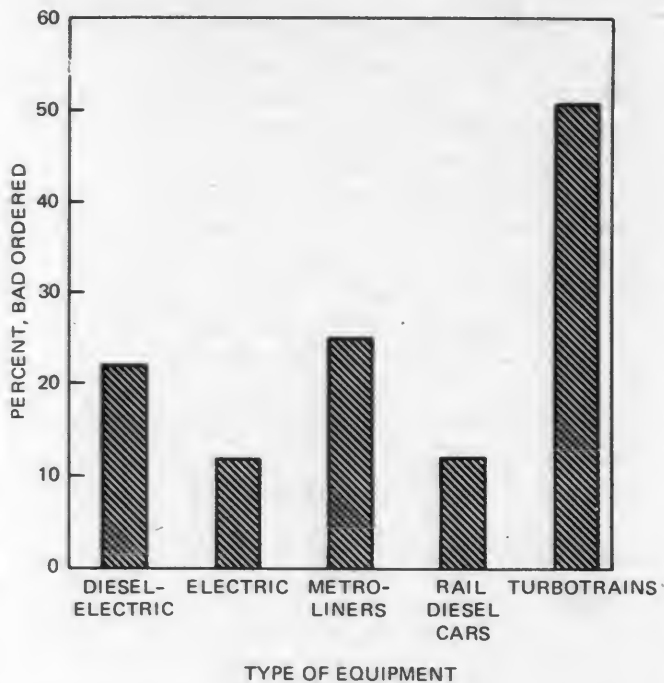


SOURCE: Secretary Department of Transportation, Report to Congress on the Rail Passenger Service Act (July, 1974), p. 29.

1,000 cars are needed. Amtrak owns approximately 1,800 cars but 800 are in need of repairs, out of service for other reasons or held as backup equipment.



FIGURE 4

DEFECTIVE EQUIPMENT (BAD ORDER) RATIOS:  
POWERED EQUIPMENT

SOURCE: Secretary DOT, Report To Congress On The Rail Passenger Service Act (July, 1974) p. 31.

Amtrak has also experienced high failure rates with the two newer types of equipment used in the Corridor. Figure 4 shows bad-order ratios for each type of powered equipment, the highest applying to turbotrains (50%) and Metroliners (25%). In contrast, electric locomotives, which power conventional trains, the most recent of which was built in 1943, have a bad-order ratio of approximately 11 percent.

After heating and air conditioning failures and poor condition of equipment, the most frequent complaint of Amtrak passengers was *on-time performance*. Systemwide, Amtrak's on-time performance record declined from 1971 through 1973. Table 10 summarizes the performance records for the railroads over which Amtrak operates. On-time performance records for the major carriers in the Region—Penn Central and the Chessie System—have deteriorated over the three-year period. Furthermore, Penn Central's figure is considered to be lower than shown in the table due to reporting trains on time even though they were more than five minutes

late.<sup>2</sup> Recent changes in reporting procedures required by the ICC affect the statistics; Amtrak formerly reported all trains over five minutes tardy as late trains, but the new ICC rules permit leeway up to thirty minutes—depending on distance of the trip.

TABLE 10.—Summary of on-time performance—by railroad  
(In percent)

	1971	1972	1973
Santa Fe.....	80.7	84.8	67.0
Burlington Northern.....	68.5	71.8	64.2
Chesapeake & Ohio/Baltimore & Ohio.....	89.2	73.8	57.6
Illinois Central Gulf.....	54.9	57.7	33.5
Louisville & Nashville.....	57.6	45.2	42.6
Milwaukee Road.....	88.4	87.6	68.1
Missouri Pacific.....	85.0	58.4	58.0
Penn Central.....	60.4	78.7	62.7
Richmond, Fredericksburg & Potomac.....	81.1	70.7	58.4
Seaboard Coast Line.....	68.9	73.7	51.8
Southern Pacific.....	60.2	67.0	40.1
Union Pacific.....	92.1	87.6	77.4

Source: Secretary DOT, "Report to Congress" (July 1974) p. 25.

Amtrak's long-haul trains generally have a performance record inferior to that of short-haul trains. These trains must traverse more miles at speeds restricted because of track conditions. For example, the *Broadway Limited* must operate at 30 m.p.h. over some portions of its route where better track maintenance permitted speeds up to 90 m.p.h. in the past. Even with schedules lengthened, as shown on Table 11, poor track conditions and delays in removing defective equipment have caused on-time performance to deteriorate. Table 12 summarizes on-time performance for Amtrak trains operating in the Region between May and October 1974. Figure 5 illustrates the decline in Amtrak's systemwide on-time performance for both long-haul and short haul trains.

Deteriorated track condition systemwide accounted for 32 percent of all Amtrak delays during 1973. Since most of the deteriorated track over which Amtrak operates is in the East, these slow orders would be responsible for far more than 32 percent of the delays to trains operating in the Region. The exact number of miles affected by slow orders varies from day to day as some sections of track are repaired and others become defective, but the problem is widespread and serious in the Region, especially outside the Northeast Corridor. Deteriorated track and structures often reduce train speeds to as low as 10 m.p.h.

Conditions became so serious in Indiana during 1974 that the Federal Railroad Administration (FRA) closed down 67 miles of track, deeming it unsafe at any speed. Two Amtrak trains—the *James Whitcomb Riley* and the *Floridian*—had to be moved away from their

<sup>2</sup> U.S. Department of Transportation, Report to Congress on the Rail Passenger Service Act. (July, 1974), p. 25.



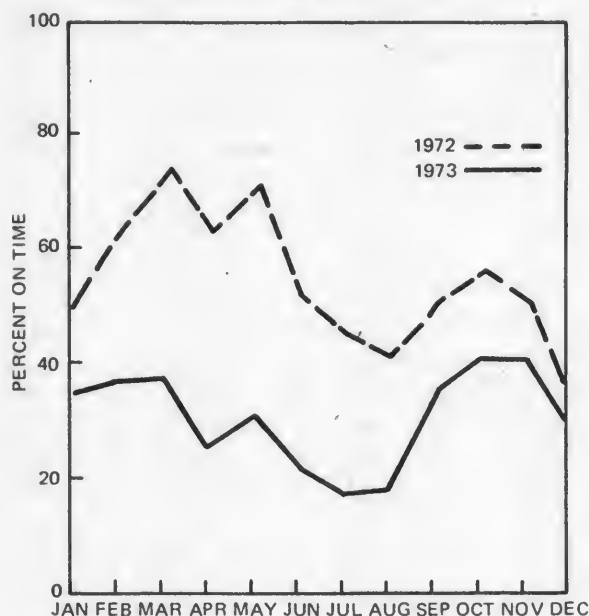
original routes to alternative routes to avoid the worst stretches of track. Major cities thereby lost service, further complicating Amtrak's planning efforts.

FIGURE 5

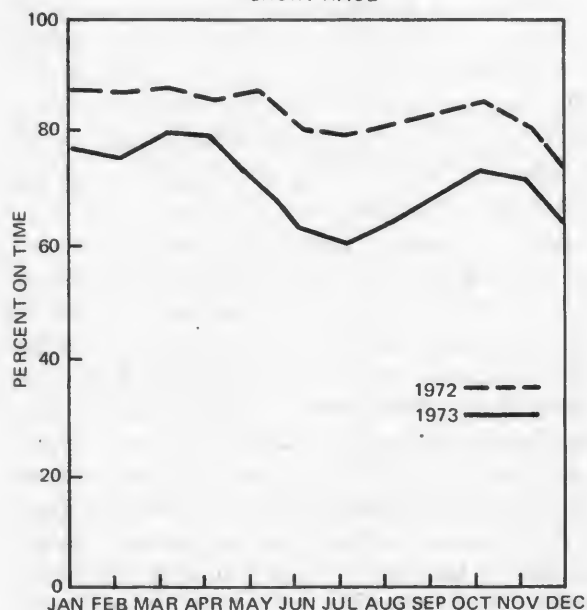
AMTRAK

## SYSTEM ON-TIME PERFORMANCE

LONG HAUL



SHORT HAUL



SOURCE: SECRETARY DOT, REPORT TO CONGRESS ON THE RAIL PASSENGER SERVICE ACT (JULY, 1974) P. 26

TABLE 11.—Comparison of rail travel times between selected major city pairs, 1949 versus 1974

City pair	Elapsed travel time		Percent Increase (decrease) 1949-74
	1949	1974	
New York-Chicago.....	16'00"	17'00"	6
New York-St. Louis.....	20'00"	21'15"	6
Washington-Chicago.....	16'00"	17'20"	8
Washington-Cincinnati.....	14'00"	13'25"	(4)
Chicago-Cincinnati.....	5'30"	8'15"	50
Chicago-Louisville.....	5'45"	9'15"	61
Washington-Montreal.....	15'40"	16'50"	7
New York-Albany.....	2'35"	2'50"	10
New York-Montreal.....	10'00"	10'20"	3
Detroit-Chicago.....	5'00"	5'45"	15
Chicago-Carbondale.....	4'25"	5'20"	21
Chicago-St. Louis.....	5'10"	5'00"	(3)
Chicago-Port Huron.....	8'05"	8'10"	1
Chicago-Milwaukee.....	1'15"	1'30"	20

Source: "Official Railway Guide," September 1949; Amtrak system timetable, November 1974.

TABLE 12.—On-time performance summary<sup>1</sup> for selected Amtrak service, May-October 1974

Service	Distance (miles)	Number of trains	Percent on-time
Northeast Corridor.....		20,081	82.5
Metroliner.....	225		
Turbotrain.....	232	5,203	79.8
Conventional.....	91-456	14,096	84.5
Non-Northeast Corridor.....		4,046	62.0
New York/Kansas City.....	1,329	368	1.4
New York/Chicago.....	907	368	12.8
Washington/Cincinnati/Chicago.....	903	368	36.1
Washington/Montreal.....	670	368	79.6
New York/Buffalo.....	436	1,838	76.7
Chicago/Detroit.....	279	736	84.5

<sup>1</sup> Reflects the changes in on-time reporting procedures which became effective Jan. 1, 1974.

Source: Monthly Amtrak reports for ridership and on-time performance.

The slow order problem makes late arrivals almost inevitable, because many schedules are based upon past performance when passenger trains were operated at faster speeds. While the recommended track program will eventually correct the slow-order problem, implementation will require 3 to 7 years.

Equipment failures also affect on-time performance. Power unit failures may reduce acceleration rates and maximum speeds and, under some conditions, can immobilize a train. Mechanical, electrical or structural failures on passenger cars are likely to necessitate unscheduled stops or excessive waits in terminals while defective equipment is repaired or removed. Even though passenger service has priority over freight service, rail passengers frequently find their train held up in order to give a freight the right-of-way.

Reservation grievances, although decreasing in number, are still high on the list of complaints. The improvement is due largely to the introduction of ARTS (Amtrak Reservations and Ticketing System). Since April, 1974, this computerized system has provided toll-free reservations service through five regional centers. Never-

theless, rail passengers still face an antiquated system at the ticket counters.

Insufficient numbers of reservation clerks and slow ticketing procedures produce long waits. Often clerks are unfamiliar with the complexities of tariff regulations, causing confusion. Also it is not uncommon for a boarding passenger to find a reserved seat or sleeping accommodation already occupied. Lack of coordination between reservations and operating personnel and changes of originally assigned equipment are to blame.

Many stations are in a distressing state of disrepair, and massive renovation is necessary. Stations are dark, dirty and lacking in even such services as telephones. Restrooms are often out of order or non-existent, and train information is not always readily available. Typically, stations are located in the older sections of cities, often near industrial areas. Crime may be a problem, and satisfactory parking and access to mass transportation often are not available. The negative impression provided by the stations may be a significant factor in marketing rail passenger services even when other services are improved.

#### Quality of Suburban Service

Commuters, too, seek frequent, prompt and comfortable rail transportation, but they have a different set of priorities. Suburban trains move large numbers of people over relatively short distances between their residences and places of business. Because suburban service takes place within limited morning and afternoon time periods and arrival at a specific time is essential, the traveling public is most concerned about schedule frequency and on-time performance and is more tolerant of some discomfort.

The uniquely high population density of the Northeast Corridor has favorably influenced the quality of suburban services. For example, ridership volume has justified electrification of most of the rights-of-way serving the New York and Philadelphia areas. Electrification permits the use of self-propelled multiple unit (MU) electric trains, which possess greater acceleration capabilities than conventional locomotive powered trains. In service requiring frequent stops, MU trains can travel at higher average speeds.

On-time performance for suburban service in the Northeast Corridor is more satisfactory than for inter-city service. As shown in Table 13, between May and October 1974, all services except some of those provided in New Jersey met their schedules more than 80 percent of the time. During the period analyzed, these New Jersey services were adversely affected by poor track conditions which are being remedied through an improvement program of the New Jersey Department of Transportation.

Equipment quality and passenger comfort vary widely. Table 14 summarizes the age of equipment used in suburban service in the Corridor by each railroad. Equipment ranges from new to 65 years of age. Many of the older self-propelled and locomotive hauled cars have outlived their usefulness and are being replaced with new equipment purchased under the sponsorship of agencies such as the Southeastern Pennsylvania Transportation Authority (SEPTA), New Jersey Department of Transportation (NJ DOT), New York's Metropolitan Transportation Authority (MTA) and the Connecticut Transportation Authority (CTA).

TABLE 13.—Summary of on-time performance for selected Northeast Corridor suburban services

City/route	Percent on-time, May-October 1974					
	May	June	July	August	September	October
Boston, PC.....	95.8	97.2	95.8	96.3	96.3	92.7
New York:						
PC—Harlem Division.....	93.9	92.8	92.4	93.8	92.0	91.8
PC—Hudson Division.....	83.6	84.8	86.7	84.4	85.4	88.9
PC—New Haven Division..	88.8	89.2	83.8	88.5	91.1	90.9
PC—New Jersey Main Line.	88.7	91.2	91.9	84.1	84.7	86.3
PC—NYLB.....	72.9	74.1	61.8	62.0	68.1	52.5
CNJ—Main Line.....	77.3	77.6	68.2	70.0	60.6	54.9
CNJ—Bayonne Line.....	79.6	72.8	74.0	67.1	70.5	54.3
CNJ—NYLB.....	54.5	56.6	48.8	55.3	53.5	25.6
Philadelphia:						
PC.....	91.6	91.6	91.9	93.2	91.9	90.6
RDG.....	94.0	94.4	93.9	94.0	94.0	(1)

1 Not available.

Source: Railroads' suburban operating statistics (December 1974).

For example, in Philadelphia SEPTA is acquiring 24 new electric cars, in New York MTA and CTA have acquired 144 new cars, and in Northern New Jersey, NJ DOT has acquired 70 cars for use on the Erie-Lackawanna. The new equipment offers more reliable heating and air conditioning, better riding qualities and superior sound insulation.

Outside the Corridor, suburban services are provided in the Pittsburgh, Cleveland, Detroit and Chicago areas. Table 14 lists the number of cars and locomotives in the active fleets used in each city, along with the average ages where available. Service in all four cities is provided by diesel-powered trains, except for Illinois Central Gulf and Chicago South Shore & South Bend services in the Chicago area which use electric multiple unit cars. Much of the diesel-powered equipment is former long distance equipment, although an attempt has been made—most notably in Chicago—to replace older equipment with newer bi-level cars.

Beginning in the early 1950's, the Burlington Northern and Chicago & Northwestern began to replace old suburban coaches with bi-level air conditioned cars seat-

TABLE 14.—Type and age of equipment used in suburban service

City/railroad/owner	Total Number of units	Electric self-propelled			Diesel self-propelled			Conventional coaches					
		Number of units	Percent under 10 yr	Percent 10-20 yr	Percent 20+yr	Number of units	Percent under 10 yr	Percent 10-20 yr	Percent 20+yr	Number of units	Percent under 10 yr	Percent 10-20 yr	Percent 20+yr
Boston:													
BM/BM	84					84			100				
PC/PC	81					7			100	74			100
New York:													
PC/PC	282	81			100	16			100	185			100
PC/MTA	264	216	33	45	21					48			100
PC/CTA	124	124	58		42								
PC/PANY&NJ	167	167		48	52								
PC/NJ	182	124	83		16					58			100
CNJ/NJ	155					10			100	145	7		93
LI/MTA	1,197	1,887								2,310			
SI/NYC	52	52	100										
EL/EL	247	231			100					16			100
EL/NJ	155									155	100		
Philadelphia:													
PC/PC	310	310		2	98								
PC/City of Philadelphia	56	56	36	64									
PC/SEPTA	10	10	100										
RDG/RDG	146	136			100	4			100	6			100
RDG/PSIC	12					12			100				
RDG/City of Philadelphia	17	17		100									
RDG/SEPTA	14	14	100										
PRSL/NJ	10					10			100				
Washington, D.C.: B&O/B&O													
	21					13			100	8			100
Detroit:													
PC/PC	1					1			100				
GTW/GTW	17									17			100
Pittsburgh:													
B&O/B&O	4					4			100				
PLE/PLE	5									5			100
Cleveland: EL/EL													
	5									5			100
Chicago:													
CNW/CNW	284									284			
ICG/ICC	164	164											
BN/BN	119									119			
CRIP/CRIP	106									106			
MILW/MILW	103									103			
NW/NW	8									8			
PC/PC	14									14			100
CSSB/CSSB	62	62			100								

<sup>1</sup> Ranges in age from 2 to 25 yr.

<sup>2</sup> Ranges in age from 12 to 65 yr.

<sup>3</sup> Average age 12 yr.

<sup>4</sup> Average age 3 yr—excludes GMO equipment.

<sup>5</sup> Average age 1 year—major rebuilding program in 1974.

<sup>6</sup> Average age 33 yr.

<sup>7</sup> Average age 13 yr—does not include 41 new cars delivered in late 1974.

<sup>8</sup> Average age 34 yr.

Source: Owner statistics.

ing 150 plus passengers. The Chicago & Northwestern purchased more than 280 of these suburban coaches and, because the service showed a small profit, the railroad was able to finance these purchases.

Since 1970, equipment purchases on all the Chicago area lines generally have been made with UMTA grants. The railroads provide the local share by donating depreciated equipment to a Suburban Transit District, and the District then arranges to rehabilitate the old equipment.

On-time performance for the major suburban services outside the Corridor is somewhat better than that within the Corridor. Table 15 summarizes on-time performance of railroads carrying 85 percent of the riders in the Chicago area for May through October 1974. The on-time performance rate for most of these railroads was more than 90 percent, a level of service that meets the most important requirement for suburban services.

TABLE 15.—Summary of on-time performance for selected Chicago suburban services<sup>1</sup>

Railroad:	Percent on-time
Penn Central	93.3
Burlington Northern	91.5
Milwaukee Road	97.4
Illinois Central Gulf	97.5
Chicago & Northwestern	93.0
Rock Island	68.0

<sup>1</sup> Source: Commuter Railroads (Jan. 1975). Data covers either all of 1974, or sample 2-month periods. In case of duplicate routes for one railroad, data represents average of all routes. Rating allows for a 5-minute schedule deviation, except BN which allows but 3-minute deviation during rush hours, Milwaukee which allows 3 minutes at all times, and C. & N.W. with a minute allowance.

### Identification of Corridors

Section 206(a)(7) of the Act, directs the Association to include in the Preliminary System Plan "the identification of all short-to-medium distance corridors in densely populated areas in which the major upgrading

of rail lines for high-speed passenger operation would return substantial public benefits."

Two general strategies are possible for the development of rail passenger services. Funds can be concentrated in a small number of corridors so that major improvements can be made in speed, thus substantially improving the competitive position of rail service with both the automobile and the airplane. This strategy is recommended in the Amtrak Five Year Plan released in August 1974. The reasons underlying this strategy are that only a major increase in speed, such as planned for the Northeast Corridor, will attract passengers from the other modes and that the only fair test of the long term potential of passenger trains would be through major upgrading. The counter-argument is that investments of the magnitude required for very high-speed, high-frequency service are justified at this time only in the Northeast Corridor, which is unique and already has a heavy proven ridership base. Concentrating major expenditures on a limited route structure where the results are uncertain, and at the same time leaving other equally promising routes without service altogether, seems in USRA's opinion an imprudent policy.

The Association recommends the second approach. It contemplates a broad-based program of service improvements graduated over time according to public need, as demonstrated by actual ridership. This has two important advantages. First, it offers to a broad cross-section of the public an opportunity to demonstrate, through actual usage, the extent to which passenger service really is desired. Second, it minimizes the risk that large sums of money will be spent on services for which demand may never develop. If and when demand becomes sufficient, service can be upgraded as appropriate. If demand does not materialize, service can be discontinued before a major loss of public funds ensues.

Critics of this strategy argue that moderate service improvements might not be sufficient to develop the full potential usefulness of the passenger train. USRA has adopted this second strategy, nevertheless, in the belief that costly public commitments for high-speed service cannot be justified at this time. There are too many markets which have either no service or unsatisfactory service at present. It would be better public policy to support development of a basic system of rail services between major population areas so that expansion can be implemented when and if it is required.

In USRA's opinion, proven demand both present and past is the best indicator of usefulness. Provision of service where there is none now and upgraded service where some presently exists will provide a sufficient basis for implementation of a logical and efficient passenger service improvement program.

*Approach.* USRA's approach to identifying potential corridors was first to survey the opinion of interested

parties, such as state and local governments, Amtrak, the United States Department of Transportation and the National Association of Railroad Passengers, for their judgment on which areas had potential for successful rail passenger service. These areas were matched against the criteria used by the U.S. Department of Transportation in developing recommendations for the original Amtrak route structure. These were:

- end point cities with Standard Metropolitan Statistical Area (SMSA) population of one million persons or more,
- distance of 300 miles or less between end points,
- railroad right-of-way connecting the end points which could presently or potentially be utilized for passenger trains with average speeds competitive with those of highway transportation.

Through this process, 18 city pairs qualified as potential corridors.

Each potential corridor then was considered for two possible levels of rail passenger service. Level I corridors were defined as those where heavy demand for rail passenger service already exists and major benefits from service improvement could be expected. Such corridors would receive service essentially comparable to that proposed for the Northeast Corridor in the report of the Secretary of Transportation. The report recommends 80 m.p.h. average speeds with maximum speeds up to 150 m.p.h. Included are departures every 30 minutes during heavily traveled times of day.

Level II corridors were defined as those where the demand for rail passenger service is less and where substantially less public benefit can be forecast. Such corridors would qualify for developmental service designed to measure public use. It is recommended that this service utilize either new rolling stock specifically designed for this service, or existing equipment refurbished and modernized to the greatest extent practical. Trains would operate at maximum speeds in the 80 to 100 m.p.h. range primarily over rights-of-way improved for freight service. Implementation of new or improved passenger service would depend upon the existence of this improved right-of-way, and therefore corridors already possessing passenger service would receive improvements before those without existing service.

Two factors underlie the consideration of two levels of service improvements for potential corridors. First, Amtrak's experience has demonstrated that, with proper marketing, people will ride trains. Intermediate level improvements as described for Level II corridors will provide a useful tool for analyzing public demand. Secondly, previous studies have indicated that capital expenses associated with passenger operations at speeds in the 120 m.p.h. range are two to four times greater than for speeds in the 80 m.p.h. range but do not produce



comparable increases in ridership.<sup>3</sup> Therefore, limiting speed increases on these routes to the 80 m.p.h. range would help to conserve capital while still offering the public substantially improved service.

The selection of individual corridors for various levels of service improvement utilized a combination of statistical data and intuitive reasoning. As a starting point, a methodology developed for USRA by Harbridge House was used to estimate the relative magnitude of non-economic public benefits to be derived from passenger service improvements in several of the potential corridors. It did not attempt to assess the value of a change or addition in service in an absolute sense, but the value of one service expansion in relation to alternatives or in relation to current service. As a result, it produced relative rankings of alternatives. Projected non-economic benefits were estimated in terms of the relative effect of the service with respect to congestion, air quality and energy consumption.

There were two basic steps in estimating the non-economic benefits of passenger service. First, present and projected ridership in terms of revenue passenger miles was developed. For existing services, 1974 Amtrak data was used. For services already planned for upgrading by Amtrak, ridership projections prepared by Amtrak were adopted.<sup>4</sup> For proposed new routes, 1979 ridership was estimated, using a mathematical model designed to forecast travel demand based on city pair populations and the distance between those two cities. The model was calibrated using ridership over existing routes.

The second step was to apply present or projected ridership figures to certain factors reflecting the impact of rail, air and highway transportation upon air quality, energy consumption and congestion to produce an index of social benefit of each category. The indices produced by this analysis were used to rank selected existing services as well as those planned and proposed for upgrading. Although these indices were not designed to be useful in establishing absolute benefit levels, they did provide a picture of the relative benefits of the services.

Table 16 lists the 18 potential intercity passenger corridors which were identified for the study. Many of these city pairs have a number of characteristics in common. Typically, they cover an area 25 to 50 miles wide and 100 to 300 miles long. Population density is often high throughout the corridor, congestion in the transportation system is an important concern and air pollution is a serious problem in many of these areas. In short, these areas fit the general description of places where rail service might make an important contribution to the quality of life. In each of these corridors the

end point cities are connected by one or more rail rights-of-way which could be used to provide some level of passenger train service.

Table 17 summarizes, for the corridors studied, the social benefit indices developed with the Harbridge House methodology. The indices are divided between existing high speed service, that which is planned for upgrading in Amtrak's Five Year Plan and proposed new service. The index totals fall into two groups: that

TABLE 16.—Potential intercity passenger corridors

Corridor	Rail miles	1973 population for standard metropolitan statistical area (SMSA) (millions)			
		First SMSA	End SMSA	Intermediate SMSA's	Total SMSA population served
Northeast Corridor:					
(a) New York-Washington.....	225	9.97	2.91	9.92	22.80
(b) New York-Boston.....	232	9.97	2.90	2.54	15.41
New York-Buffalo (via Albany)....	437	9.97	1.35	2.72	14.04
Chicago-Detroit.....	284	7.61	4.43	.81	12.85
Cleveland-Chicago.....	340	2.06	7.61	1.04	10.71
Chicago-Cincinnati (via Indianapolis).....	308	7.61	1.38	1.11	10.10
Chicago-St. Louis (via Springfield).....	284	7.61	2.41	.27	10.05
Chicago-Milwaukee.....	85	7.61	1.40	.....	9.01
Philadelphia-Pittsburgh.....	348	4.82	2.40	1.12	8.34
Detroit-Cincinnati.....	282	4.43	1.38	1.61	7.42
Detroit-Buffalo.....	251	4.43	1.35	.....	5.78
Pittsburgh-Indianapolis (via Columbus).....	371	2.40	1.11	1.86	5.37
Washington-Pittsburgh (via Cumberland).....	296	2.91	2.40	.....	5.31
Cleveland-Pittsburgh (via Youngstown).....	131	2.06	2.40	.54	5.00
Washington-Norfolk-Newport News (via Richmond).....	188	2.91	1.02	.54	4.47
Cleveland-Cincinnati (via Columbus).....	260	2.06	1.38	1.01	4.45
Indianapolis-St. Louis.....	240	1.11	2.41	.18	3.70
Cleveland-Buffalo.....	184	2.06	1.35	.26	3.67

Source: Bureau of the Census, "Ranking of U.S. Standard Metropolitan Statistical Areas," the World Almanac and Book of Facts: 1974, Newspaper Enterprise Association, New York City 1973, p. 156.

TABLE 17.—Public benefit index for selected service improvements based on Harbridge House analysis

Corridor	Congestion	Public benefit index		Total
		Energy consumption	Air quality	
Existing high-speed service: Northeast Corridor.....				
	1.00	1.00	1.00	1.00
Planned for Upgrading by Amtrak: <sup>1</sup>				
Chicago to Milwaukee.....	.17	.16	.34	.29
New York to Buffalo (via Albany)....	.16	.60	.09	.14
Chicago to St. Louis.....	.17	.28	.07	.11
Chicago to Detroit.....	.17	.26	.07	.11
Proposed services:				
Detroit to Cincinnati.....	.08	.11	.04	.06
Pittsburgh to Indianapolis.....	.07	.06	.06	.05
Chicago to Cincinnati.....	.06	.03	.01	.02
Cleveland to Pittsburgh.....	.02	.02	.02	.02
Cleveland to Cincinnati.....	.04	.05	.00	.02
Detroit to Buffalo.....	.03	.02	.00	.01

<sup>1</sup> Indices represent total benefits from existing and improved services.

<sup>3</sup> United States Department of Transportation, *Survey to Determine the Potential for Improved Rail Advanced Vehicle Service*, July 1973.

<sup>4</sup> National Railroad Passenger Corporation, "Five Year Financial Program, Operations & Capital Acquisitions, Fiscal Years 1975-1979."

which is extremely high, i.e., New York-Washington, and those which are moderately high or so low as to be insignificant by comparison. Clearly, where public benefits most heavily justify high speed corridor service, it already exists. In corridors other than the Northeast Corridor, benefit indices are so minimal by comparison that further analysis would be needed before implementation of high speed service is undertaken.

### Recommendations for Corridor Service

The following recommendations are in accord with USRA's position that expenditures of the magnitude required for high-speed Northeast Corridor-type service be made only where clearly justified by potential public benefits. Amtrak is free to supplement, reduce or modify the concept of future service improvements as its studies indicate necessary, but it is urged to consider thoroughly the following approach. It is recommended that high speed service be established only in the Northeast Corridor. All other corridors classified as Level II should receive new or improved service as outlined.

The proposed service improvements for each corridor are shown in Table 18. The concept underlying these improvements calls for an integrated network of corridor services which will provide a minimum frequency of two trains in each direction in each corridor. Appendix

TABLE 18.—Summary of recommended service improvements

Corridor	Present service level			Recommended service level	
	Transit time <sup>1</sup>	Number of daily round trips <sup>1</sup>	Highway travel times <sup>2</sup>	Transit time	Number of daily round trips
<b>Level I:</b>					
Northeast Corridor:					
New York to Washington.....	3'03"	30	6'15"	2'30"	(3)
New York to Boston.....	4'30"	11	5'00"	3'00"	(2)
<b>Level II:</b>					
Chicago to Milwaukee.....	1'30"	7	2'15"	1'15"	10
New York to Buffalo.....	8'30"	3	10'00"	7'20"	(4)
Chicago to St. Louis.....	5'00"	3	6'30"	4'30"	4
Chicago to Detroit.....	6'50"	2	6'00"	5'00"	4
Detroit to Cincinnati.....	None	0	6'00"	5'30"	2
Pittsburgh to Indianapolis.....	8'20"	<sup>5</sup> 1	8'00"	7'30"	2
Chicago to Cincinnati.....	9'00"	<sup>5</sup> 1	6'45"	6'15"	3
Cleveland to Pittsburgh.....	None	0	3'15"	3'00"	3
Cleveland to Cincinnati.....	None	0	5'45"	5'30"	3
Cleveland to Buffalo.....	None	0	4'15"	3'15"	2
Philadelphia to Pittsburgh.....	7'16"	<sup>5</sup> 2	7'15"	7'00"	2
Washington to Pittsburgh.....	8'19"	( <sup>5</sup> 4)	6'00"	6'00"	2
Washington to Norfolk.....	None	0	5'00"	4'00"	2
Detroit to Buffalo.....	5'05"	1	7'45"	5'00"	1
Cleveland to Chicago.....	None	0	8'00"	5'45"	3
Indianapolis to St. Louis.....	4'56"	<sup>5</sup> 1	5'00"	4'00"	2

<sup>1</sup> Based on current Amtrak timetable.

<sup>2</sup> Modified Rand McNally trip times which reflect 55 mph speed limit.

<sup>3</sup> By 1990 frequency should be 1/4-hourly New York to Washington, and 1/2-hourly New York to Boston; by 1982 frequency should be 1/2-hourly New York to Washington, and hourly New York to Boston.

<sup>4</sup> 3 round trips Buffalo to Syracuse; 4 round trips Syracuse to Albany; 7 round trips Albany to New York.

<sup>5</sup> Long distance trains operating in proposed corridors.

<sup>6</sup> 1 daily round trip plus 1 additional round trip triweekly via Harrisburg. Also 1 daily round trip Washington to Cumberland.

G contains recommended rail routings for these services. Coordinated bus service should be considered to establish the network prior to completion of necessary track upgrading and could ultimately serve to feed passengers to rail routes. Adjacent corridors would be linked, either through direct or convenient connecting services, to provide schedule availability between major cities. Downtown-to-downtown transit times would be competitive with auto and, in some cases, airline travel, and the service would be directed at attracting primarily nonbusiness and, to a lesser extent, business travelers.

To minimize operating and capital costs, equipment assigned to Level II corridors would be standardized and schedules tailored to obtain maximum ridership and equipment utilization. In this manner, it is estimated that train service in the Region can be increased by almost 187 percent while additional equipment requirements will increase 100 percent. The integrated corridor concept is discussed in detail in Appendix G.

Responsibility for detailed planning and implementation of improved services will lie with Amtrak. The planning and marketing studies required will consume considerable time, and even if planning were complete today and equipment available, the present deteriorated condition of track in the corridors would preclude the running times suggested. Upgrading of all corridors in question will require at least 5 to 10 years. It is recommended that, due to the lead time required for implementation, Amtrak immediately begin planning service for the identified corridors. The alternative of waiting for a crisis similar to the 1973-74 energy crush and then attempting to establish quickly a patchwork of uncoordinated service must be avoided if the Region is to have a rational, coordinated passenger service network.

Amtrak may also wish to consider introducing service between additional cities which did not qualify as corridors according to USRA's selection criteria. For example, some non-qualifying areas suggested in the original corridor identification process include Boston-Portland and New York-Binghamton. If detailed marketing studies produce evidence of sufficient passenger demand, Amtrak could initiate service in any or all of these areas. If demand is sufficient only for state level interest in initiating service, a combination of state and federal funds could be used under the provisions of Section 403 (b) of the Rail Passenger Service Act of 1970. A number of cities in Illinois, Michigan and New York area presently receiving service under this type of arrangement.

### Passenger Policy Considerations

The level of passenger service, both intercity and suburban, will undoubtedly increase, and Congress expects that the quality of service will be improved. To improve passenger service, the ICC has proposed stand-

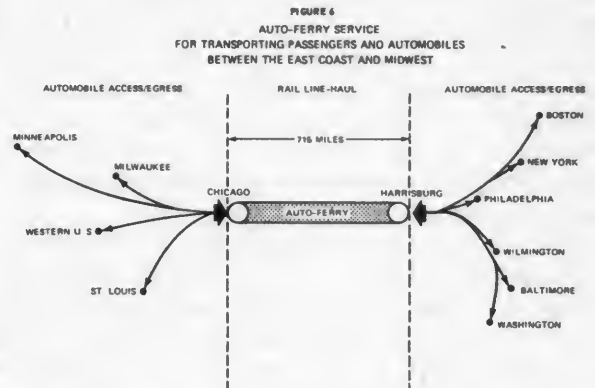
## AUTO-FERRY SERVICE

The Association also recommends that Amtrak investigate an auto-ferry service similar to that presently provided by Auto-Train. The overwhelming demand for Auto-Train service and the fact that Auto-Train stockholders receive a significant return on investment suggests that some type of auto-ferry service operated by Amtrak may prove to be financially rewarding. Admittedly, the Florida route is a lucrative one for Auto-Train service because of the magnitude and nature of automobile travel between these two markets. Whether the same concepts could be profitable on other Amtrak routes is another question, and the answer would require detailed marketing and operating studies.

One area in which the auto-ferry service may be justified in the Region is between Harrisburg, Pa. and a location in the Chicago metropolitan area as shown in Figure 6. A schedule between these two points similar to the current *Broadway Limited* schedule would provide overnight transportation for passengers and their automobiles between strategically located terminals. The major east coast cities of Boston, New York, Philadelphia, Baltimore and Washington would be served through a relatively short drive to Harrisburg, while the Chicago terminal would serve not only that city but also the midwestern cities of St. Louis, Milwaukee and Minneapolis, providing a gateway to the western United States.

For these reasons, USRA recommends that Amtrak perform detailed marketing and operating studies to determine the feasibility of operating an auto-ferry between these two points. The concept of carrying auto-

mobiles and their passengers on the same train offers travelers an opportunity to combine the flexibility and convenience of the automobile with the comfort and economics of the train. While Amtrak's service attempts to divert passengers *from* their automobiles, the auto-ferry concept attracts passengers *and* their automobiles. The technology is available now, and it would utilize excess rail capacity.



If such a service does prove successful in attracting sufficient ridership, Amtrak may want to consider providing a second service between Albany, N.Y. and Chicago in order to attract the overflow from the New York and New England area. A further consideration, if demand warrants, could be the extension of auto-ferry service from Chicago to Denver, thereby providing this unique service to Western cities.

ards for service quality and track which also could have a significant impact on ConRail. For these reasons, policy questions of facilities control, operations control and financing must be considered by USRA to implement improved passenger services.

**Facilities control.**—Responsibility for facilities involves policymaking authority over all functions pertaining to the physical condition of the railroad. This includes proper maintenance of track, signals, structures and other facilities. In addition, policies concerning capital improvements such as grade crossing elimination, reduction of curvature and various types of track, signal and structural modifications must be set according to the service to be provided. When facilities are used for more than one type of operation, policies on maintenance and capital improvements must take into account the often conflicting needs of each user.

For example: the standards of track geometry and alignment required for high speed passenger train operation vary significantly from those required for conventional freight and passenger trains. Similarly, the wear

caused by freight trains with heavy wheel loadings tends to be more severe than that caused by passenger trains. Both of these variations will dictate different levels and types of maintenance effort which must be reconciled if the two services are operated together. A more clear-cut condition exists for allocating responsibilities where facilities required for one type of service could be eliminated completely if the service were not provided. Obvious examples are classification yards for freight trains and passenger terminals and support yards for passenger trains.

It is USRA's recommendation, therefore, that when the facility exists for the exclusive use of passenger services, the passenger entity involved must bear the full responsibility for facility decisions. If more than one passenger entity is involved, obviously arrangements for dividing these responsibilities must be worked out by the parties involved.

Where a mix of passenger and freight services exist and passenger services predominate, the passenger service entity should have primary responsibility for facil-



ity decisions. ConRail should be responsible for any additional facilities required for its operation, such as industrial sidings, as well as an appropriate share of the cost for use of the passenger facility. This is similar to an arrangement which presently exists between Penn Central and MBTA in Boston.

Conversely, where freight services predominate, ConRail should have primary responsibility for facility decisions. Passenger users should be responsible for additional facilities required for their operation plus an appropriate share of the cost for use of the facilities. An example of this type of arrangement would be a main line rated 60 m.p.h. for freight and 80 m.p.h. for passenger service. To upgrade this facility for higher passenger train speeds would be the responsibility of the passenger user. Similarly, any signalling or other control system required to upgrade a freight secondary line for passenger use would be the responsibility of the passenger user.

*Operations control.*—Operations control responsibility presents similar conflicts whether one or more service is provided. The greatest potential for problems exists where traffic volumes approach the capacity of the fixed plant. In such cases, interference between trains tends to cause delays, and priorities for train dispatching can have an important effect upon service quality as well as the operating expenses of individual users. Compounding the problem, priorities significantly reduce capacity of the system as compared to a system organized on a first-come, first-served basis.

Where intercity passenger, suburban and freight operations are intermingled, the diverse operating characteristics and service requirements of each create a complex and often conflicting traffic mix. Intercity passenger trains are generally limited-stop, high-speed operations; suburban trains have mixed characteristics ranging from high-speed, limited stops to frequent stops with moderate overall speed, and freight trains are moderate to slow-speed operations making relatively few stops. Although it is apparent that certain rail operations are becoming increasingly time-limited, when combined on the same right-of-way, the operation of each can hinder the operation of the others. If one of the users holds responsibility for operational control, preferential treatment is likely.

One potential problem with ConRail ownership and control is that there is a general public belief that railroads do not give high priority to the movement of passenger trains. There may be some validity to this public criticism, as often railroads do not maintain definitive policies enforced down to the line supervisory level. This can result in an indifferent attitude toward the movement of passenger trains.

It is also USRA's recommended policy that passenger trains be allowed to operate at the maximum speed consistent with track conditions and should be given prefer-

ence over freight operations. While operating conflicts between freight and passenger service exist, ConRail should identify necessary operational and facilities changes to reduce or eliminate these conflicts and see to it that these changes are executed properly at the operating level. To maximize the degree of cooperation between the two entities, it is recommended that ConRail and Amtrak agree upon a financial incentive program which will reward superior performance and penalize inferior operations.

*Financial responsibility.*—With the creation of Amtrak and the various commuter authorities, the bankrupts have been relieved of a significant portion of their passenger deficits. Certain substantial costs still, however, are incurred by the freight operator(s); for the most part, these relate to fixed plant ownership and maintenance costs.

The USRA recommends ConRail freight operations not be used to subsidize passenger service. Therefore ConRail should not continue to carry the cost burden of passenger services operated over ConRail facilities in any form. It is therefore the Association's recommendation that all costs directly attributable to passenger service be borne by the responsible passenger entity, whether Amtrak or the commuter authority.

The determination of this cost responsibility is often quite difficult. The simplest situations to resolve are those instances where the asset is entirely employed for passenger operations, e.g., cars, track used exclusively for passenger operations, shops used exclusively for the maintenance of passenger service equipment, stations and in the case of electrified services (where there is no electrified freight service), the related catenary and power subsystems.

For such exclusive use, the passenger entity should bear the full cost of ownership and maintenance of the asset. This could be accomplished through various methods, including renegotiation (to an extent not already contemplated) of present contracts, negotiation of leases which reflect this cost, or a direct transfer of the asset from ConRail. The Final System Plan will contain standards for that negotiation. Where there is joint use, but passenger operations dominate, it is the policy of USRA that the passenger operator(s) be responsible for ownership and maintenance costs and that ConRail pay all costs directly attributable to freight service.

On those facilities where ConRail freight operations will represent the dominant user, ConRail will maintain responsibility for both ownership and maintenance of the assets. ConRail should negotiate appropriate contractual arrangements with the passenger entity or passenger operator(s) to assure that the costs attributable to the passenger service are borne by the operator(s).



For example, where a line is required for freight service that will not be operated at speeds above 30 to 40 miles an hour, the passenger entity should pay the related additional costs for maintenance of track signalling, structures, etc., to higher standards.

In the case of suburban service, many commuter agencies have purchased or leased all or a significant portion of equipment and facilities used, relieving ConRail of that responsibility. For example, MBTA in Boston has an operating agreement under which Penn Central provides stainless steel coaches to the extent possible for a specified cost per coach per month. In addition, Penn Central agreed to sell to MBTA certain segments of track, retaining an easement to operate freight and Amtrak service over as much of the sold property as is needed. MBTA has the option to purchase additional segments of Penn Central track in Massachusetts and Rhode Island.

In Connecticut, CTA leases from Penn Central those sections of track (plus the power generation and distribution system) over which suburban service to New York is operated. MTA has a similar agreement with Penn Central in New York to lease track and power and has purchased a segment of the old New Haven line from Woodlawn, N.Y. to the Connecticut state line. Similar agreements exist between the commuter authorities and the operating railroad for purchase or lease options for track, power and terminal facilities.

Finally, consideration must be given to those passenger services presently operated by bankrupt carriers which receive no support from area authorities.

Such services operated on rail properties designated by the Final System Plan for transfer to ConRail may be discontinued provided that no state, local or regional transportation authority offers to purchase or subsidize them. They may not be discontinued if precluded by the terms of leases and agreements with such authorities under which financial support was being provided, at the time of the Act's enactment, for the continuance of rail passenger service.

The amount of the subsidy to be offered by the contracting transportation authority should cover the difference between the revenue and the cost of providing the service plus a reasonable return on the value of the rail properties used. An offer of purchase shall be accompanied by an offer of a subsidy which shall be paid until the purchase transaction is completed.

If no entity assumes responsibility for these services, then ConRail is under no obligation to continue them, and the trustees of the bankrupts need only comply with the notice and effective date provision of the Act in order to discontinue services.

Another factor to be considered in implementing passenger service improvements is the method of financing acquisition, improvement of passenger facilities and expense of operations. The Act provides for several

levels of funding which range from operating subsidies to outright acquisition of property. Section 211(a) of the Act provides for USRA loans to Amtrak to achieve the goals in the Final System Plan relating to improvements in passenger services, and Section 601(d)(1) specifically refers to the Northeast Corridor, stating that these loans may be for either lease or purchase by Amtrak of Corridor property.

While the purpose of Section 601(d)(1) is to insure that necessary passenger services are not lost in the course of creating a profitable freight system, funds provided by Section 211(a) must be used for other purposes as well and the use of these funds for acquisition, modernization and improvement of passenger facilities should be minimized. It is USRA's policy that passenger entities should make their own arrangements for financing insofar as possible.

#### **Northeast Corridor Policy Considerations**

Because of the nature of rail services in the Northeast Corridor and the special emphasis given to it by Congress, additional specific recommendations must be made for dealing with this complex area in terms of operations, ownership and managerial control.

Passenger and freight traffic coexists satisfactorily from a capacity standpoint everywhere in the Region except in the Northeast Corridor. Congestion is substantial today and promises to get much worse with the expanded development of truly high speed services. Most of the approximately 1,100 trains operating daily on the Penn Central main line between Washington and Boston are passenger trains, either intercity or suburban. The heaviest traffic is between New York and Washington, where heavy freight traffic competes for space on a limited number of tracks with high speed Metroliners, conventional intercity passenger service and frequent suburban operations. Tracks on this congested segment will be increasingly hard-pressed to meet the needs of both the passenger and freight systems. Between New York and Boston the problem is not so serious because alternate freight routes exist in that area on the Penn Central.

In the past, particularly during World War II, the New York-Washington corridor experienced higher volumes of traffic than are now handled. In the last three decades, institutional and operational changes have resulted in a reduction of track capacity. First, and most important, rail freight traffic in the past was not subject to today's intensive level of truck competition, and freight trains could be operated on slower, less precise schedules. Under present-day conditions, shipper demands for more efficient freight service have mandated greater reliability and higher speeds. Second, average passenger train speeds have increased with the introduction of Metroliners. Third, commuter services have increased significantly.

The present situation seriously impinges on freight operations. High-speed Metroliners are operated hourly in both directions between 6 a.m. and 8 p.m., interspersed with conventional passenger trains. South of Wilmington, Del., where the route is largely double-tracked, this pattern of passenger service restricts freight movements even without adding the factor of suburban trains. Should the high-speed service be increased to half-hourly and quarter-hourly frequency, as now projected, for 1982 and 1990 respectively, it will be difficult to operate reliable through freight train services during passenger service hours.

Through freight train services would deteriorate significantly if operations were limited to off-peak passenger periods between 10 p.m. and 6 a.m. Yard congestion would become acute, and a substantial percentage of traffic would be delayed. The quality of freight service today is impaired to some degree by restricting some through freight trains to late night and early morning hours. During September 1974, through scheduled freight trains between New York and Washington averaged a 3.2 hour delay per trip.

Table 19 shows the growth that both passenger and freight services are expected to realize in the next 15 years. Passenger ridership is expected to grow between 159 percent and 282 percent; freight traffic could increase between 35 percent and 100 percent.

TABLE 19.—*Northeast Corridor, traffic growth projections*

A. PASSENGER TRAFFIC—SELECTED SEGMENTS

[Passenger volumes expressed in thousands]

Market segment	1973 volume	1990 projected volume			
		Low potential	Percent growth	High potential	Percent growth
New York-Boston.....	1,087	5,400	420	9,400	803
New York-Washington.....	6,571	17,000	159	25,100	282
Through New York.....	272	1,300	356	2,300	736
Total corridor.....	7,880	23,700	200	36,800	367

B. FREIGHT VOLUME PROJECTIONS

Commodity group	Percent growth (1973-90)	
	High potential	Low potential
Bulk.....	80	25
Intermodal.....	250	100
General freight.....	130	40
Composite.....	100	35

NOTE: Another study of traffic growth performed by Temple, Barker and Sloane for USRA projects a 30 percent increase in general tonnage for the Region as a whole between 1973 and 1985. This would appear to support Bechtel's low potential estimate for growth through 1990.

Source: Bechtel, Inc. Report to Federal Railroad Administration Sept. 19, 1974.

If train speeds and frequencies desired by Congress are to be approached in the Northeast Corridor, at least

two tracks will have to be devoted exclusively to inter-city passenger services. Although two or more tracks have been upgraded for a speed of 110 m.p.h. for most of the distance between New York and Washington, at present all trackage is used by the various services on a more-or-less random basis as traffic demands.

Consideration has been given to upgrading Northeast Corridor facilities for continued joint freight and passenger operations, but this approach has some major disadvantages. First, constant freight use of tracks over which high-speed passenger trains are operated would require either exorbitant maintenance costs or force a reduction in average passenger speeds lower than desired for the Northeast Corridor. To operate at high speeds with satisfactory passenger comfort, passenger trains must utilize roadbeds which meet strict standards of gauge and alignment. Passenger trains, which have relatively light weights on each wheel, cause less pounding on track than freight trains with heavy wheel loadings. Therefore, as freight train use increases, the track structure tends to deteriorate more rapidly, and either the riding quality becomes less satisfactory or more money must be expended for maintenance.

A second problem is that, given the present state of the art, it is doubtful that freight operations could be conducted with the necessary degree of precision to prevent substantial delays of many high-speed passenger trains. As more trains are operated, the probability of delay would automatically increase. In addition, freight trains are inherently more prone to delay than passenger trains. They tend to be longer and heavier, placing substantially more stress upon mechanical components and making failure more likely. When a failure does occur, correction of the problem is correspondingly more difficult and time-consuming.

More important, however, than the problems created by mixed freight and passenger operations is the consideration that this plan would not solve the problem, only postpone it. If traffic grows as expected, new investment in fixed plant will be necessary since a more extensive program for the separation of passenger and freight traffic ultimately will be required. The fixed plant investment which will have been made for improved freight yards and connections under this alternative will become obsolete.

Working in concert with DOT and various consultants, USRA staff has studied the Northeast Corridor problem at length to determine the best method of providing separate rail facilities for both types of traffic. There are two basic alternatives for solving the congestion problems of the New York-Washington segment. One of the alternatives would utilize the same Penn Central right-of-way for passenger and freight operations, on separate tracks. The second alternative would introduce a parallel route for the separation of

passenger and freight traffic. This parallel route would be composed of segments of the B&O, Reading, Central of New Jersey and Lehigh Valley lines. The two alternatives are as follows:

1. *Install additional trackage on the PC right-of-way as necessary to permit separate passenger and freight train operations.* Continuation of both passenger and freight service on the Penn Central right-of-way offers a number of advantages: freight service would remain on the Penn Central with its electrification and superior right-of-way and with proximity of industries and yards to trunk freight routes; separation of passenger and freight tracks would also avoid congestion and reduce the need for tight scheduling, high horsepower to weight ratios on freight trains and a rough ride for passenger trains operating on tracks used by freight.

But the concept is also accompanied by major disadvantages. Foremost is the high expenditure for fixed plant required to implement the project. Widening the right-of-way would be required, which presents formidable problems between Wilmington, Del. and Newark, N.J. There would also be a negative environmental impact for the required widening through large urban areas such as Philadelphia. Even if the environmental objections could be overcome, the cost of fixed-

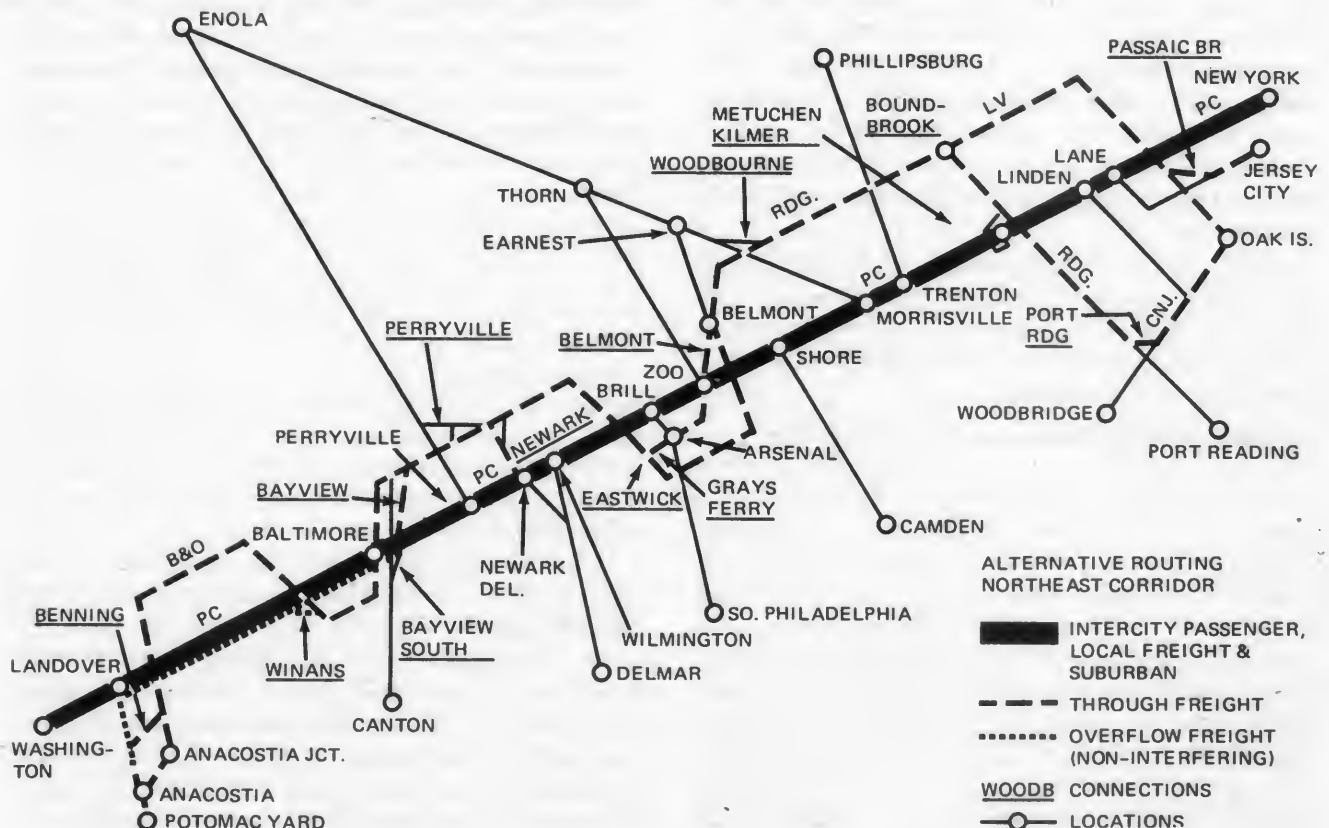
plant improvements for the entire New York-Washington segment is estimated at \$1.2 billion.<sup>5</sup>

Concern has been expressed over passenger safety if high-speed passenger and freight operations are conducted on the same right-of-way. It has been recommended that high-speed passenger and freight trains be separated to avoid the possibility of sideswiping accidents caused by shifting loads, protruding doors, etc., as well as to eliminate the possible risk from freight derailments. That there is a certain risk is not denied, and the potential damage from an accident could be more extensive as speeds are increased. There is, however, no precise evidence available to quantify the risk factor in a meaningful way. Through passenger and freight services always have shared the same trackage, to separate the services on different rights-of-way would remove whatever element of risk does exist.

2. *Remove most of the freight traffic from the PC right-of-way by upgrading parallel routes and providing cross connections to industrial and yard locations.* This solution, shown in Figure 7, would utilize the B&O-RDG-LV route as the main line for freight movement between Washington and Newark, N.J. and the RDG-LV route (through Allentown, Pennsylvania)

<sup>5</sup> Preliminary estimates furnished by Bechtel, Inc., for the Federal Railroad Administration.

FIGURE 7  
ALTERNATE ROUTING FOR NORTHEAST CORRIDOR





for the movement of freight between Harrisburg and Newark. This would free the Penn Central main line for almost exclusive use by Amtrak and suburban operations. The principal exceptions would be local switching of freight cars to and from industries located on the corridor which would continue as at present. The physically separated lines also provide emergency detour possibilities in the event one line is blocked by a serious derailment. The physical separation of trackage provides easier access for track and roadway maintenance which is of considerable importance where rail lines are operating at or near capacity. Dispatching and line supervision functions for freight and passenger can be readily segregated when the lines are physically separated, resulting in fewer conflicts between two essentially disparate enterprises.

The disadvantages of this alternative are that implementation would require the restoration of double track on the Baltimore & Ohio Railroad between Baltimore and Philadelphia, and a number of connections at intermediate points would have to be constructed to provide access to existing Penn Central yards and industries. The fixed-plant improvements required to achieve the basic objectives of this plan are estimated to cost \$300 million.<sup>6</sup>

USRA believes this alternative offers the most reasonable solution for improved passenger and freight operations. It alone can be accomplished with a reasonable fixed-plant investment, and yet it avoids spending large sums to upgrade an existing facility only to have it outlive its economic usefulness in a few years, as is the case with alternative 1. The existing Penn Central route can be released and upgraded for high-speed passenger service, and the parallel route can be upgraded specifically for efficient freight operation thereby accomplishing the maximum practical separation of freight and passenger traffic.

USRA strongly recommends this operating alternative and to this end has entered into discussions with the Chessie System to determine the best institutional and operating structure for use of the B&O line between Washington and Philadelphia.

#### **Northeast Corridor Management and Financing**

A number of options for ownership and management of Northeast Corridor facilities have been studied. Some will not fulfill the purpose of providing improved passenger service while allocating full responsibility for freight and passenger costs to the appropriate entities. For example, private sector ownership was rejected because of the magnitude of investments required, the financial uncertainties, and the desirability of pursuing service objectives rather than profit. The history of the Act suggests a legislative interest in Amtrak ownership

or control through lease, or otherwise, of Corridor properties.

Should ConRail retain Corridor properties acquired under the Final System Plan, Amtrak and the various commuter service authorities would pay ConRail on a lease or user-charge basis. Because the property involved would saddle ConRail's capital structure with an unnecessary burden (as the Corridor will not be used as a through freight route) this option was rejected. Furthermore passenger service costs might be hidden in the corridor freight operation to the ultimate detriment of ConRail's function. This left three major options for ownership and management of passenger service in the Corridor: a federal corporation/regional authority, Amtrak, and a fixed plant entity.

*Federal Corporation/Regional Authority.* This option would place the ownership, management, and operation of the Northeast Corridor under a new federal corporation acting as a regional authority with state participation. This arrangement would be consistent with Section 206(c)(1)(D) of the Act, which states that the Final System Plan shall designate which rail properties may be purchased or leased from ConRail by a state, local or regional transportation authority to meet the needs of commuter and intercity rail passenger service.

Under this option the authority would acquire control of the Northeast Corridor through purchase or lease from ConRail and would assume responsibility for train operations, control functions now performed by Penn Central, management of needed construction and for maintenance of way programs. Acquisition and maintenance of passenger rolling stock would fall to the organization responsible for providing the service. After a period of federal control and supervision of the authority's activities, individual Corridor states could gradually assume an owning and controlling role. Ultimately, a Board of Directors composed of representatives of the U.S. Treasury, the U.S. Department of Transportation, Amtrak and the Corridor states would oversee the authority.

Corridor states' incentives to join the authority would include control of the Corridor and influence over the timing and extent of improvements, improved connectivity and coordination with other public transportation services, and participation in long range management of the Northeast Corridor.

Penn Central properties which are primarily commuter related could be included with intercity properties. The inclusion offers the advantage of establishing a single entity responsible for all Northeast Corridor functions, with passenger service as its primary objective. However, each state would continue to collect revenues and subsidize its own commuter services and would be billed by the authority for actual costs incurred. Amtrak and ConRail would contract with the authority

<sup>6</sup> Preliminary estimates furnished by Bechtel, Inc., for the Federal Railroad Administration.



for intercity passenger and local freight services and/or operating rights with charges based on an allocation of costs.

*Amtrak.* The Northeast Corridor is a major Amtrak revenue source at present. Amtrak ownership would provide the most direct channel to upgrading the Corridor because Amtrak is an existing organization and has a source of federal funds.

Amtrak acquisition of the Northeast Corridor is provided for as an alternative under Section 601(d) of the Regional Rail Reorganization Act. This option provides for Amtrak to own the right-of-way, (except the portions owned by MTA/CTA/MBTA and similar local or regional organizations). Amtrak would assume responsibility for control functions and provision of train services but could, if desired, contract with ConRail for this work. A separate Northeast Corridor Division might be established within Amtrak to maintain right-of-way and Amtrak rolling stock and manage needed construction. Commuter requirements could be contracted with either Amtrak or ConRail. An independent review board might be established to resolve operational disputes, provide a forum for local participation, and to arbitrate changes in agreements.

Amtrak would acquire the Northeast Corridor from ConRail concurrent with conveyance to ConRail of the Corridor. The transportation and maintenance of way functions could be assumed by ConRail at conveyance to ease the integration of activities between the Corridor and the rest of the Region. This also would provide flexibility in assigning ConRail personnel and is consistent with the relationship on the rest of the Amtrak routes.

*Fixed plant entity.* This proposal envisions a facilities

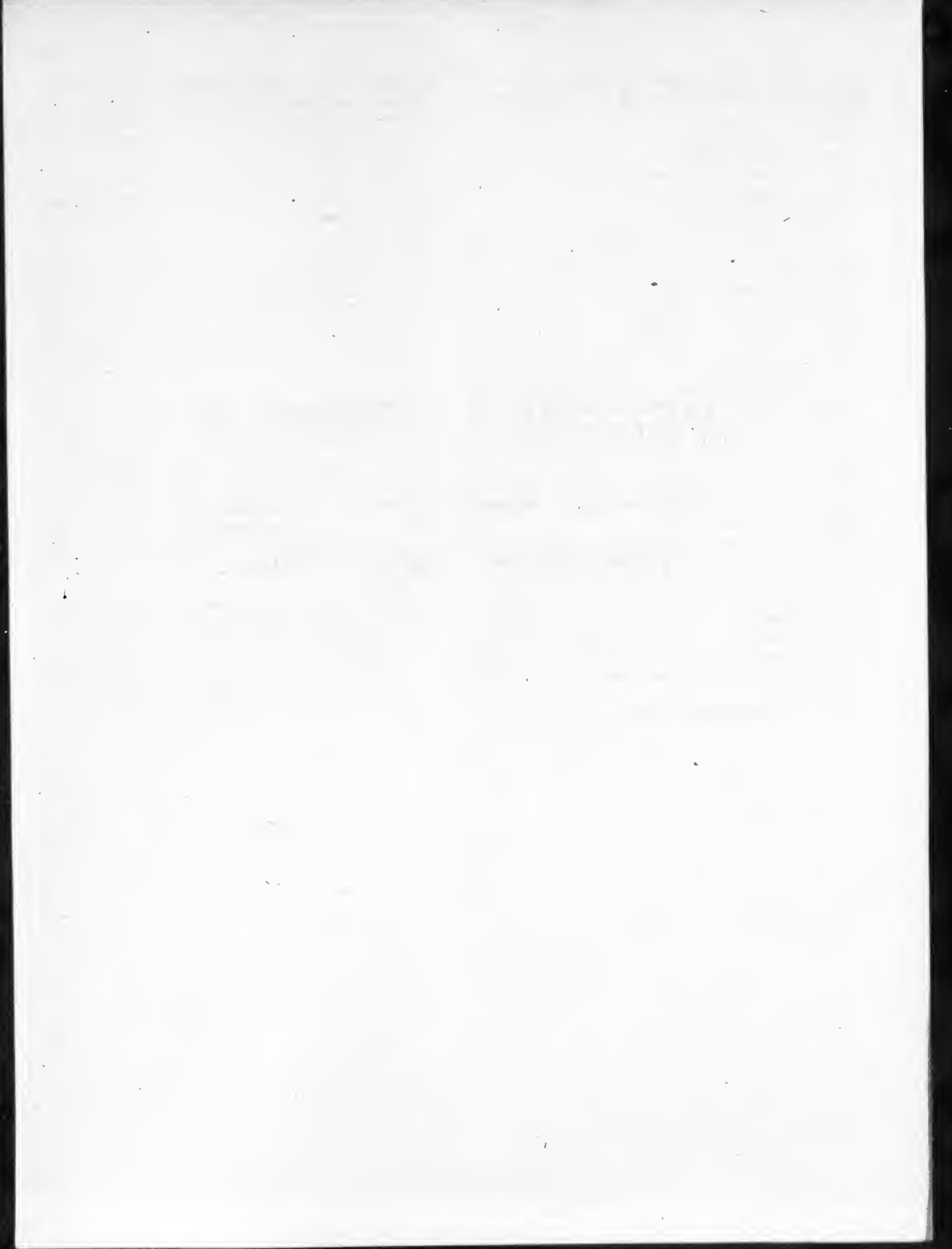
corporation or a separate fixed plant entity which would purchase the Northeast Corridor properties from ConRail. Such a proposal would separate ownership and associated capital burdens from the operating function.

The entity could be passive or active. In neither case would it assume responsibility for train operations, or maintenance of equipment. As a passive owner, it would lease the properties to Amtrak or another operating organization.

If it were to assume this role Amtrak or another operating organization would be responsible for maintenance and dispatch control. As described below, however, the fixed plant entity assumes an active role. It would lease operating rights to Amtrak, ConRail and the commuter agencies but would retain responsibility for control functions, maintenance of way and necessary construction.

The lease agreement between the users and the entity would be similar to the existing agreements between Penn Central, Amtrak and the commuter agencies. This alternative is similar to the Federal Corporation/Regional Authority option except that the fixed plant entity performs no on-board transportation functions. Because the entity would not operate any trains and would have no special interests to protect; it would be neutral and capable of reconciling conflicting operating interests.

The Department of Transportation is preparing a detailed plan for specific improvements to the Northeast Corridor and these improvements are intended to provide the improved rail passenger service required by the Act. Specific engineering requirements and cost analyses will be available at the time of the Final System Plan.



# **VOLUME I—PART 3**

**Financial Assessment of the  
Preliminary System Plan**

THE HISTORY OF THE

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## Financial Analysis of the Preliminary System Plan

*The creation in the Region of a financially self-sustaining system operated by a private corporation (ConRail) is mandated by the Regional Rail Reorganization Act of 1973. The Act also contemplates that creditors of the bankrupt estates will be compensated for the properties conveyed to ConRail through stock and other securities in the new corporation. ConRail's projected and actual performance will determine the ultimate value of these securities.*

*The central concern in Congressional hearings, the courts and proceedings before the Interstate Commerce Commission has been the ability of ConRail to create a fair value for the securities issued to the creditors of the bankrupts in exchange for the assets acquired.*

*This chapter presents the Association's financial projections (or pro formas) for ConRail from 1976 to 1985 on an accounting basis consistent with other railroads (except for track rehabilitation, which has been capitalized and not depreciated).*

*In preparing the pro formas, the Association used sound historical and empirical data to project a reliable estimate of ConRail's revenues and expenses. A myriad of complex assumptions were considered in*

*detail, including alternative sources of federal and non-federal financing, traffic growth potential, the impact of inflation, management capabilities, accounting policies and the relationship between rehabilitation and operating performance.*

*Although the projections call for ConRail to achieve sizeable operational economies, experience positive market growth and thus attain profit margins equivalent to industry averages, the cost of carrying debt incurred in upgrading the facilities reduces these gains, and the uncertain future of the economy demands caution in reviewing the precise accuracy of the estimates.*

The question of whether a financially self-sustaining system can be achieved is central to every decision made by the Association, the Interstate Commerce Commission, Congress and the courts. Consequently, the development of the pro forma projections received the Association's careful attention, with much effort given to designing the best approach to the preparation of the pro forma financial projections.

The first section of this chapter presents the results of the pro forma projections and compares projected results of ConRail with expense ratios of other railroads. The second section describes the methodology used to derive the projections. As explained in earlier chapters, the pro forma statements included in this Preliminary System Plan should be viewed as tentative and subject to revision for the Final System Plan.

## **FINANCIAL PROJECTIONS**

Using the methods described in the second half of this chapter, income statements, balance sheets and statements of required financing were prepared for ConRail both on an uninflated and inflated basis. With the economy in its present state of flux, however, the Association is studying the manner in which the projections should be adjusted for inflation. So that the potential effect that inflation might have on ConRail's funding requirements can be appreciated, an inflated balance sheet is presented with the set of uninflated pro forma statements (Tables 8-11).

The Association projects that ConRail's earnings in 1973 dollars will improve from a net loss of \$91.4 million in 1976 to a net profit of \$381.7 million by 1985. It is expected that ConRail will break even and begin earning a positive net income by the third year (1978).

Such an improvement in net income represents a dramatic turn-around in view of recent trends in the Northeast's railroads, and the present state of the U.S. economy compounds the uncertainties of the future and suggests some caution in reviewing the precise accuracy

of the forecasts. Yet, the improvement should be possible because ConRail is not intended to be a composite of the bankrupt carriers but a revitalized, restructured railroad serving the same territory now served by the bankrupt carriers. The opportunity to repair and rehabilitate track and facilities, acquire new equipment, implement modern technical developments and consolidate the operating organizations, yards and facilities of six railroads is unique in the railroad industry.

All of the financial information and projections contained in this chapter reflect the industry structure referred to as ConRail I, which is discussed in Chapter 3. This railroad configuration does not contain the Erie Lackawanna, which requested to be included in USRA's planning process in mid-January, 1975. Because of the late timing of this request, detailed operating expenses, revenues and related financial projections could not be developed for a system that includes the Erie Lackawanna within the time allowed for the Preliminary System Plan. The examination made to date of such a ConRail system indicates that only a modest difference in net income relative to the ConRail I alternative should result. The financial projections contained herein can therefore be viewed as representative of the rail system structure identified as the preferred structure in Chapter 3.

## **Cause of Change Analysis**

The 1973 consolidated loss of the bankrupt carriers was \$221 million. The difference between this loss and the Association's projections of ConRail's net income on an uninflated basis represents the annual projected improvement in net income. To evaluate the reasonableness of ConRail's improved earnings, the Association prepared a "Cause of Change Analysis" to reconcile projected income with historical income (Tables 1 and 2). The variety of factors responsible for the favorable change can be traced by reviewing the individual cap-

TABLE 1.—ConRail, Cause of change analysis, derivation of increase in revenues, due to changes in volume/mix and other factors

[Millions of dollars, 1973 base]

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Total gain in operating revenues (to Table 2).....	\$46.7	\$229.1	\$185.8	\$224.0	\$257.8	\$290.0	\$318.6	\$357.9	\$398.2	\$440.5
Gains not related to volume:										
Selective rate increases.....	6.7	63.5	63.5	63.7	64.4	64.4	64.4	64.4	64.4	64.4
Light line subsidy.....	27.7	27.7	0	0	0	0	0	0	0	0
Passenger deficit recovery.....	55.0	51.9	48.9	45.8	44.8	41.5	31.8	31.8	31.8	31.8
Other operating revenue.....	11.8	(14.6)	(14.9)	(16.4)	(17.6)	(19.0)	(20.2)	(20.2)	(20.2)	(20.2)
Total.....	101.2	128.5	97.5	93.1	91.6	86.9	76.0	76.0	76.0	76.0
Revenue increase due to volume/mix.....	(54.5)	100.6	88.3	130.9	166.2	203.1	242.6	281.9	322.2	364.5
Total gain in operating revenues.....	\$46.7	\$229.1	\$185.8	\$224.0	\$257.8	\$290.0	\$318.6	\$357.9	\$398.2	\$440.5

NOTE.—All amounts show increase or (decrease).

TABLE 2.—ConRail, Cause of change analysis, reconciliation of ConRail income statement with bankrupt carriers (1973 dollars)

[Millions of dollars, 1973 base]

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Comparison of net income:										
1976-85 period (as projected for ConRail).....	\$(91.4)	\$(27.4)	\$31.8	\$135.2	\$160.8	\$218.1	\$253.0	\$288.9	\$348.7	\$381.7
1973—as experienced by bankrupt carriers.....	(221.0)	(221.0)	(221.0)	(221.0)	(221.0)	(221.0)	(221.0)	(221.0)	(221.0)	(221.0)
Difference.....	\$129.6	\$193.6	\$252.8	\$356.2	\$381.8	\$439.1	\$474.0	\$509.9	\$569.7	\$602.7
Cause of change:										
Total operating revenue increase (from Table 1).....	46.7	229.1	185.8	224.0	257.8	290.0	318.6	357.9	398.2	440.5
Operating expenses:										
Total maintenance of way.....	22.8	(22.5)	20.4	18.9	18.6	16.8	15.9	10.3	6.7	5.5
Maintenance of equipment.....	(7.5)	(13.4)	(7.5)	(15.0)	(21.7)	(22.3)	(23.9)	(32.6)	(35.1)	(36.9)
Transportation.....	(3.9)	(44.8)	(19.6)	(6.1)	5.9	13.8	22.2	25.7	27.8	27.3
General, administrative and other.....	(22.2)	(20.1)	(17.9)	(16.0)	(14.5)	(12.9)	(13.0)	(12.7)	(12.8)	(13.0)
Total operating expenses.....	(12.8)	(100.8)	(24.6)	(18.2)	(11.7)	(4.6)	1.2	(9.3)	(13.4)	(17.1)
Net car hire paid.....	28.5	13.7	48.0	114.3	101.9	113.3	108.4	98.9	103.4	79.8
Payroll taxes.....	(4.3)	(6.0)	(0.9)	0.8	2.5	2.5	2.5	6.0	7.7	7.7
Property taxes.....	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Income tax credit <sup>1</sup> .....	(7.6)	(7.6)	(7.6)	(7.6)	(7.6)	(7.6)	(7.6)	(7.6)	(7.6)	(7.6)
Other rents, interest and miscellaneous income and expenses <sup>1</sup> .....	(34.8)	(32.8)	(30.9)	(30.8)	(30.7)	(23.8)	(20.3)	(8.8)	8.4	26.1
Interest expense:										
Defaulted interest <sup>1</sup> .....	84.5	84.5	84.5	84.5	84.5	84.5	84.5	84.5	84.5	84.5
Federal notes.....	(19.4)	(38.2)	(54.4)	(63.4)	(67.0)	(66.5)	(64.0)	(61.5)	(59.0)	(56.5)
Equipment and miscellaneous interest.....	14.4	17.3	18.5	18.2	17.7	16.9	16.3	15.4	13.1	10.9
Leased line payments <sup>1</sup> .....	30.9	30.9	30.9	30.9	30.9	30.9	30.9	30.9	30.9	30.9
Total other.....	95.7	65.3	91.6	150.4	135.7	153.7	154.2	161.3	184.9	179.3
Total difference.....	\$129.6	\$193.6	\$252.8	\$356.2	\$381.8	\$439.1	\$474.0	\$509.9	\$569.7	\$602.7

<sup>1</sup> Changes primarily due to reorganization and restructuring of bankrupt roads.

NOTE.—All amounts show increase or (decrease) net income, i.e., positive values increase net income and negative values ( ) decrease income.

tions in the "Cause of Change Analysis." A discussion of the more significant factors follows.

### Revenues

By 1985, total operating revenues are anticipated to increase some \$440 million over the consolidated 1973 level of the bankrupt carriers. The majority of the gain from 1976 is due to increased freight revenues, approximating \$364 million in 1985. The gain includes \$50 million by 1985 as a result of diversion. These diversions

result from ConRail's ability to pick up direct routings from originations now interchanged with other railroads.

Other sources of revenue gains are not related to volume growth. These sources are:

*Selective rate increases* amount to nearly \$65 million by 1985. Both freight rate increases and switching service charges are included. Freight rates increase \$56 million and switching \$9 million. The freight rates increases reflect the results of a program to selectively increase tariff rates on non-compensatory movements.

*Light density line subsidy* to ConRail is estimated at \$28 million<sup>1</sup> in 1976 and 1977. This amount assumes that ConRail will receive subsidies on a fully allocated cost basis for operating lines otherwise scheduled to be abandoned. A fair return on investment was not incorporated into the calculation as the Association does not anticipate that ConRail will assume ownership of these light density lines. To reflect the abandonment after 1977 of these lines unable to cover their costs of operations, operating expenses were reduced by \$106 million and revenues by \$78 million from 1978 through 1985, in the pro formas.

*Passenger deficit recovery* represents the amount of direct subsidy required of Amtrak and the regional commuter authorities to more fully compensate ConRail for operating these passenger services. A fair return on investment was not incorporated into the deficit as the Association did not find it possible at the time of this writing to determine the underlying value of the subject passenger assets, or to set its final strategy regarding conveyance of passenger properties.

Each regional passenger contract was analyzed separately, and the results were then aggregated to ascertain the total amount of subsidy ConRail should receive for passenger service at 1973 operating levels. Costs were developed on a long-term, fully-allocated cost basis similar to the recently negotiated, but not implemented, Amtrak contract with the Penn Central.

Revenues were based on the amount of conductor and agent receipts and subsidy payments actually received by the carriers in 1973. The total annual costs and revenues were then adjusted to reflect the gradual declining usage and reimbursement for maintenance expenses of the Northeast Corridor by ConRail as indicated by the deficit repayment decline to \$32 million by 1985. To implement the assumption of full cost reimbursement, ConRail will have to negotiate a revision to most of the existing contracts with the passenger authorities.

*Other operating revenue* includes mail, joint facility, switching and demurrage revenues and passenger subsidy reimbursements projected on a declining basis consistent with the gradual removal of ConRail's operations from the Northeast Corridor.

## Expenses

*Maintenance-of-way* expenses reflect the outlay required to maintain ConRail's road and structure facilities at a level consistent with design specifications. Initially, the amount of maintenance-of-way expenses is less than that incurred by the bankrupts due to the rationalization of the system size and the adoption of

<sup>1</sup> The subsidy required to operate these lines on a long-term basis would naturally be greater. The \$28 million subsidy in the pro formas does not include a rate of return factor, a rehabilitation program nor a higher level of normal maintenance. In calculating the amount of subsidy needed to operate these lines over a long period, such costs would have to be included.

modified betterment accounting which capitalizes the substantial expenditures for maintenance-of-way rehabilitation instead of expensing them. On a road mile basis, however, ConRail will incur maintenance-of-way expenses some 60 percent greater over the 10-year period than the bankrupt railroads realized in 1973.

*Maintenance of Equipment* expenses are slightly greater in 1976 and approximately 9 percent greater by 1985 than the consolidated level reported by the bankrupt carriers in 1973. The increased costs result from the extensive repair program developed for ConRail to reduce the high bad-order ratio of the bankrupt carriers. The bad-order ratio is 10.7 percent currently; proper fleet maintenance should produce a ratio of approximately 5 percent.

*Transportation* expenses are approximately equal in 1973 and 1976. By 1985, they are projected to show a 2½ percent improvement over 1973. Since ConRail's largest operating expense category is the Transportation Account, however, this improvement represents savings of \$27.3 million over the 1973 level despite an increase in traffic handled. The gradual decrease in transportation expenses occurs from the implementation of improved car handling procedures and systems, merger effects and the impact of rehabilitation of facilities.

*Net car hire paid* is composed of net per diem and mileage payments and car leases. Over the planning period, this account is anticipated to decrease \$28.5 million in 1976 and \$80 million by 1985 relative to the level of the consolidated bankrupt carriers in 1973. The favorable change principally results from use of an improved car distribution management system, the impact of rehabilitation on transit speeds and the assumption that ConRail will acquire cars through purchase rather than lease, reducing the amount of lease payments over time.

*Other rents, interest and miscellaneous income and expenses* are initially projected to be higher than they were in 1973 because ConRail will not have the opportunity to offset the expenses with income from nonoperating real estate properties. This initial loss of miscellaneous income is diminished in later years as income is generated from ConRail's short-term investments. The build-up of short-term investments is not significant, however, when inflation is taken into account.

*Defaulted interest* is \$84.5 million less than was incurred by the bankrupts since ConRail will not be assuming the bankrupt carriers' outstanding debt currently in default.

*Interest expense for federal notes* is naturally higher than in 1973 since the bankrupt carriers had no such debt. Its level is dependent upon the annual amount of debt ConRail needs to cover the short fall between internally generated funds and total financing requirements.



*Equipment interest.*—The initial decline in equipment interest over 1973 reflects the assumed inability of ConRail to acquire new equipment by traditional financing. As ConRail acquires new equipment from the private markets, this difference gradually declines.

*Leased line payments* are \$30.9 million less than was incurred by the bankrupts in 1973 since it was assumed that the underlying assets, rather than the leases themselves, would be conveyed to ConRail. This assumption was made for the purposes of preparing the pro forma projections. It may be more appropriate for ConRail to affirm the existing leases and/or acquire stock ownership of the leased lines. The choice among these alternative acquisition methods will be made on a lease-by-lease basis prior to completion of the Final System Plan.

### Ratio Analysis

Having traced the sources of improvement, ratio analyses were prepared, comparing key operating and financial ratios to other railroads to test whether the results of these improvements were reasonable.

Examination of specific ratios of expense to revenue indicates that a continuing favorable trend in overall operating results is forecast. Following the initial 2 years of ConRail's corporate life, during which large non-recurring "start-up" expenses will accrue, the operating ratios (total railway operating expenses divided by total railway operating revenues) should descend below those of Penn Central and the bankrupt carriers combined, in 1973.

Likewise, each of the major expense categories, viz., Maintenance-of-Way and Structures, Maintenance of Equipment, Transportation, and General Administrative and Other, indicates a definitive downward trend resulting, of course, in an increasingly larger net income available for taxes, rents and fixed charges.

Although ConRail will be undeniably unique in terms of size of plant, complexity of traffic patterns, and source of financing, the interconnective nature of all railroads operating within the economic environment of the northeastern quadrant of the Nation mandates that it must adapt itself to the competitive climate into which it will emerge. To the extent that ConRail participates in the provision of transportation services in its geographical territory, both its revenues and expenses must bear reasonable relationships to those of the solvent carriers in the same Region and to other carriers in the industry.

Tables 3 and 4 show selected operating ratios for ConRail's first ten years and for selected Class I railroads operating in all sections of the Nation in 1973. While ConRail's operating ratio in its initial year is higher than that for any of the other railroads shown, by the close of the decade it is lower than the 1973 ratio for all the other railroads with the exception of the South-

ern Railway System. Even though the comparable accounting procedures were used in deriving these statistics, the comparison is not completely valid since ConRail's Maintenance-of-Way expense accounting varies somewhat from those of other roads.

As a new railroad, ConRail's Maintenance-of-Way expenses will contain depreciation on only 10 years of depreciable property additions by 1985, whereas the ongoing carriers' accounts would generally contain depreciation on approximately 35 years of accumulated depreciable property additions. An adjustment for this "bias" would move ConRail's Maintenance-of-Way ratio relative to that of the Southern Railway System by 2 percentage points thereby raising ConRail's operating ratio to 73.7 percent.

In the category of transportation expenses, which include the operation of road trains, yards and stations, ConRail is initially compared unfavorably with the other railroads, but by the end of the planning period surpasses some of the Class I railroads and is closing the gap with respect to the others. Achievement of this improvement is not unrealistic given the productivity gains expected to arise from the sizable rehabilitation program and the innovative operating and marketing policies expected to be implemented by ConRail management.

### Effect of Inflation

The uninflated financial statements are expressed in constant 1973 dollars to dramatize the cost and benefits associated with the rehabilitation, consolidation and restructuring of the bankrupt carriers and to more effectively evaluate the planning decisions made, excluding the effect of inflation. With the country's economy experiencing double digit inflation, however, it would be naive to ignore the effects inflation may have on the pro forma projections. The prices of fuel, rail, cross ties, wages and other railroad expenses have risen rapidly over the last few years.

To demonstrate the severity and magnitude of the impact inflation could have on ConRail's future performance, the Association prepared an inflation version of ConRail's projections. Estimates of the annual inflationary increases in equipment and specific ordinary operating expenses were made by Chase Econometric Associates and incorporated into the analysis. The assumptions entitled Economic Outlook, appear in the box.

Railroad industry absorption of these increases without passing them on to shippers in the form of higher rates would be unrealistic. It was assumed, therefore, that freight rate increases sufficient to offset inflationary increases in operating expenses would be granted, and there would be no loss of volume due to the higher rates. Rate relief was calculated without the effects of a regulatory time lag, even though the carriers often experienced such lags in the past.

TABLE 3.—Operating ratio and components<sup>1</sup> for ConRail

ConRail I (4)—1973 dollars	Six bankrupts 1973	PCTC 1973	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Operating expenses/railway operating revenues.....	0.533	0.827	0.896	0.851	0.823	0.807	0.793	0.773	0.754	0.742	0.727	<sup>2</sup> 0.717
Maintenance of way/railway operating revenues.....	.131	.130	.164	.158	.142	.140	.138	.132	.125	.120	1.15	<sup>2</sup> .114
Maintenance of equipment/railway operating revenues..	.169	.167	.175	.164	.163	.163	.163	.161	.160	.160	.180	.157
Transportation expense/railway operating revenues.....	.470	.470	.481	.460	.451	.438	.427	.418	.408	.400	.393	.387
General, administrative and other expense/railway operating revenue.....	.063	.060	.076	.069	0.067	.066	.065	.063	.061	.062	.060	.059

<sup>1</sup> Revenues and expenses for ConRail and other railroads were computed using accounting rules comparable to those being used by industry in 1973. In addition to adjustments made to transform ConRail from a modified betterment to an ICC betterment accounting method, other adjustments were made to reflect revenues and expenses on a basis comparable with other railroads with respect to light line subsidies,

Amtrak remuneration, and recoveries of passenger deficits not currently being reimbursed.

<sup>2</sup> See text on page 10 for discussion of the comparability of these numbers.

Source: Railroads' Annual Reports to the ICC.

TABLE 4.—Operating ratio and components<sup>1</sup> for Class I railroads, 1973

Selected Class I railroads—1973 dollars	ATSF	Chessie <sup>2</sup>	BN	MILW	ICG	N&W	PCTC	SOU <sup>2</sup>	SP <sup>2</sup>	SCL	UP <sup>2</sup>
Operating expense/railway operating revenues.....	0.791	0.748	0.826	0.803	0.752	0.725	0.827	0.714	0.770	0.768	0.741
Maintenance of way/railway operating revenues.....	.156	.120	.163	.166	.138	.117	.130	.162	.122	.142	.130
Maintenance of equipment/railway operating revenues..	.186	.159	.167	.140	.155	.179	.167	.176	.186	.183	.179
Transportation expense/railway operating revenues.....	.381	.382	.415	.415	.381	.359	.470	.310	.392	.384	.353
General, administrative, and other expense/railway operating revenue.....	.068	.065	.061	.062	.078	.070	.060	.066	.071	.059	.079

<sup>1</sup> Revenues and expenses for ConRail and other railroads were computed using accounting rules comparable to those being used by industry in 1973. In addition to adjustments made to transform ConRail from a modified betterment to an ICC betterment accounting method, other adjustments were made to reflect revenues and expenses on a basis

comparable with other railroads with respect to light line subsidies, Amtrak remuneration, and recoveries of passenger deficits not currently being reimbursed.

<sup>2</sup> Consolidated companies.

Source: Railroads' Annual Reports to the ICC.

The amount of rate relief forecast for ConRail under these assumptions was still insufficient to shield ConRail's net income from the impact of inflation. By 1985, ConRail's net income under the inflation projection is \$166.8 million lower than its net income under the constant dollar projection.

The reason is that the ICC's rate policies have not allowed full recoupment of investment costs. Consequently, as the cost of capital expenditures rises due to inflation, ConRail must borrow more money to cover the increase. This borrowing need naturally increases the amount of interest expense deducted from net operating income, hence the difference between the uninflated and inflated income statements. The annual effects of inflation on ConRail's income statement are shown in Table 5.

The effect of inflation on ConRail's balance sheet is even more pronounced. The inflationary increases in capital expenditures for both road and equipment, significantly raise ConRail's funding requirements. The total amount of external financing outstanding by 1985 is \$3.5 billion, a net increase of \$2.4 billion over the uninflated projections. The \$2.4 billion is net of the \$3 billion of additional debt incurred to meet the higher principal payments which fall due under the inflation scenario than which fall due under the constant-dollar scenario.

The annual effect inflation would have on ConRail's Balance Sheet is depicted in Table 6. The most noticeable cumulative changes due to inflation are that net property additions increase \$2.6 billion, interest and

TABLE 5.—The effects of inflation on ConRail net income, 1976–85 (years ended Dec. 31)

[Dollar amounts in thousands]

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Net income (loss) uninflated (1973 dollars).....	\$(91,425)	\$(27,403)	\$31,780	\$135,224	\$160,787	\$218,092	\$253,010	\$288,869	\$348,666	\$381,736
Increase in operating expenses due to inflation.....	(979,270)	(1,321,133)	(1,575,434)	(1,848,643)	(2,117,364)	(2,375,835)	(2,655,488)	(2,963,176)	(3,272,535)	(3,628,137)
Offsetting increase in rates.....	979,270	1,321,133	1,575,434	1,848,643	2,117,364	2,375,835	2,655,488	2,963,176	3,272,535	3,628,137
Increase in interest expense on inflated investments.....	(2,591)	(10,099)	(21,364)	(36,186)	(54,260)	(75,685)	(97,233)	(119,674)	(144,095)	(166,812)
Net income, (loss) inflated basis.....	\$(94,016)	\$(37,502)	\$10,416	\$99,038	\$106,527	\$142,407	\$155,777	\$169,195	-\$204,571	\$214,924

debt repayment grow \$1.1 billion, and a drop in temporary cash investment decreases working capital by \$0.5 billion.

Moreover, while the uninflated projections call for ConRail to stop borrowing federally funded debt in 1981, the inflated projections show that ConRail is still borrowing at the end of the 10-year period. To ascertain when the need for additional funds would cease, projections were made for the years from 1985 to 1995, assuming no further inflation after 1985.

Under this assumption, ConRail's need for additional federal funding would not cease until after 1990. It is possible, however, that private sector financing could take the place of federal funding in the later years if the planned results are attained in the early years.

The Association is still reviewing and refining assumptions used to develop the inflated projections. Of primary concern to the Association is the assumption regarding freight rate increases. As related above, the rate increases were calculated to compensate ConRail for the total dollars necessary to offset the inflationary increase in ordinary expenses.

However, in light of the ICC's recent suspension of the Class I rail carriers' proposal for a 7 percent increase, *ex parte* 310, the automatic, non-regulatory lag rate increase action projected for ConRail could be considered unrealistic. To the extent the ICC does grant rate increases in 1975 equivalent to the real dollar cost of inflation, ConRail should not have to apply for "catch up" rate relief in future years.

Although the general symptoms of inflation affect all business, not all companies can attain large infusions of general rate relief to compensate for their increased

costs. The ability of a company to pass inflationary costs on to its customers primarily depends on its competitive market position. The concept that railroads will be able to pass through all inflationary costs presumes that other competitive transportation modes will have similar increases.

Yet shippers are not simply concerned with transportation cost but total distribution costs, and have been historically innovative and creative in reducing the transportation cost ingredient in their total unit product cost, through redefined material distribution, rationalized warehousing and adjusted manufacturing processes. Historically, general rail rate increases have been succeeded by some diversion by shippers of high rated commodities, which has a more dramatic effect on the net income than it does on traffic volume or revenue.

### Funding Requirements and Sources

Despite the problems involved in forecasting the effect of inflation, the level of funding required by ConRail in the inflated projections is so much greater than in the uninflated projections that any discussion as to how the financing need can be met should be based on an evaluation of the inflated requirements. The inflated *pro forma* projections project that total liabilities, exclusive of payment by ConRail for assets conveyed by the estates, reach a peak in 1985 at \$5.3 billion. Of this amount approximately \$3 billion will consist of federal notes and \$500 million will consist of equipment obligations. The Association expects ConRail's needs to be met through a combination of private and government funds, although the precise mix cannot yet be deter-

TABLE 6.—Analysis of increase (decrease) in ConRail financing requirements due to inflation (years ended Dec. 31)

(Dollar amounts in thousands)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	Cumulative
Change in financing requirements caused by an increase (decrease) in the following:											
Net income before fixed charges.....											
Depreciation.....	\$(566)	\$(2,925)	\$(6,279)	\$(9,838)	\$(13,433)	\$(16,904)	\$(20,269)	\$(24,341)	\$(29,967)	\$(35,825)	\$(160,247)
Cash from operations before fixed charges.....	(566)	(2,925)	(6,279)	(9,838)	(13,433)	(16,904)	(20,269)	(24,341)	(29,967)	(35,825)	(160,247)
Equipment interest.....			674	2,169	3,818	5,513	6,867	8,662	11,521	14,485	53,729
Federal notes interest.....	2,591	10,099	20,690	34,017	50,442	70,172	90,366	110,992	132,574	152,327	674,270
Cash from operations after fixed charges.....	2,025	7,174	15,065	26,348	40,827	58,781	76,964	95,333	114,228	130,987	567,752
Road property additions, net of salvage.....	81,685	110,512	152,187	171,407	206,460	245,335	237,040	305,619	313,202	322,369	2,145,816
Equipment additions, net of retirements.....	10,521	44,139	35,000	46,211	31,858	37,607	24,388	53,558	61,847	62,130	407,259
Repayment of debt.....		2,366	6,755	13,055	21,797	32,166	45,004	55,923	70,494	84,552	332,112
Current assets and liabilities, net.....	(2,080)	(543)	(5,011)	(2,355)	103	(5,672)	(61,103)	(100,674)	(172,025)	(223,000)	(572,360)
Other changes, net.....	(21,161)	(31,989)	(32,537)	(15,508)	(15,434)	(11,361)	(14,257)	(15,444)	(15,472)	(18,353)	(191,516)
Additional financing required as a result of inflation.....	\$70,990	\$131,659	\$171,479	\$239,158	\$285,611	\$356,856	\$308,086	\$394,315	\$372,274	\$358,685	\$2,689,063
Sources for additional financing:											
Equipment notes.....			17,500	23,106	25,486	28,268	19,512	42,848	49,478	49,706	255,904
Federal notes.....	70,990	131,659	153,979	216,052	290,125	328,588	288,574	351,467	322,796	308,979	2,433,159
Total additional financing required.....	\$70,990	\$131,659	\$171,479	\$239,158	\$285,611	\$356,856	\$308,086	\$394,315	\$372,274	\$358,685	\$2,689,063



mined. This section examines the nature of ConRail's funding requirements and discusses some of the potential sources for meeting them. Because the Association assumes that necessary funds will initially be difficult to obtain from the private sector, it is further assumed that federal financing will be the principal source of such funds. Therefore, the term used for external funds throughout the report, regardless of source is "federal notes."

**Current Liabilities.**—The inflated balance sheet shows that the current ratio (current assets divided by current liabilities) is 1.03:1 in 1976 and only 0.94:1 in 1985. This analysis indicates that ConRail will need a slightly higher level of working capital and more cash and cash equivalents than was assumed in the \$100 million cash balance in the pro forma projections to have a working

capital position consistent with the average of Class I railroads in the U.S. for 1973. To do so, current assets would have to be 104 percent of current liabilities, including debt due within 1 year.<sup>2</sup> This would necessitate adding to the cash and temporary investment account \$6.3 million in 1976, \$55.5 million in 1980 and \$149.9 million in 1985. The additional need could be met with an increase in long-term debt or capital.

**Equipment Financing.**—ConRail's new equipment requirements will be substantial. Preliminary estimates, which will be refined as the planning proceeds, call for expenditures for new locomotives and rolling stock to average \$102.3 million per year through 1980. In addi-

<sup>2</sup> Association of American Railroads, Statistics of Railroads of Class I in the U.S., August 1974.

## THE ECONOMIC OUTLOOK TO 1985

The total economic outlook for the year 1975, as measured by real GNP, is expected to be slightly better than 1974, although significant improvements are not projected until the end of the second quarter of 1975. Real GNP is then expected to rise modestly as a result of higher new car sales, housing starts, higher levels of inventory investments and increased stability in world oil prices. An anticipated decline in food prices is expected to reduce inflation to less than 7 percent by the end of 1975.

The Federal Reserve near-term monetary policy is expected to be one of restricted money supply even when the economy shows slight positive results. Short-term interest rates should remain relatively high. Plant and equipment investments are expected to grow dramatically in response to consumer demand characteristic of the positive growth economy, but profits are expected to remain at current depressed levels, forcing

firms to continue borrowing heavily in the debt market. The high long-term bond interest rate experienced in 1974 is thus expected to be maintained for the next few years.

The period 1976 to 1978 is expected to benefit greatly from the economic turnaround of 1975 with a sustained moderate growth rate of 5 percent. It is also felt that the significant real growth of 1975 through 1978 will result in over-capacity for industry in the United States with consequential slowdown of the economy in 1979. The slowdown is anticipated to last only a year, however, with the economy returning to an equilibrium growth rate of 4 to 5 percent. Assuming that the 1979 slowdown remains at a moderate level, the rate of inflation for GNP will average 5 percent and real growth will remain at a 4 percent annual rate. These rates are expected to continue to 1985.

### LONG-TERM FORECASTS

	Macro economic indicators		Railroad economic indicators				
	Real growth GNP in 1958 dollars	Inflation as measured by consumer price index	Price index of railroad materials (General supplies, machinery, and equipment)		Labor wages <sup>1</sup>	Long-term government bond rate	Equipment trust certificate rate
	Annual per- cent change	Annual per- cent change	Annual per- cent change	Cumulative	Annual per- cent change		
1973.....	5.9	6.2		100.0		6.3	7.6
1974.....	-1.8	11.4	13.8	113.8	5.2	7.4	9.1
1975.....	-0.6	10.4	17.8	134.0	11.3	7.3	9.5
1976.....	5.3	7.0	5.0	140.7	9.4	7.3	10.1
1977.....	5.7	7.1	5.7	148.7	8.3	7.6	10.4
1978.....	3.9	6.1	5.2	156.4	10.3	7.7	9.9
1979.....	3.5	5.3	4.3	163.1	9.4	7.5	9.6
1980.....	4.4	4.9	4.4	170.2	7.2	7.3	9.0
1981.....	4.7	4.8	4.3	177.5	6.6	7.3	8.6
1982.....	4.4	4.9	4.6	185.6	6.5	7.4	8.4
1983.....	3.5	5.0	4.0	193.1	6.2	7.5	8.2
1984.....	3.5	4.9	3.9	200.7	6.0	7.7	7.9
1985.....	4.0	4.8	3.5	207.8	6.0	7.9	7.9

<sup>1</sup> Adjusted for effects of agreement in January 1975.

Source: Chase Econometrics, Nov. 21, 1974.



tion, during ConRail's initial year of operation, freight car rehabilitation will require \$62.1 million and heavy overhaul of locomotives \$59.7 million. As an average, car rehabilitation will require \$58.4 million per year and locomotive overhaul \$62.6 million per year through 1980.

Five alternatives exist for obtaining new equipment: leasing, equipment trust certificates, conditional sales agreements, short term rentals and cash purchases. ConRail will mix these traditional techniques to its advantage in accordance with its credit standing in the private capital markets. The possibility of equipment financing through shipper participation is also being considered. ConRail could accomplish this indirectly by encouraging a higher volume of shipper-owned cars or directly by participating in joint financing equipment with shippers.

Although railroad equipment has traditionally served as its own collateral, USRA has conservatively assumed in the pro forma projections, that ConRail would purchase equipment with cash obtained from federally supported debt in its first two years of operation. In years three and four it was assumed that 50 percent of the cost of new equipment would be financed through secured equipment instruments. From the fifth year onward it was assumed that traditional financing could be arranged; hence the projections are based on a 20 percent downpayment from operating funds and an 80 percent equipment financing from the private capital markets. ConRail may, of course, be able to accelerate this program and begin self-supporting equipment financing at an earlier date.

*Remaining Funding Requirements.*—The bulk of ConRail's remaining financing requirements is associated with the rehabilitation of equipment and track and the support of operating losses in early years. Because funds for these purposes are not easily obtained from private sources, the Association assumed that federally supported debt would be available to meet these requirements.

The actual amount of federal debt needed by ConRail in any given year was assumed to be the amount of money required to meet all cash needs after utilization of cash generated from operations, subsidies, equipment financing, and non-interest bearing liabilities.

From the projected results of ConRail on an inflated basis, using modified betterment accounting, the federal debt levels for selected years are listed below.

	(\$000)		
Federal Debt: <sup>1</sup>	1976	1980	1985
Current.....	\$15, 124	\$61, 096	\$114, 441
Long term.....	538, 584	1, 737, 129	2, 871, 804
Total.....	\$553, 708	\$1, 798, 225	\$2, 986, 245

<sup>1</sup> Expressed in pro forma projections as "Federal Notes" (long-term debt) and "Current Portion of Federal Notes."

The federal debt reaches almost \$3 billion by 1985. Since the provisions of the Act in Section 211 allow for \$1 billion, the difference of approximately \$2 billion must come from either increased federal financing or private source borrowings.

The amount of debt that could be supported by ConRail would depend primarily upon its ability to service that debt through normal operations. As shown in Table 7, ConRail eventually would be able to service the debt, but the coverage of fixed charges remains low, even as late as 1985, compared to the acceptable level of 2.0, due to a slow growth in the rate of earnings coupled with an assumed steady interest rate on a climbing total debt burden. After 1985 the level of debt begins to decline as the peak requirements of the rehabilitation program are satisfied.

Although the Association assumed that federally supported debt would supply a majority of ConRail's funding requirements, alternative sources or other types of support certainly exist. The federal government's financial involvement, for instance, may take a different form from that assumed. Or, it may prove possible to obtain a portion of the financing from the private markets. The feasibility of using some of these alternative types of private financing is discussed below.

*Bonded Debt.*—ConRail's ability to obtain mortgage or other long-term bonds from the private capital markets will be largely dependent on its actual proven results during its first 5 years of operations and more current projections for future operations thereafter. Industry and market conditions will also determine the practicality of such instruments as either private placements or public issues.

Trends in first mortgage bond issues for railroads have not been encouraging. Railroads in general have had to pay relatively high interest rates. Sinking funds, which reduce the average life of the bonds, have become

TABLE 7.—ConRail fixed charge coverage

	1976	1980	1985
Interest Expenses <sup>1</sup> .....	\$39, 729	\$135, 639	\$244, 551
Equipment Rentals <sup>2</sup> .....	107, 487	90, 666	-109, 812
Fixed Charge Total....	\$147, 216	\$226, 305	\$354, 363
Income (Loss) Before Taxes and Fixed Charges <sup>3</sup> .....	\$53, 200	\$332, 832	\$569, 287
Fixed Charge Coverage.....	0.36	1.47	1.61

<sup>1</sup> Interest Expenses were calculated by adding the additional interest due to inflation to the uninflated interest charges shown in the Statement of Income for 1976-1985.

<sup>2</sup> These numbers were adjusted upward to allow for inflationary increases. A traditional industry ratio of one-third of the total expenses was used to calculate the interest portion of equipment rentals. Equipment Rentals are shown in the Income Statements on an uninflated basis as part of Interest and Other Income Expenses (locomotive leases) and Net Car Hire (leased and rented cars).

<sup>3</sup> This line was calculated by adding the interest amount described in footnote 2 to the uninflated Income Before Taxes and Fixed Charges.

increasingly necessary to attract investors. Obviously, rate and saleability will be affected by money market conditions and alternate investment opportunities.

From 1947 to 1973, the total long-term debt of the railroad industry increased slowly from \$9 to \$11.5 billion. However, bonded debt dropped from approximately \$7 billion to approximately \$4 billion while equipment debt increased from \$1 billion to \$4.5 billion. Other long-term debt, which has grown from \$1 billion to \$3 billion, is composed of receivers' and trustees' securities, long-term debt in default and non-negotiable debt to affiliated companies.<sup>3</sup>

Absent an improvement in the prospects of the railroad industry as a whole, it is unlikely that ConRail will be able to avail itself of bonded debt as a material source of capital.

**Commercial Bank Debt.**—It is assumed that ConRail will establish a full range of relationships with commercial banks which can best satisfy its needs. These needs will include, but not be limited to, depository accounts, short-term borrowing requirements and various administrative services. No long-term debt from banks has been assumed in the pro forma projections, although short-term lines of credit and medium-term financing may be pursued by ConRail to finance its day-to-day operations. The Final System Plan will include more specific assumptions concerning bank debt. At this

<sup>3</sup> Modern Railroads, Vol. 30, No. 2.

point, it is not planned as a key source of funds for the rehabilitation or capital program.

**Employee Stock Ownership Plan (ESOP).**—Section 206(e) of the Act requires that the Final System Plan set forth the manner in which employee stock ownership plans may to the extent practicable, be utilized for meeting the capitalization requirements of the Corporation. USRA is giving thorough consideration to this issue and is aware of the possible advantages to be gained through employee stock plans for ConRail. However, whether ESOP or some alternative incentive system can be made applicable to ConRail is not yet known.

Any plan will need to be conceived and administered with great care in order to be a positive rather than a negative motivator of employees. The Association is attempting to determine the extent to which employee stock ownership plans provide an opportunity for lower cost financing and for more employee participation, involvement and commitment to an organization. The implementation of an ESOP must be fair and effective for all classes of stockholders and the employees themselves. Distribution of stock to employees should result in an investment which has value to them, and/or an incentive from which all parties will benefit as employees work to improve the economic performance of ConRail. USRA is studying the practicality of employee stock ownership from both of these points of view and in the light of the pro forma projections.

TABLE 8.—ConRail income (loss) pro forma projections, 1976–85, as of Dec. 31

(Thousands of 1973 dollars)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
<b>Railway operating revenues:</b>										
Freight.....	\$1,892,340	\$2,059,300	\$2,016,110	\$2,055,600	\$2,089,250	\$2,123,920	\$2,161,150	\$2,196,280	\$2,234,240	\$2,274,900
Passenger and other.....	487,856	503,256	503,184	501,880	504,993	499,564	490,948	495,128	497,428	499,079
<b>Total railway operating revenues.....</b>	<b>2,380,196</b>	<b>2,562,556</b>	<b>2,519,294</b>	<b>2,557,480</b>	<b>2,594,243</b>	<b>2,623,484</b>	<b>2,652,098</b>	<b>2,691,408</b>	<b>2,731,668</b>	<b>2,773,979</b>
<b>Operating expenses:</b>										
Maintenance of way.....	267,479	312,806	269,901	271,413	271,673	273,441	274,361	279,967	283,620	284,770
Maintenance of equipment.....	409,085	414,959	409,120	416,595	423,283	423,905	425,461	434,200	436,740	438,459
Transportation.....	1,105,542	1,144,400	1,119,273	1,105,679	1,093,672	1,085,917	1,077,418	1,073,929	1,071,796	1,072,338
General, administrative and other.....	186,998	184,892	182,767	180,858	179,318	177,775	177,655	177,530	177,647	177,831
<b>Total operating expenses.....</b>	<b>1,969,104</b>	<b>2,057,057</b>	<b>1,981,061</b>	<b>1,974,545</b>	<b>1,967,946</b>	<b>1,961,038</b>	<b>1,954,895</b>	<b>1,965,626</b>	<b>1,969,803</b>	<b>1,973,398</b>
<b>Net operating revenue.....</b>	<b>411,092</b>	<b>505,499</b>	<b>538,233</b>	<b>582,935</b>	<b>626,297</b>	<b>662,446</b>	<b>697,203</b>	<b>725,782</b>	<b>761,865</b>	<b>800,581</b>
<b>Other income (expenses):</b>										
Net car hire.....	(228,445)	(243,245)	(208,945)	(142,645)	(155,045)	(143,645)	(148,545)	(158,045)	(153,545)	(177,145)
Payroll taxes.....	(145,520)	(147,232)	(142,096)	(140,384)	(138,672)	(138,672)	(138,672)	(135,248)	(133,536)	(133,536)
Other taxes.....	(54,744)	(54,744)	(54,744)	(54,744)	(54,744)	(54,744)	(54,744)	(54,744)	(54,744)	(54,744)
Interest and other income and expenses.....	(36,670)	(34,670)	(32,670)	(32,670)	(32,670)	(25,625)	(22,464)	(10,661)	6,646	24,319
<b>Total other expenses, net.....</b>	<b>(465,379)</b>	<b>(479,891)</b>	<b>(438,455)</b>	<b>(370,443)</b>	<b>(381,131)</b>	<b>(362,686)</b>	<b>(364,425)</b>	<b>(358,698)</b>	<b>(335,179)</b>	<b>(341,106)</b>
<b>Income before taxes and fixed charges (deficit).....</b>	<b>(54,287)</b>	<b>25,608</b>	<b>99,778</b>	<b>212,492</b>	<b>242,166</b>	<b>299,760</b>	<b>332,778</b>	<b>367,084</b>	<b>426,686</b>	<b>459,475</b>
Interest expense.....	37,138	53,011	67,998	77,268	81,379	81,668	79,768	78,215	78,020	77,739
<b>Income before Federal income taxes (deficit).....</b>	<b>(91,425)</b>	<b>(27,403)</b>	<b>31,780</b>	<b>135,224</b>	<b>160,787</b>	<b>218,092</b>	<b>253,010</b>	<b>288,869</b>	<b>348,666</b>	<b>381,736</b>
<b>Federal income taxes (note 1).....</b>										
<b>Net income (loss).....</b>	<b>\$(91,425)</b>	<b>\$(27,403)</b>	<b>\$31,780</b>	<b>\$135,224</b>	<b>\$160,787</b>	<b>\$218,092</b>	<b>\$253,010</b>	<b>\$288,869</b>	<b>\$348,666</b>	<b>\$381,736</b>

TABLE 9.—ConRail balance sheet, 1976–85 (years ended Dec. 31)

[Thousands of 1973 dollars]

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
<b>ASSETS</b>										
<b>Current assets:</b>										
Cash.....	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000
Temporary cash investments.....						1,236	58,375	155,197	320,594	539,881
Accounts receivable less allowance.....	309,425	333,132	327,508	332,472	336,862	341,053	344,773	349,863	355,117	360,617
Material and supplies.....	117,139	118,812	109,863	110,298	110,842	106,400	107,106	107,942	106,537	105,756
Other current assets.....	54,948	58,371	57,309	57,928	58,495	58,987	59,456	60,208	60,935	61,734
<b>Total current assets.....</b>	<b>581,512</b>	<b>610,315</b>	<b>594,680</b>	<b>600,698</b>	<b>606,199</b>	<b>609,676</b>	<b>669,710</b>	<b>773,230</b>	<b>943,183</b>	<b>1,167,988</b>
<b>Property and equipment, at cost:</b>										
Land (Notes 2 and 5).....										
Road and facilities (notes 1, 2 and 5).....	308,726	508,776	717,971	918,096	1,128,429	1,347,666	1,553,469	1,756,244	1,954,612	2,137,980
Transportation equipment (notes 1, 2 and 5).....	309,625	409,208	473,701	550,463	596,004	649,138	678,964	742,490	810,316	872,160
<b>Total, properties.....</b>	<b>618,351</b>	<b>912,984</b>	<b>1,191,672</b>	<b>1,469,159</b>	<b>1,724,433</b>	<b>1,996,804</b>	<b>2,232,433</b>	<b>2,498,734</b>	<b>2,764,928</b>	<b>3,010,140</b>
Less accumulated depreciation.....	43,487	92,168	147,422	208,477	274,692	345,303	419,787	498,515	582,784	672,524
<b>Net properties.....</b>	<b>574,864</b>	<b>820,816</b>	<b>1,044,250</b>	<b>1,260,682</b>	<b>1,449,741</b>	<b>1,651,501</b>	<b>1,812,646</b>	<b>2,000,219</b>	<b>2,182,144</b>	<b>2,337,616</b>
Other assets.....	54,745	58,939	57,943	58,822	59,600	60,341	60,998	61,903	62,829	63,802
<b>Total assets.....</b>	<b>\$1,211,121</b>	<b>\$1,490,070</b>	<b>\$1,696,873</b>	<b>\$1,920,202</b>	<b>\$2,115,540</b>	<b>\$2,321,518</b>	<b>\$2,543,354</b>	<b>\$2,835,352</b>	<b>\$3,188,156</b>	<b>\$3,569,406</b>
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>										
<b>Current liabilities:</b>										
Accounts and wages payable.....	\$131,172	\$135,102	\$132,219	\$132,285	\$132,498	\$132,306	\$132,390	\$133,346	\$133,992	\$134,948
Accrued liabilities.....	271,713	279,853	273,882	274,020	274,490	274,063	274,237	276,218	277,554	279,535
Other current liabilities.....	90,668	107,627	105,810	107,414	108,832	110,186	111,388	113,039	114,730	116,507
Current portion of equipment notes.....	37,180	35,601	36,607	32,773	27,460	28,340	24,919	26,506	27,484	23,608
Current portion of federal notes.....	12,757	22,146	28,049	31,600	33,336	33,336	33,336	33,336	33,336	33,336
<b>Total current liabilities.....</b>	<b>552,790</b>	<b>580,329</b>	<b>576,567</b>	<b>578,092</b>	<b>576,586</b>	<b>578,231</b>	<b>576,270</b>	<b>582,445</b>	<b>587,096</b>	<b>587,934</b>
<b>Long-term debt, less current portion:</b>										
Equipment notes (notes 2 and 3).....	177,843	142,242	140,635	149,344	164,010	181,116	182,997	210,251	239,967	268,679
Federal notes (notes 2 and 3).....	469,960	729,479	878,530	953,442	972,183	938,847	905,511	872,176	838,840	805,504
Other debt (note 5).....										
<b>Other noncurrent liabilities:</b>										
Self-insurance reserves.....	39,473	55,947	55,926	56,880	57,758	58,536	59,277	60,248	61,241	62,320
Other.....	62,480	100,901	132,263	134,268	136,040	137,733	139,235	141,299	143,413	145,634
<b>Total liabilities.....</b>	<b>1,302,546</b>	<b>1,608,898</b>	<b>1,783,921</b>	<b>1,872,026</b>	<b>1,906,577</b>	<b>1,894,463</b>	<b>1,863,290</b>	<b>1,866,419</b>	<b>1,870,557</b>	<b>1,870,071</b>
<b>Stockholders equity:</b>										
Capital stock (notes 2 and 5).....										
Additional paid-in capital (notes 2 and 5).....										
Retained earnings (deficit).....	(91,425)	(118,828)	(87,048)	48,176	208,963	427,055	680,064	968,933	1,317,599	1,699,335
<b>Stockholders' equity.....</b>	<b>(91,425)</b>	<b>(118,828)</b>	<b>(87,048)</b>	<b>48,176</b>	<b>208,963</b>	<b>427,055</b>	<b>680,064</b>	<b>968,933</b>	<b>1,317,599</b>	<b>1,699,335</b>
<b>Total liabilities and stockholders' equity.....</b>	<b>\$1,211,121</b>	<b>\$1,490,070</b>	<b>\$1,696,873</b>	<b>\$1,920,202</b>	<b>\$2,115,540</b>	<b>\$2,321,518</b>	<b>\$2,543,354</b>	<b>\$2,835,352</b>	<b>\$3,188,156</b>	<b>\$3,569,406</b>

## NOTES TO THE PRO FORMA PROJECTIONS

### Note 1—Summary of Significant Accounting Policies

**Accounting Methods.**—The financial statements are presented on a modified betterment basis for road properties. Under the modified betterment method, costs of rehabilitating track structures are capitalized and are not depreciated. Costs of additions and improvements in track structures are likewise capitalized and are not depreciated pursuant to accounting regulations of the Interstate Commerce Commission (ICC). Amounts capitalized for road properties other than track structures are depreciated pursuant to ICC regulations over their estimated useful lives. Amounts spent maintaining

track and replacing track with comparable weight track are expensed when incurred according to traditional ICC accounting regulations.

The modified betterment method capitalizes the cost of rehabilitation of track structures because such expenditures must be made to bring the assets acquired up to acceptable operating standards.

Under a pure betterment accounting method, costs of rehabilitating track structures would be charged to current year's maintenance-of-way expenses as incurred. If the pro forma projections were prepared on a pure betterment accounting method, net income would be lower and the additions to the road asset accounts would be reduced by the following amounts; which would have been charged directly to operating expense.



## Change to road assets accounts due to betterment accounting

	1973 dollars (thousands)
1976	\$89,988
1977	72,728
1978	96,441
1979	104,145
1980	137,828
1981	133,804
1982	126,009
1983	112,529
1984	101,833
1985	82,472
<b>Total for planning horizon</b>	<b>\$1,057,867</b>

The programmed expenditures for rehabilitation of the right-of-way and structures, expressed in uninflated 1973 dollars, totals \$2,278 million and is accomplished over a 14-year period. Of this amount, \$1,868 million is expended in the 1976-1985 period and included in the pro forma projections included herein.

The total right-of-way and structures capital program in the 1976-1985 period, included in the pro forma projections, is \$2,016 million. This program is composed of the \$1,868 million of rehabilitation and \$636 million of capital expenditures for additions and betterments to the right-of-way and structures, less salvage proceeds of \$488 million.

When inflated to current dollars over the 10-year projection period, in accordance with the inflation factors developed by Chase Econometrics, the 10-year rehabilitation program increases to \$3,901 million, the capital expenditures for additions and betterments to \$1,313 million, and the salvage proceeds to \$1,052 million, for a net capital expenditure of \$4,162 million.

**Depreciation.**—The provision for depreciation has been calculated on a group composite basis over the following useful lives of depreciable assets.

Equipment Assets..... 15 years—straight line method  
Road Assets..... 35 years—straight line method

Under the group composite method of depreciation, both new and old assets must be depreciated over the same average expected life. Furthermore, no gain or loss may be recognized when assets are retired. The original cost of assets retired, net of any salvage is charged to the accumulated depreciation account under this method of accounting, which is consistent with ICC regulations for depreciable properties.

**Salvage.**—For depreciable assets under the group composite method, no profit is realized on salvage. Instead, salvage is credited to accumulated depreciation, lowering the net book value of such assets.

Salvage for non-depreciable road assets is normally reflected as a reduction of operating expense under the betterment accounting method, but all road asset salvage during the first 10 years is assumed to relate to the rehabilitation program. Accordingly, road asset salvage reduces the amount of rehabilitation capitalized by the amounts indicated below for road.

Component salvage values projected for each year are shown below.

Year	1973 dollars (thousands)		
	Equipment	Road assets	Total
1976	\$3,809	\$19,416	\$23,225
1977	5,011	28,820	33,831
1978	5,507	31,608	37,115
1979	6,202	37,833	44,035
1980	7,117	62,063	69,200
1981	3,674	63,006	66,682
1982	3,674	62,211	65,885
1983	3,674	61,441	65,115
1984	3,674	60,671	64,345
1985	3,556	60,671	64,227
<b>Total</b>	<b>\$45,898</b>	<b>\$487,762</b>	<b>\$533,660</b>

TABLE 10.—ConRail pro forma projections of sources and uses of funds and required financing, 1976-85

[Thousands of 1973 dollars]

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
<b>Sources of funds:</b>										
Net Income (Loss)	\$(91,425)	\$(27,403)	\$31,780	\$135,224	\$160,787	\$218,092	\$253,010	\$288,869	\$348,666	\$381,736
Depreciation—Road and Facilities	493	1,534	2,638	3,730	4,812	5,920	7,028	8,158	9,323	10,473
Depreciation, transportation equipment	42,994	47,147	52,616	57,325	61,403	64,694	67,459	70,570	74,948	79,270
Cash flow from operations	(47,938)	21,278	87,034	196,279	227,002	288,706	327,497	367,597	432,937	471,479
<b>Other sources and (uses) of funds:</b>										
Additions to roadway facilities	(308,726)	(195,050)	(214,195)	(200,725)	(209,733)	(219,237)	(205,803)	(202,775)	(198,368)	(183,368)
Additions to transportation equipment	(313,434)	(104,594)	(70,000)	(82,964)	(52,658)	(56,806)	(33,500)	(67,200)	(71,500)	(65,400)
Repayment of debt	(41,187)	(49,937)	(57,747)	(64,656)	(64,372)	(60,795)	(61,675)	(58,254)	(59,841)	(60,819)
Current assets and liabilities	21,341	(9,074)	4,964	(4,210)	(3,430)	(2,712)	(58,574)	(98,932)	(166,280)	(220,091)
Other changes, net	51,017	55,712	37,844	8,282	8,989	5,400	5,255	5,804	5,852	5,879
<b>New financing required</b>	<b>\$638,927</b>	<b>\$281,665</b>	<b>\$212,100</b>	<b>\$147,994</b>	<b>\$94,202</b>	<b>\$45,446</b>	<b>\$26,800</b>	<b>\$53,760</b>	<b>\$57,200</b>	<b>\$52,320</b>
<b>Sources of financing:</b>										
Equipment financing	256,210		35,000	41,482	42,126	45,446	26,800	53,760	57,200	52,320
Other financing	382,717	281,665	177,100	106,512	52,076					
<b>Total financing</b>	<b>\$638,927</b>	<b>\$281,665</b>	<b>\$212,100</b>	<b>\$147,994</b>	<b>\$94,202</b>	<b>\$45,446</b>	<b>\$26,800</b>	<b>\$53,760</b>	<b>\$57,200</b>	<b>\$52,320</b>



TABLE 11.—ConRail pro forma balance sheet (years ended Dec. 31)

[Thousands of inflated dollars]

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
<b>ASSETS</b>										
<b>Current assets:</b>										
Cash.....	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000
Temporary cash investments.....										
Accounts receivable less allowance.....	438,849	506,451	535,766	577,615	618,320	655,501	694,076	726,981	779,996	830,735
Material and supplies.....	171,832	192,544	198,640	218,266	236,565	249,008	264,157	283,933	299,429	317,121
Other current assets.....	77,881	89,096	94,431	101,821	106,900	115,447	122,316	130,085	137,762	146,679
<b>Total current assets.....</b>	<b>788,562</b>	<b>888,091</b>	<b>928,837</b>	<b>997,702</b>	<b>1,063,815</b>	<b>1,119,956</b>	<b>1,180,549</b>	<b>1,250,949</b>	<b>1,317,187</b>	<b>1,394,535</b>
<b>Property and equipment, at cost:</b>										
Land (notes 2 and 5).....										
Road and facilities (notes 1, 2 and 5).....	390,411	695,973	1,062,355	1,434,487	1,850,680	2,315,252	2,758,095	3,266,489	3,778,059	4,283,796
Transportation equipment (notes 1, 2 and 5).....	320,146	463,868	563,361	686,334	763,733	854,474	908,688	1,025,772	1,155,445	1,279,419
<b>Total properties.....</b>	<b>710,557</b>	<b>1,159,841</b>	<b>1,625,716</b>	<b>2,120,821</b>	<b>2,614,413</b>	<b>3,169,726</b>	<b>3,666,783</b>	<b>4,292,261</b>	<b>4,933,504</b>	<b>5,563,215</b>
Less accumulated depreciation.....	45,443	97,775	159,939	231,533	312,081	397,679	492,677	596,001	710,393	836,153
<b>Net properties.....</b>	<b>665,114</b>	<b>1,062,066</b>	<b>1,465,777</b>	<b>1,889,288</b>	<b>2,302,332</b>	<b>2,772,047</b>	<b>3,174,106</b>	<b>3,696,260</b>	<b>4,223,111</b>	<b>4,727,062</b>
Other assets.....	77,642	89,608	94,789	102,193	109,395	115,973	122,798	130,389	137,999	146,976
<b>Total assets.....</b>	<b>\$1,531,318</b>	<b>\$2,039,760</b>	<b>\$2,489,403</b>	<b>\$2,989,183</b>	<b>\$3,475,592</b>	<b>\$4,007,976</b>	<b>\$4,477,453</b>	<b>\$5,077,598</b>	<b>\$5,678,297</b>	<b>\$6,268,573</b>
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>										
<b>Current liabilities:</b>										
Accounts and wages payable.....	\$185,647	\$208,163	\$221,598	\$239,009	\$255,102	\$270,433	\$286,927	\$305,902	\$324,813	\$345,607
Accrued liabilities.....	284,554	431,195	459,015	495,089	528,425	560,183	594,248	633,654	672,828	715,899
Other current liabilities.....	141,782	163,623	173,094	186,614	199,765	211,777	224,240	238,101	251,999	268,391
Current portion of equipment notes.....	37,180	35,601	37,774	35,480	31,866	34,631	32,511	36,954	41,230	40,668
Current portion of federal notes.....	15,124	28,901	39,937	50,669	61,096	72,049	81,666	93,382	104,142	114,441
<b>Total current liabilities.....</b>	<b>764,287</b>	<b>867,483</b>	<b>931,413</b>	<b>1,006,881</b>	<b>1,076,254</b>	<b>1,149,073</b>	<b>1,219,662</b>	<b>1,307,993</b>	<b>1,395,012</b>	<b>1,485,006</b>
<b>Long-term debt, less current portion:</b>										
Equipment notes (notes 2 and 3).....	177,843	142,242	156,968	186,076	221,822	260,905	274,706	334,360	399,808	461,166
Federal notes (notes 2 and 3).....	538,584	923,007	1,214,151	1,486,024	1,737,129	1,993,608	2,200,526	2,458,610	2,677,265	2,871,904
Other debts (note 5).....										
<b>Total long-term debt.....</b>	<b>716,427</b>	<b>1,065,249</b>	<b>1,371,119</b>	<b>1,672,100</b>	<b>1,958,951</b>	<b>2,254,513</b>	<b>2,475,232</b>	<b>2,832,970</b>	<b>3,077,073</b>	<b>3,333,070</b>
<b>Other noncurrent liabilities:</b>										
Self-insurance reserves.....	56,007	85,150	91,607	98,999	106,219	112,740	119,583	127,167	134,802	143,773
Other.....	88,613	153,396	216,367	233,268	249,706	264,721	280,300	297,627	314,998	335,499
<b>Total liabilities.....</b>	<b>1,625,334</b>	<b>2,171,278</b>	<b>2,610,506</b>	<b>3,011,248</b>	<b>3,391,130</b>	<b>3,781,107</b>	<b>4,094,807</b>	<b>4,525,757</b>	<b>4,921,885</b>	<b>5,297,238</b>
<b>Stockholders equity:</b>										
Capital stock (notes 2 and 5).....										
Additional paid-in capital (notes 2 and 5).....										
Retained earnings (deficit).....	(94,016)	(131,518)	(121,108)	(22,065)	84,462	226,869	382,646	551,841	756,412	971,335
<b>Stockholders' equity.....</b>	<b>(94,016)</b>	<b>(131,518)</b>	<b>(121,108)</b>	<b>(22,065)</b>	<b>84,462</b>	<b>226,869</b>	<b>382,646</b>	<b>551,841</b>	<b>756,412</b>	<b>971,335</b>
<b>Total liabilities and stockholders' equity.....</b>	<b>\$1,531,318</b>	<b>\$2,039,760</b>	<b>\$2,489,403</b>	<b>\$2,989,183</b>	<b>\$3,475,592</b>	<b>\$4,007,976</b>	<b>\$4,477,453</b>	<b>\$5,077,598</b>	<b>\$5,678,297</b>	<b>\$6,268,573</b>

**Federal Income Taxes.**—No provision has been made for federal and state income taxes or investment tax credits because the objective of the pro forma statements is to evaluate pretax profit potential.

The failure to indicate income taxes on the financial statements may not materially affect the cash requirements of the Company during the 10-year planning horizon because opportunities for favorable tax treatment could result in the substantial elimination or deferral of income taxes during that period.

If additional analysis determines that the tax basis of the acquired assets in the hands of the existing railroads exceeds the cost of these assets to the Company, and if under existing tax laws or through special leg-

islation the tax-basis of the acquired assets can be carried over to the Company, tax savings through increased depreciation and amortization deductions should be realized.

If operating losses from early years of the Company's operations are projected, they should be available for carryover to reduce or eliminate income taxes in subsequent years. If the Company is permitted to maintain its tax records on a pure betterment accounting basis while it maintains its financial records on a modified betterment basis (a matter which is currently being explored), income for tax purposes may be considerably less than income for financial statement purposes for a considerable period of time. Also, tax lia-

bilities may be further reduced if accelerated depreciation methods are utilized for tax purposes. No provision is made on the financial statements for the deferral which would arise under these situations in which income for financial reporting purposes exceeds income for tax purposes because analyses estimating income for tax purposes cannot be completed until the tax basis has been established for the assets acquired.

Under existing law, substantial investment tax credits should be generated during the rehabilitation program. Subject to carryover limitations, these credits should be available to reduce income tax liabilities in later years.

#### Note 2—Initial Financial Condition

For purposes of forecasting, the starting values of assets to be acquired, related liabilities to be assumed and capitalization are as follows:

	<i>Thousands</i>
Cash .....	0
Although operating cash will be required, no initial cash balance is assumed.	
Land .....	0
Valuation of land is not yet complete and therefore is not included in the financial statements.	
Road .....	\$121,600
Represents the cost of road property and road rehabilitation financed by Government-guaranteed loans under Sec. 215 of the Act. Valuation of other road assets acquired is not yet complete and is accordingly not included in the financial statements.	
Equipment .....	284,610
Represents the par value of debt tied specifically to equipment presently owned by the bankrupt carriers and equipment purchased with the proceeds of Government-guaranteed loans under Sec. 215. Since valuation of other equipment acquired from bankrupt carriers is not complete, no value for it is included in the financial statements.	
Total assets .....	<u>406,210</u>
Equipment debt .....	<u>\$256,210</u>
Existing unpaid debt (conditional sales agreements and equipment trust certificates) to be assumed by ConRail, related to equipment to be acquired, as of Jan. 1, 1976.	
Sec. 215 debt .....	150,000
Government-guaranteed debt used to purchase and make roadway improvements on rail lines to be included in the final system.	
Capital stock, additional paid-in capital and other debt .....	0
The valuation of capital stock, additional paid-in capital, and other debt depend upon the valuations of the assets acquired in exchange for the securities issued. Because asset valuations are not yet complete, no values are assigned to these accounts.	
Total liabilities and stockholder's equity .....	<u>\$406,210</u>

#### Note 3—Long Term Debt

*Equipment Notes.*—Collateralized by 100 percent of the equipment assets initially acquired and by 100 percent of equipment assets purchased, beginning in 1978.

Equipment debt finances 50 percent of the equipment acquired in 1978 and 1979 and 80 percent of the equipment acquired in 1980 and thereafter at interest rates which vary from 7.9 to 9.9 percent. Principal is repaid in 15 equal annual payments commencing on July 1 of the year following the year the debt is issued.

*Federal Notes.*—Guaranteed by the U.S. Government as to interest and principal.

Government debt finances all cash needs other than equipment debt. Principal is repaid in 30 equal annual payments commencing on July 1 of the year following the year the debt is issued at rates ranging from 7.3 to 7.9 percent.

#### Note 4—Commitments and Contingencies

*Leases.*—The SEC and the Financial Accounting Standards Board require disclosure of Off-Balance-Sheet financing in the form of long-term leases. Although ConRail will lease equipment, buildings and other facilities, no disclosure of the minimum annual rentals and expiration of leases is given because of lack of detailed data for developing such statistics and the fact that such information, although required for external financial reporting, is not considered necessary at this point in the planning aspects of the pro forma projections. For these same reasons, the capitalized value of lease commitments was not calculated.

*Pension Plans.*—The pro forma projections contain no provision for liabilities arising out of unfunded pension plans, and no unrecorded liability for unfunded past service is anticipated.

*Obligations of Predecessor Bankrupt Railroads.*—Because the Company enjoys protection under the federal bankruptcy laws and the Regional Rail Reorganization Act of 1973, no provision is made on the pro forma projections for uncollateralized liabilities of the bankrupt railroads. These uncollateralized liabilities include income taxes, real estate and other taxes, accounts payable in default and other unsecured obligations.

#### Note 5—Shareholders' Equity and Other Securities Issued at Conveyance

No assumption has been made with respect to the package of securities to be transferred for the assets of the bankrupt estates conveyed to ConRail. Furthermore, no value is placed on assets acquired from the bankrupt railroads except for assets with specific debt attached to them. Since asset valuations are not complete, valuations could not be made for Capital Stock, Additional Paid-In Capital, and Other Debt. Accordingly, these accounts are set equal to zero.

## DESIGN OF PRO FORMA FINANCIAL PROJECTIONS

Although Section 206(e) of the Act calls for pro forma financial projections, it is silent with respect to the design of the projections, the level of details to be included or the accounting policies to be used. Among the Association's first problems, therefore, was to determine what type and how many projections should be prepared.

Selection of the number, type and format of the financial projections was based on consideration of their potential uses. In addition to meeting the requirements of Section 206(e), pro forma financial projections are necessary to demonstrate compliance with other goals and designations in Sections 206 and 207.

It was evident that pro forma financial projections would also be needed by USRA staff to evaluate planning alternatives during preparation of the Preliminary and Final System Plans and to help plan ConRail's financial future and develop financial systems and procedures. Finally, the Association acknowledged that the estate of the bankrupts, Congress and other public bodies would need financial information regarding USRA financial commitments, the retention of light-density lines, the extent of passenger, commuter and subsidized operations and other data to evaluate the Preliminary and Final System Plans.

To satisfy all these potential uses, financial statements at varying levels of detail were devised. The statements fall into four general categories:

- Statements of Net Income
- Statements of Financial Condition (Balance Sheets)
- Statements of Sources and Uses of Funds and Required Financing
- Supplemental Financial and Statistical Information

### Accounting Policies

ICC railroad accounting principles were used to prepare the financial projections with one major exception: the ICC method of accounting for rehabilitation and maintenance-of-way expense was "modified" to better portray the complete rehabilitation of the basic facilities, rather than their mere maintenance.

Under the traditional railroad industry method referred to as "betterment accounting" most of the rehabilitation expenditures for road assets would have to be expensed in the years they are incurred. As a result, operating income in these years would be recorded at a lower level than warranted. To present such extraordinary charges as ordinary expenses would mask reality and portray ConRail's operating results on an entirely different basis from other railroads.

Moreover, if the cost of catching up with years of deferred maintenance were to be charged against Con-

Rail's initial years of operation, the basic accounting axiom of matching one period's revenues with the costs of producing those revenues would be violated. Since the rehabilitation program is expected to add permanent value to the assets, it was considered far more reasonable to treat the costs of implementing such a program as part of the initial cost of the assets. For these reasons, therefore, a modification of the traditional method of accounting for rehabilitation and maintenance of way expenditures was used.

Application of the "Modified Betterment Method" would result in capitalizing the properties initially acquired and all track structure rehabilitation costs as they are incurred to correct the deferred maintenance problem. All other expenditures for track maintenance, those arising from normal business operations, would be charged to current operating expenses in accordance with "betterment accounting" regulations prescribed by the ICC. Also, in accordance with ICC betterment accounting regulations, depreciation would be taken on road assets other than track structures while no depreciation would be taken on track structures.

The Association also considered using the depreciation method, commonly used by most businesses, to account for ConRail's extraordinary rehabilitation expenditures. Under this method, any major expenditure which substantially improves an asset or increases an asset's life is capitalized and subsequently written off or depreciated over the life of the improved asset. The method is designed to spread the costs of achieving the benefits over the length of time the benefits are received.

The Association's present position is that the depreciation method was not entirely appropriate in ConRail's case. Use of the depreciation method resulted in the capitalization of costs normally accounted for as expenses, thus distorting the earnings of ConRail by raising earnings in the initial years and lowering them in subsequent years beyond the 10-year planning horizon. The effects each of the three methods would have on net income and the road property accounts are shown in Figure 1.

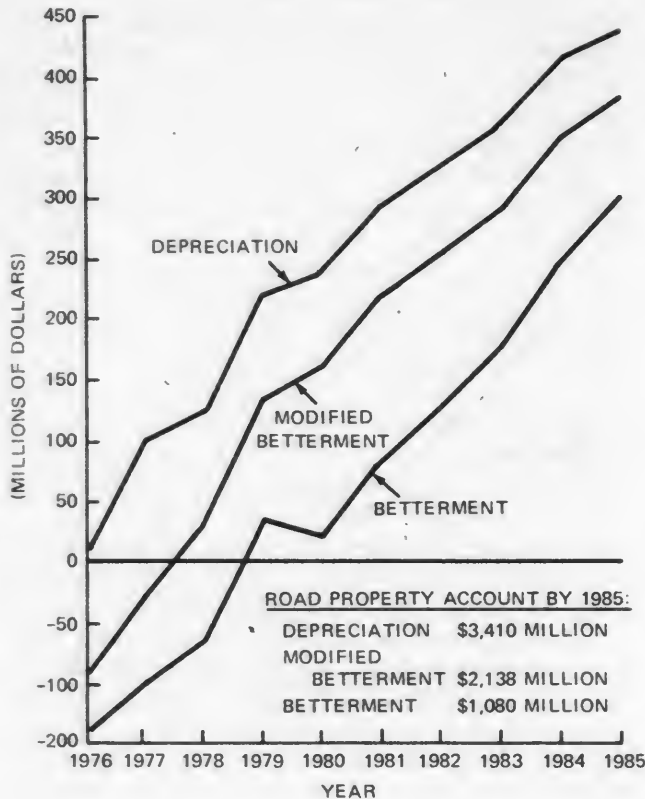
### Pro Forma Financial Data Bank and Financial Model

The task of assimilating historical and projected data needed to generate the pro formas was naturally a complex one. To assure that proper records were maintained and to facilitate access to these data, computerized data banks were created. The financial information is stored by financial statement account number.

All data not geographically important, such as car hire data, is put in files by ICC account numbers. Geographically important data such as the rehabilitation cost for a specific section of track or the asset value of a passenger terminal, is filed in another computerized information storage system.



**FIGURE 1**  
**CONRAIL NET INCOME**  
 (1973 DOLLARS - UNINFLATED)



The financial model was designed to generate pro forma statements for the various system designs and financing options considered by the Association in its planning process. The model uses data from the two data banks, making arithmetic calculations and projects the results directly in pro forma statement format.

### Developing the Pro Forma Projections

The conceptual process by which the pro formas were developed was as follows: First, projections were developed of the annual capital expenditures needed by ConRail to complete its rehabilitation and equipment acquisition programs. Second, annual projections of ConRail's operating income and cash available for fixed charges were developed. Third, the annual difference between internally generated cash and ConRail's total financing requirements was calculated.

To avoid the circular problem of needing to know a firm's capital structure in order to project its net income and vice versa, it was assumed that federally guaranteed debt would be used to finance this entire shortfall. Second, since neither the value of the property to be acquired nor the mix of securities to be ex-

changed would be known until a later date, no asset values were established.

Although the Act mentions a limit of \$1 billion on the amount of USRA obligations which can be provided, this first assumption was made because it is unlikely that ConRail will attract additional capital, if needed, from the private markets. The assumption was only a working one, however, and the Association recognizes that federally supported debt is not the only way to meet this shortfall.

Essentially, the process was designed to answer three questions:

- What would be ConRail's operating income over time?
- What level of external financing would be required to enable ConRail to become self-sufficient?
- Are the Act's financing provisions adequate to accomplish the rehabilitation program and reorganization of the bankrupt railroads?

To emphasize the degree to which reorganization and rehabilitation of the bankrupt railroads could improve their financial performance, the pro forma income projections for the Preliminary System Plan are expressed in constant 1973 dollars. The Association recognizes, however, that the levels of inflation the country is now experiencing could significantly change these projections. To demonstrate the potential impact of inflation on ConRail's financial shortfall, the Association also prepared a preliminary set of inflated pro forma balance sheets. A discussion of the results of these projections appears earlier in this chapter.

### Derivation of Operating Income

The following procedure was used to develop annual estimates of Net Railway Operating Income (NROI) for ConRail.

Freight revenues were developed from a forecast of ConRail's potential annual revenue and tonnage over the planning period by Temple, Barker & Sloane, Inc. (TBS).<sup>3</sup> This forecast was adjusted to reflect recent changes in the economy that have a long-term impact on the timing of economic growth. The pro forma projections encompass these changes. See the Marketing Chapter for freight revenues and tonnage forecasts by commodity.

Passenger revenues reflect the level of fares collected by the carriers in 1973. Included in Other Revenues is the level of subsidy required to make ConRail break even on passenger service and the actual 1973 Amtrak reimbursements and the regional commuter contract subsidies.

<sup>3</sup> A consultant firm working under contract to USRA. The Temple, Barker & Sloane projections were based on a forecast made by Chase Econometric Associates in June, 1974.



These overall revenue projections were then further adjusted by USRA staff to incorporate: (a) the assumption that rate increases would be granted where needed to recover losses on traffic which is currently unremunerative; (b) the assumption that ConRail would be reimbursed for all passenger losses on a fully allocated cost basis; (c) the assumption that the losses incurred as a result of operating branch lines designated for abandonment would be reimbursed in 1976 and 1977 and (d) estimated shifts in traffic brought on by the new configuration of ConRail. The end result of this process was the projection of annual revenue figures for ConRail from 1976 through 1985.

With respect to freight expenses, a network model was used as a starting point to develop expenses. All expenses were at the ICC account level. The 1972 expenses were then indexed to 1973 price levels to make them comparable with 1973 revenues. Annual expenses for 1985 were derived by modifying the 1973 expense levels to reflect the TBS tonnage forecasts that year.

Each ICC expense account was then adjusted to reflect the impact of anticipated organizational and merger effects. Implicit in this analysis was the sequencing of these changes and the extent to which they would affect operating savings. A concurrent step was to estimate the amount by which operating expenses for freight could be reduced through plant rehabilitation or upgrading.

Working from field analysis, USRA staff estimated the total and annual cost adjustments in transportation and maintenance expense, car and locomotive hire and other operating expenses expected from the rehabilitation of road and structure and equipment. The time required to complete the rehabilitation program was also estimated. All rehabilitation and upgrading expenditures were in 1973 dollars.

Passenger service expenses are included in the pro forma projections. They reflect ConRail's estimated cost of maintaining the 1973 service levels of regional commuter lines and Amtrak's intercity operations over the planning period.

Finally, each option's annual expense projections were subtracted from the corresponding annual revenue projections to obtain annual net railway operating income for each alternative.

#### **Derivation of the Balance Sheet**

Once the amount of USRA funding needed by ConRail to equalize the shortfall between internally generated funds and its total financing requirements was determined, it was possible to construct balance sheets. The more significant items within the balance sheets were derived as follows:

*Cash* was arbitrarily set at \$100 million for planning purposes, and to utilize the model's automatic financing program to calculate the amount of USRA money Con-

Rail needs. This assumption does not mean that the railroad will have only \$100 million of cash in the bank, but that a revolving government loan commitment may serve as a substitute for working cash.

*Operating Properties* (land, road and facilities, and transportation equipment) represent the dollar value of the railroad's investment in land, road, and equipment held for use as transportation property at the date of the balance sheet. New property additions are valued at their estimated purchase cost.

Since ConRail has not yet purchased any assets, nor has the Association determined the value of the assets to be conveyed to ConRail, the property values of assets acquired from existing bankrupt railroads are not reflected in the Preliminary System Plan's financial projections with one exception. Assets, such as equipment, which will not be transferred to ConRail free of liens are reflected on the financial projections at the net par value of the associated debt scheduled to be assumed by ConRail.

The asset valuations in the Final System Plan financial projections will differ from those in the financial projections shown here because assets collateralizing debt may be worth more or less than their associated debt, and because many assets are not presently included in the financial projections.

However, since most of the assets to be conveyed to ConRail are nondepreciable, the value of the properties will have no material effect on the income statement. Thus, no values were assigned to properties.

The amount of new equipment anticipated to be purchased by ConRail was added to these accounts to derive each subsequent year's balance sheet. The capitalized portion of annual road and property improvements was also added to property accounts.

*Current Portion of Long-term Debt* represents the projected amounts of equipment notes and federal notes scheduled for repayment during the following year.

*Equipment Debt* account reflects the amount of new equipment obligations plus the existing level of outstanding debt on equipment originally purchased by the bankrupt estates and scheduled to be transferred to ConRail. This debt has been reduced for amounts which fall due within the next year.

The amount of new equipment debt equals 80 percent of the amount of annual new equipment purchasing anticipated for the years 1980 through 1985 in accordance with traditional equipment financing arrangements. Equipment forecasted to be purchased during the first 2 years of operations will be financed with federal notes since the new railroad may not be able to attract private capital at reasonable interest rates. The level of new equipment debt for the third and fourth years of operations was assumed to be equal to 50 percent of the purchase price of equipment acquired in those years.

Principal payments on equipment debt acquired from private capital markets were calculated on the assumption that the debt would require 15 equal annual repayments commencing on July 1 of the year after the year that the debt is issued. Average annual interest rates for the new equipment debt obtained from the private capital markets were projected by Chase Econometric Associates and range from 9.9 percent in 1978 to 7.9 percent in 1985.

*Federal Notes* represents debt carrying a government guarantee. The amount borrowed in any year equals the amount of money needed to equalize each year's sources and uses of funds, including the interest and principal needed to service that debt.

The federal debt was assumed to be in the form of 30 year serial bonds requiring principal payments in 30 equal annual installments commencing on July 1 of the year after the year that the bonds are issued. The portion of the federal debt due within one year is shown as a current liability. Average annual interest rates on this debt were also projected by Chase Econometric Associates and vary from 7.3 percent in 1976 to 7.9 percent in 1985.

No provisions were made to retire long-term debt before it is due as excess cash became available. To determine the precise level of required financing in a given year, one should reduce long-term debt by the amount

of any temporary cash investments available in that year. Since interest earned on temporary cash investments was assumed to equal interest rates on federal debt, debt repayments over 30 years, even with growing temporary cash investments, do not distort income projected.

*Equity* consists of the amount contributed by the shareholders and retained earnings. The valuation of assets acquired from the bankrupt railroads is required before the shareholders' accounts may be valued. (See the Valuation Process.) Retained earnings consists of the accumulation of each year's annual net income and is net of early year's deficits. No extraordinary items nor dividends were charged to retained earnings. Also, as stated earlier, accumulated earnings are shown on a pre-tax basis in retained income.

*Accounts Receivable, Materials and Supplies, Special Funds, Other Current Assets, Other Non-Current Assets, Accounts and Wages Payable, Other Current Liabilities, Total Non-Current Reserves and Other Non-Current Liabilities* bear relationships to specific elements of income or expense and are calculated accordingly. The percentages applied were based upon analysis of prior experience of the consolidated results of the bankrupt carriers, where appropriate, and in other instances by analysis and application of experience factors of all three geographic districts and all Class I railroads as a whole.

## THE VALUATION PROCESS

The Association has two valuation tasks under the Act: first, to properties acquired, and second, to value the securities and other benefits accruing to the estates.

The Act requires that the exchange of rail properties for ConRail securities and other benefits be "in the public interest" and "fair and equitable to the estates of each railroad in reorganization in accordance with the standards of fairness and equity applicable to the approval of a plan of reorganization or a step in such plan under Section 77 of the Bankruptcy Act." (Section 303(c) (A).)

The valuation process will concentrate on these two methods: (a) capitalization of earnings and (b) net liquidation value. It is the opinion of the Association that these two methods are the most suitable for the valuation of the rail properties subject to the Act.

Asset valuation based on capitalization of the projected earnings of the reorganized entity is established as the primary method of valuation by Section 77(e) of the Bankruptcy Act:

The value of property used in railroad operations shall be determined on a basis which will give due consideration to the earning power of the property, past, present,

and prospective, and all other relevant facts. In determining such value only such effect shall be given to the present cost of reproduction new and less depreciation and original cost of the property, and the actual investment therein, as may be required under the law of the land, in light of its earning power and all other relevant facts.

Given the explicit mandate of Section 77(e) and the court decisions which have construed it, capitalization of the earning power of the reorganized entity must be stressed.

Net liquidation value will also be developed for the assets of the estates. It represents the maximum value the estates would obtain if the assets were actually liquidated rather than reorganized as provided in the Act.

On the basis of the conclusion that the Association's principal approaches to valuation will be capitalization of earnings and net liquidation, a series of work programs within the framework of the valuation process have been developed. These are designed to provide the valuation data needed to prepare the Final System Plan and to document it before Congress and the Courts.

The valuation program being undertaken by the Association is designed to accomplish five major objectives:

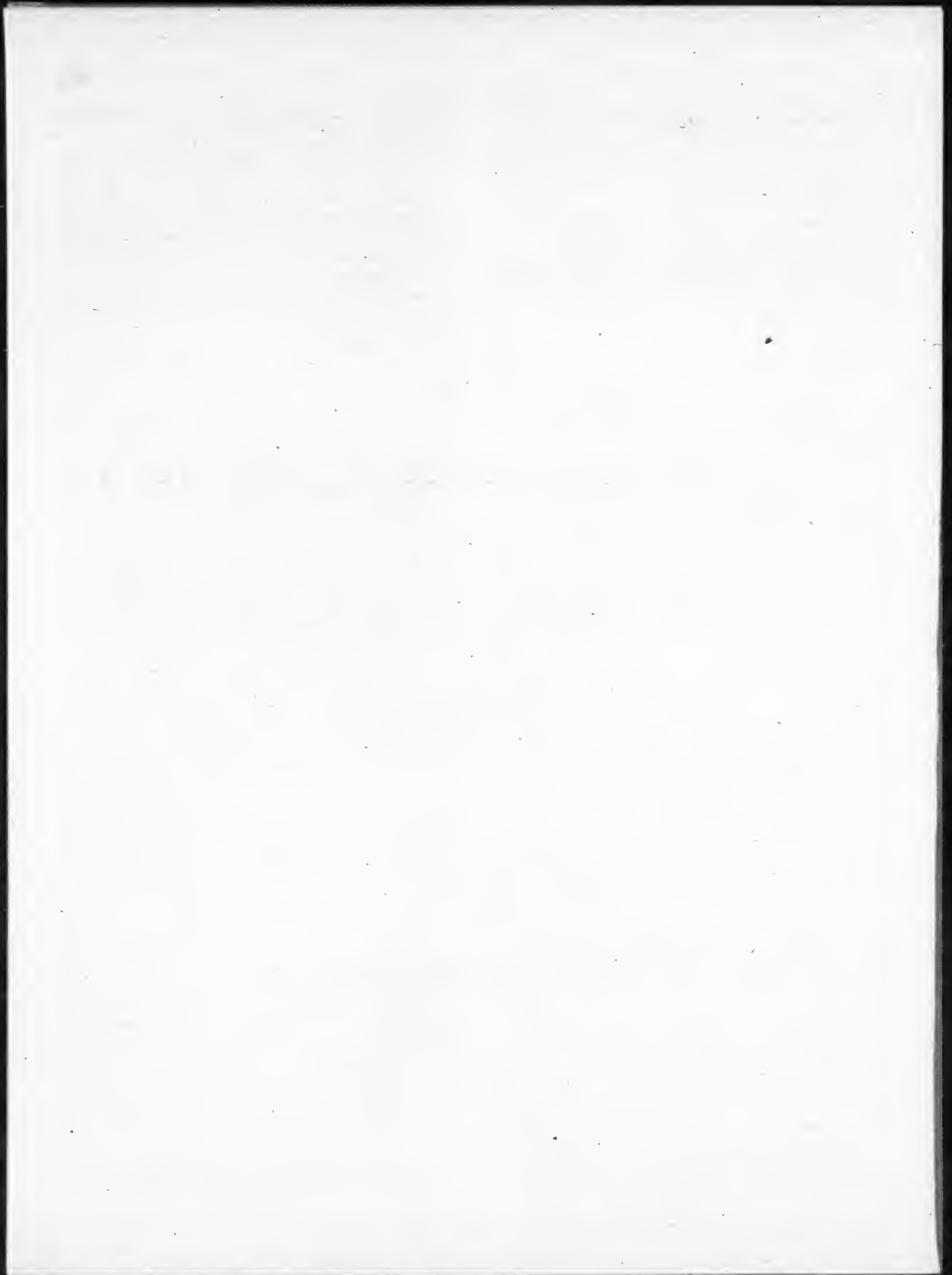
- To establish an accurate inventory of properties of each railroad in reorganization.
- To establish a value for the properties transferred or conveyed in the context of the two primary methods of valuation:

Capitalization of earnings value, and  
Net liquidation value.

- To establish values for the securities and benefits

provided in exchange for the properties transferred or conveyed.

- To establish that the value of the securities, and benefits provided for the properties transferred, represent a fair and equitable exchange when measured against the standards set forth in the Act.
  - To establish the manner by which properties now operated under leased line agreements should be transferred.
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## Financial Programs Under the Act

*The Regional Rail Reorganization Act of 1973 establishes six financial programs to assist in the restructuring process of the bankrupt railroads in the Region. The programs were designed to provide funds for continued rail service and physical plant improvement prior to the Final System Plan and to improve ConRail performance during its early years.*

*Three programs provide funds to enable the bankrupt carriers to maintain safety and service as well as aiding ConRail, other railroads and state and local authorities in acquiring and modernizing properties they choose to operate.*

*Two programs involving matching federal loans or grants would assist in maintaining essential service over track in the Region not included in the Final System Plan.*

*Another program creates a mechanism for providing benefits to protected railroad employees who are displaced, transferred or put out of work as a result of the reorganization process.*

The Regional Rail Reorganization Act established six financial programs to assist the freight rail system of the Northeast and Midwest. These programs provide both permanent financing and funds for interim programs. They are to be administered by the United States Railway Association (USRA), the Department of Transportation (DOT), the Interstate Commerce Commission (ICC) and the Railroad Retirement Board. The financial programs available under the Act are the subject of this chapter.

### Sections 210 and 211

Sections 210 and 211 of the Act authorize the Association to make loans to:

- ConRail (the Corporation), Amtrak and other railroads for purposes of implementing the Final System Plan,<sup>1</sup>
- State, local or regional authorities to assist in acquiring or modernizing rail lines they elect to operate and
- Those solvent railroads whose lines connect with the railroads in reorganization and are in "need of financial assistance to avoid reorganization proceedings under Section 77 of the Bankruptcy Act."

Outstanding obligations at any one time cannot exceed \$1.5 billion, of which not more than \$1 billion can be loaned to ConRail. At least half of this \$1 billion must be spent on rehabilitation and modernization of properties designated to be a part of the ConRail System.

The intent of Congress, stated in the Act, is that these loans "be made on terms and conditions which furnish reasonable assurance that the Corporation or the railroads to which such loans are granted will be able to repay them within the time fixed and that the goals of the final system plan are reasonably likely to be achieved" (Section 211(f)).

There is a much greater demand for funds, given the needs of the various eligible recipients and the multiple uses for such loans, than can be satisfied with the present limitations on lending authority. A careful ordering of priorities is required to make certain that the basic purposes of the Act are met in granting the loans. The Association has developed an analytical process for the allocation of the resources available to the several categories of loans and for specific uses within those categories.

Procedures governing loan applications have been published as Title 49, Chapter IX, Part 921 of the U.S. Code of Federal Regulations. To date, two such applications have been received. The Missouri-Kansas-Texas Railroad Company (KATY) has requested a \$21 mil-

lion loan and the Chicago Rock Island & Pacific Railroad (Rock Island) has requested a \$100 million loan.

The KATY request is currently under review. The Rock Island has been offered a secured \$9.1 million loan to meet its working capital requirements from railroads which connect with railroads in the Region.

### Section 213

Section 213 of the Act authorizes the Secretary of Transportation to provide up to \$85 million in emergency assistance to railroads in reorganization pending implementation of the Final System Plan. As stated in the Act, the Secretary is authorized to "pay to the trustees of railroads in reorganization such sums as are necessary for the continued provision of essential transportation services by such railroads. Such payments shall be made by the Secretary upon such reasonable terms and conditions as the Secretary establishes, except that recipients must agree to maintain and provide service at a level no less than that in effect on the date of enactment of this Act."

Although the Association has no statutory responsibility for such grants, it is working closely with the Department of Transportation in determination of the need for the continuing services and the need of the carrier for the assistance. All of the \$85 million of authorized funds has been appropriated, and the Secretary to date has committed grants totaling \$81.5 million.

Five railroads in reorganization have received Section 213 commitments to enable them to continue essential services: Penn Central has received \$62.5 million; Central of New Jersey has received \$12.2 million; the Lehigh & Hudson River has received \$341,000; the Lehigh Valley has received \$5.0 million; and the Ann Arbor \$1.4 million (Table 1).

Under the proposed amendment, the funding available under Section 213 would be increased significantly above the current level of \$85 million.

TABLE 1.—Obligations and outlays under Section 213, Regional Rail Reorganization Act of 1973

(Status as of February 6, 1975)

Total funds authorized.....			\$85,000,000.00
Total funds appropriated.....			85,000,000.00
Total funds obligated/committed.....			81,454,008.42
Balance of appropriated funds available for obligation.....			3,895,996.58
Total outlays against obligations.....			78,271,272.42
	Obligations	Outlays	Available for drawdowns
PC.....	\$62,518,008.42	\$62,518,008.42	0
CNJ.....	12,245,000.00	9,353,000.00	\$2,892,000.00
LV.....	5,000,000.00	5,000,000.00	0
AA.....	1,350,000.00	1,200,000.00	150,000.00
L&HR.....	341,000.00	200,269.00	140,731.00
Total.....	81,454,008.42	78,271,272.42	3,182,731.00

<sup>1</sup> Amendments have been proposed to Section 211 which, if enacted, would broaden the authorization to permit loans "for purpose of achieving the goals of the Act."

<sup>1</sup> Includes \$75,000 in "trust" account for rehabilitation of terminal area.

**Section 215**

Under Section 215 of the Act, funds are available to advance the process of rehabilitating the physical plants of the bankrupt carriers during the planning process and before ConRail starts operations. Section 215 presently authorizes interim assistance of up to \$150 million, although an amendment to the Act has been proposed in the Congress to raise the total to \$300 million. The Secretary of Transportation is authorized by Section 215, with the approval of the Association, to enter into agreements with railroads in reorganization for the acquisition, maintenance or improvement of bankrupt carriers' facilities and equipment which will be acquired by ConRail.

Under the present language of Section 215 of the Act, the Association provides the necessary financing through the issuance of obligations which ConRail is required to assume at the time of conveyance of properties from the bankrupts to ConRail. The assistance is limited to improvements in properties that will be in the Final System Plan. This assistance must be provided in such a manner that ConRail, in eventually acquiring the property, will not be required to pay for that portion of the value of the properties attributable to the improvements financed through Section 215.

The proposed legislation contains an amendment to the Act which would also allow the Secretary, with the approval of the Association, to finance program maintenance, to acquire rail properties of the bankrupts for lease back to the railroads, to acquire interests in rail properties owned or leased to such railroads and to purchase money obligations of the bankrupts.

The Association has been working with the eligible railroads to establish priorities for use of the Section 215 funds. Recognizing that ConRail will assume most of these obligations, priority is being given to expenditures that will maximize the future performance of ConRail. The Association, with the approval of the Secretary, will designate in the Final System Plan those obligations which will be refinanced on different terms and from those obligations, if any, from which the Corporation shall be released.

Expenditures will go to assure the continuity of service, improve track or facility standards, reduce current losses of the bankrupt carriers and permit future benefits to ConRail. On January 16, 1975, the Section 215 capital program was approved by the Association (Table 2) as described in the following paragraphs:

- The Association approved an agreement between DOT and the trustees of the Lehigh Valley Railroad to acquire 12 new 2,250 horsepower General Electric diesel electric locomotives, series 723B, at a cost of \$3.4 million. The new engines replace 18 aged units owned by the company. The Association authorized the issuance of its obligations to finance

the purchase of the locomotives which were delivered in December and leased to the Lehigh Valley. The new equipment is presently owned by ConRail and will be used in the rail system established under the Final System Plan.

- The Central of New Jersey requested \$21.3 million for locomotives, freight cars and track rehabilitation. The Association determined that only rehabilitation in the terminal and port area could be considered as definitely in the Final System Plan, and an amount of \$2.5 million was allocated. The implementation of this project is being negotiated as a part of the Association's track rehabilitation program for 1975.
- The original application from the Penn Central totaled \$210 million for a capital expenditure program, which was envisioned as an additive program to the Penn Central's planned program maintenance and capital improvements. However, due to the downturn in the economy, the cash position of the Penn Central deteriorated to a point which made achievement of the level of program maintenance and capital improvement from the railroad's own resources highly improbable.

As a result, the Association, DOT and the Penn Central operating staff cooperated in reviewing the immediate needs of the railroad and developing a two-phase program aimed at retarding the deterioration of the physical plant and improving operations, safety and service.

Phase one of the program has allocated \$119.1 million to be spent on the Penn Central from the present \$150 million Section 215 authorization. This amount is divided into two categories:

TABLE 2.—Section 215—capital program, assuming \$300 million appropriation

	Items approved	Items suggested for additional funding with approval at a later date
<b>Right-of-way rehabilitation material:</b>		
Tie (2.1 million).....	\$29.0	
Rail (52,000 tons).....	16.0	
Labor and other.....	25.0	
<b>Total.....</b>	<b>70.0</b>	<b>\$65</b>
<b>Capital projects and yard rehabilitation:</b>		
Penn Central.....	49.1	
Central of New Jersey.....	2.5	
<b>Total.....</b>	<b>51.6</b>	<b>23</b>
M of W machinery and cars.....	25.0	
Lehigh Valley locomotives.....	3.4	
Equipment obligations.....		62
<b>Total.....</b>	<b>150.0</b>	<b>150</b>

- \$70 million for material required to carry out the Penn Central's 1975 programed maintenance and a portion of the program's labor costs;
- \$49.1 million for capital improvements and yard rehabilitation projects.

Also, in order to assure the railroad's capacity and capability for programed maintenance, an expenditure of \$25 million has been authorized for the purchase of machinery and support equipment.

Phase two of the program involves the proposed \$150 million increase in Section 215 authorization. Of the additional funds, \$65 million will be required to complete the programed maintenance, \$23 million for completion of the capital improvement projects and \$62 million to meet the equipment obligations of the Penn Central.

The phase two program has been designed with the flexibility to allow its completion with reduced overall objectives if the additional Section 215 authorization fails to materialize.

The Reading originally applied for \$44 million to acquire 1,750 freight cars and 30 diesel locomotives. Later, the Reading was able to arrange its own financing for the locomotives and reduced its application to \$36 million for the freight cars. The Reading is also negotiating to arrange its own financing for the freight cars.

On January 28, 1975, the Secretary received an application from the Reading for an estimated \$5.7 million to be used for rehabilitation of the railroads fixed plant. This application is being reviewed by the Association as a possible substitution for other projects.

### Sections 402 and 403

Section 402 provides up to \$180 million (\$90 million in each of 2 years) to assist the Midwestern and Northeastern states in operating rail services over properties that will not be included in the Final System Plan, but which the states deem necessary in order to prevent unemployment, energy shortages and degradation of the environment. Section 403 authorizes loans under Section 211 to assist states or local or regional transportation authorities in acquiring and modernizing properties not recommended for inclusion in the Final System Plan but required for continuation of local services.

### Section 509

Section 509 authorizes an aggregate sum of \$250 million for payment of benefits to protected employees of the bankrupt railroads and railroads acquiring properties under the Final System Plan. ConRail, USRA (where applicable) and acquiring railroads, as the case may be, are responsible for the actual payment of all allowances, expenses and costs to protected employees. However, protective costs provided in the Act are subject to reimbursements by the Railroad Retirement

Board from a separate account maintained in the Treasury of the United States.

The service continuation subsidies (Section 402) and employee protection benefits (Section 509) are considered in other parts of this report and not dealt with in this chapter.

### Strategy for Use of Funds

It now seems likely that the demand for funds to support upgrading or service continuation plans will exceed the amount of funds available under the Act. The Association has attempted, therefore, to develop priorities and criteria for committing funds under the current funding limitations of the Act as well as to project additional funding needs.

Provisions of the Act allow for interim and permanent financing of railroads in the Region. The Association has approached both the interim and permanent financing from two viewpoints:

- Given the operational needs of the regional rail system, how can these requirements best be funded? Consideration must be given to both the private and public capital markets through utilization of the Act's current provisions as well as possible requirements which go beyond the Act and could only be satisfied by additional government support.
- Given the funds available under the Act as well as from private sources, how can these monies best be allocated? The Association is applying customary financial criteria to these issues, while recognizing its obligation to consider the totality of the Act's objectives, of which economic viability of the restructured rail system is but one. Financial decisions are to be made by the Association both prior to conveyance of assets to ConRail and subsequent to such conveyance. The approach to each decision will differ in several respects.

### Preconveyance Projects

Preconveyance funds are available to eligible carriers under Sections 211, 213 and 215 of the Act. Selection of preconveyance projects necessitates compiling a data base of capital expenditure requests from field personnel of USRA, Penn Central, the other railroads in reorganization and certain connecting carriers.

Most of the expenditure requests of the railroads in reorganization were previously either approved or disapproved by trustees, although some projects apparently never were considered because of funding limitations. Of those approved, some were to be funded internally, while others were to be submitted to USRA and DOT for consideration as Section 215 projects.

The rationale used by the trustees of the railroads in reorganization for project selection was reviewed by



USRA. The Association has given particular consideration to the compatibility of expenditure requests with the requirements of the Act that a financially self-sustaining rail system be developed. For this reason, projects not considered by the railroads in reorganization due to lack of funds are now being reconsidered from the perspective of ConRail as a whole. The Association also is reconsidering projects that were disqualified because the payback would have occurred after conveyance.

The USRA and DOT have given high priority to expenditures that will improve track and yard conditions. This position is conditioned upon the ability of the eligible railroads to carry out programs of normal maintenance, which then would be supplemented by Section 211 or 215 funds. The USRA preconveyance analysis process recognizes the high priority of roadbed rehabilitation, while not ignoring the importance of revenue equipment, locomotives and yard or service improvements.

#### **Postconveyance Projects**

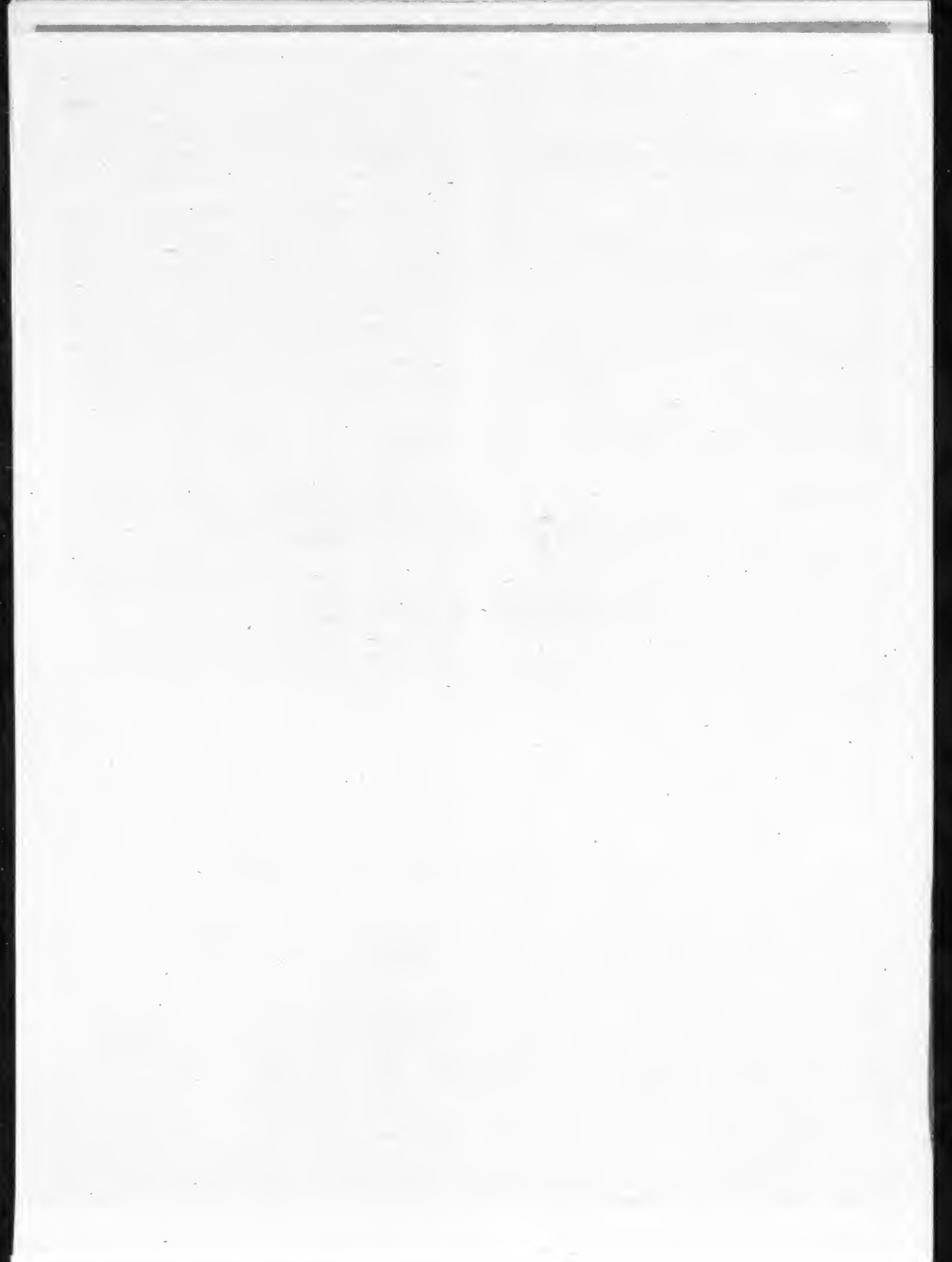
The Final System Plan will set forth the planning guidelines which determined the capital investment program of ConRail. The basic techniques of capital budgeting analysis will be applied with some modification to account for the unique nature of the problem at hand. Projects included in the Preliminary System Plan have been selected on the basis of financial criteria (when

sufficient quantifiable data were available) and other economic, operational or managerial criteria. The financial evaluations were made by using discounted cash flow rate-of-return analysis.

As has been pointed out in earlier chapters, a significant issue is the availability of capital to meet the funding requirements. Since the need for capital exceeds authorized resources, provision has been made for developing a capital investment plan that will prioritize capital needs of the rehabilitated system.

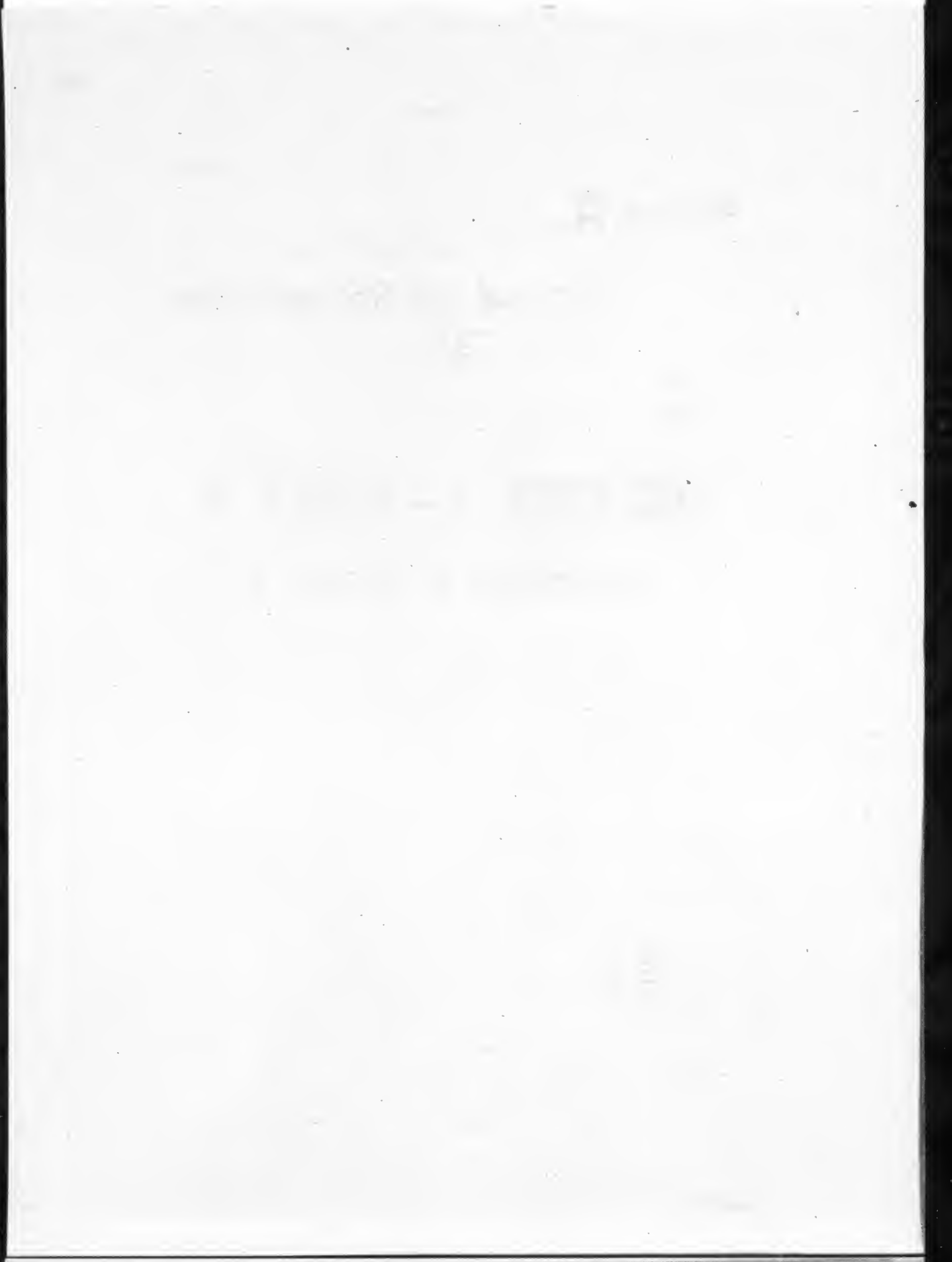
The approach will selectively downgrade the overall level of rehabilitation and abandon certain projects completely. At the present time USRA is developing the ability to undertake cost/benefit analyses on line rehabilitation as a part of network rehabilitation. This work has been used partially for inclusion in the Preliminary System Plan.

An analytical tool is being developed for establishing the priority system for capital investment loans to ConRail. The approach will be to develop a model which will divide the bankrupt estates into subsections of roadway and evaluate rehabilitation costs for each unit. It is possible that USRA will be able to develop techniques, employing this model, by which the cost of upgrading a track segment to various levels of rehabilitation can be specified. For example, improvements in the model might enable determinations of the cost of replacing all the track on a given segment instead of replacing only those rails in the worst condition.



# **VOLUME I—PART 4**

**Appendixes A through I**





# APPENDIX A

## Regional Rail Reorganization Act of 1973



Public Law 93-236  
93rd Congress, H. R. 9142  
January 2, 1974

### An Act

87 STAT. 985

To authorize and direct the maintenance of adequate and efficient rail services in the Midwest and Northeast region of the United States, and for other purposes.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That this Act, divided into titles and sections according to the following table of contents, may be cited as the "Regional Rail Reorganization Act of 1973".

Regional Rail  
Reorganization  
Act of 1973.

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##### TITLE I—GENERAL PROVISIONS

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##### TITLE II—UNITED STATES RAILWAY ASSOCIATION

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- Sec. 211. Loans.
- Sec. 212. Records, audit, and examination.
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##### TITLE III—CONSOLIDATED RAIL CORPORATION

- Sec. 301. Formation and structure.
- Sec. 302. Powers and duties of the Corporation.
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##### TITLE IV—LOCAL RAIL SERVICES

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##### TITLE V—EMPLOYEE PROTECTION

- Sec. 501. Definitions.
- Sec. 502. Employment offers.
- Sec. 503. Assignment of work.
- Sec. 504. Collective-bargaining agreements.
- Sec. 505. Employee protection.
- Sec. 506. Contracting out.
- Sec. 507. Arbitration.
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- Sec. 509. Payment of benefits.

##### TITLE VI—MISCELLANEOUS PROVISIONS

- Sec. 601. Relationship to other laws.
- Sec. 602. Annual evaluation by the Secretary.
- Sec. 603. Freight rates for recyclables.
- Sec. 604. Separability.

(4) "effective date of the final system plan" means the date on which the final system plan or any revised final system plan is deemed approved by Congress, in accordance with section 208 of this Act;

(5) "employee stock ownership plan" means a technique of corporate finance that uses a stock bonus trust or a company stock money purchase pension trust which qualifies under section 401 (a) of the Internal Revenue Code of 1954 (26 U.S.C. 401(a)) in 68A Stat. 134; 76 Stat. 609.

(6) "final system plan" means the plan of reorganization for the restructures, rehabilitation, and modernization of railroads pursuant to section 208 of this Act;

(7) "includes" and variants thereof should be read as if the phrase "but is not limited to" were also set forth;

(8) "Office" means the Rail Services Planning Office established under section 205 of this Act;

(9) "profitable railroad" means a railroad which is not a railroad in reorganization. The term does not include the Corporation, the National Railroad Passenger Corporation, or a railroad leased, operated, or controlled by a railroad in reorganization;

(10) "rail properties" means assets or rights owned, leased, or otherwise controlled by a railroad which are used or useful in rail transportation service; except that the term, when used in conjunction with the phrase "railroads leased, operated, or controlled by a railroad in reorganization," shall not include assets or rights owned, leased, or otherwise controlled by a Class I railroad which is not wholly owned, operated, or leased by a railroad in reorganization but is controlled by a railroad in reorganization;

(11) "railroad" means a common carrier by railroad as defined in section 1(3) of part I of the Interstate Commerce Act (49 U.S.C. 1(3)). The term includes the Corporation and the National Railroad Passenger Corporation;

(12) "railroad in reorganization" means a railroad which is subject to a bankruptcy proceeding and which has not been determined pursuant to this Act as prescribed in section 207 (b) of this Act. A "bankruptcy proceeding" includes a proceeding pursuant to section 77 of the Bankruptcy Act (11 U.S.C. 205) and an equity receivership or equivalent proceeding;

(13) "Region" means the States of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, West Virginia, Ohio, Indiana, Michigan, and Illinois; the District of Columbia; and those portions of contiguous States in which are located rail properties owned or operated by railroads doing business primarily in the aforementioned jurisdictions (as determined by the Commission by order);

(14) "Secretary" means the Secretary of Transportation or his delegate, unless the context indicates otherwise; and

(15) "State" means any State or the District of Columbia.

## DECLARATION OF POLICY

SEC. 101. (a) FINDINGS.—The Congress finds and declares that—  
(1) Essential rail service in the midwest and northeast region of the United States is provided by railroads which are today insolvent and attempting to undergo reorganization under the Bankruptcy Act.

(2) This essential rail service is threatened with cessation or significant curtailment because of the inability of the trustees of such railroads to formulate acceptable plans of reorganization. This rail service is operated over rail properties which were acquired for a public use, but which have been permitted to deteriorate and now require extensive rehabilitation and modernization.

(3) The public convenience and necessity require adequate and efficient rail service in this region and throughout the Nation to meet the needs of commerce, the national defense, the environment, and the service requirements of passengers, United States mail, shippers, States and their political subdivisions, and consumers.

(4) Continuation and improvement of essential rail service in this region is also necessary to preserve and maintain adequate national rail services and an efficient national rail transportation system.

(5) Rail service and rail transportation offer economic and environmental advantages with respect to land use, air pollution, noise levels, energy efficiency and conservation, resource allocation, safety, and cost per ton-mile of movement to such extent that the preservation and maintenance of adequate and efficient rail service is in the national interest.

(6) These needs cannot be met without substantial action by the Federal Government.

(b) PURPOSES.—It is therefore declared to be the purpose of Congress in this Act to provide for—

(1) the identification of a rail service system in the midwest and northeast region which is adequate to meet the needs and service requirements of this region and of the national rail transportation system;

(2) the reorganization of railroads in this region into an economically viable system capable of providing adequate and efficient rail service to the region;

(3) the establishment of the United States Railway Association, with enumerated powers and responsibilities;

(4) the establishment of the Consolidated Rail Corporation, with enumerated powers and responsibilities;

(5) assistance to States and local and regional transportation authorities for continuation of local rail services threatened with cessation; and

(6) necessary Federal financial assistance at the lowest possible cost to the general taxpayer.

## DEFINITIONS

SEC. 102. As used in this Act, unless the context otherwise requires—  
(1) "Association" means the United States Railway Association, established under section 201 of this Act;

(2) "Commission" means the Interstate Commerce Commission;

(3) "Corporation" means the Consolidated Rail Corporation required to be established under section 301 of this Act;

## TITLE II—UNITED STATES RAILWAY ASSOCIATION

## FORMATION AND STRUCTURE

SEC. 201. (a) ESTABLISHMENT.—There is established, in accordance with the provisions of this section, an incorporated nonprofit association to be known as the United States Railway Association.

(b) ADMINISTRATION.—The Association shall be directed by a Board of Directors. The individuals designated, pursuant to subsection (d) (2) of this section, as the Government members of such Board shall be deemed the incorporators of the Association and shall take whatever steps are necessary to establish the Association, including filing of articles of incorporation, and serving as an acting Board of Directors for a period of not more than 45 days after the date of incorporation of the Association.

(c) STATUS.—The Association shall be a government corporation of the District of Columbia subject, to the extent not inconsistent with this title, to the District of Columbia Nonprofit Corporation Act (D.C. Code, sec. 29-1001 et seq.). Except as otherwise provided, employees of the Association shall not be deemed employees of the Federal Government. The Association shall have succession until dissolved by Act of Congress, shall maintain its principal office in the District of Columbia, and shall be deemed to be a resident of the District of Columbia with respect to venue in any legal proceeding.

(d) BOARD OF DIRECTORS.—The Board of Directors of the Association shall consist of 11 individuals, as follows:

- (1) the Chairman, a qualified individual who shall be appointed by the President, by and with the advice and consent of the Senate;
- (2) three Government members, who shall be the Secretary, the Chairman of the Commission, and the Secretary of the Treasury, or their duly authorized representatives; and
- (3) seven nongovernment members, who shall be appointed by the President, by and with the advice and consent of the Senate, on the following basis—

(A) one to be selected from a list of qualified individuals recommended by the Association of American Railroads or its successor who are representatives of profitable railroads;

(B) one to be selected from a list of qualified individuals recommended by the American Federation of Labor and Congress of Industrial Organizations or its successor who are representative of railroad labor;

(C) one to be selected from a list of qualified individuals recommended by the National Governors' Conference;

(D) one to be selected from a list of qualified individuals recommended by the National League of Cities and Conference of Mayors;

(E) two to be selected from lists of qualified individuals recommended by shippers and organizations representative of significant shipping interests including small shippers;

(F) one to be selected from lists of qualified individuals recommended by financial institutions, the financial community, and recognized financial leaders.

As used in this paragraph, a list of qualified individuals shall consist of not less than three individuals.

Except for the members appointed under paragraphs (1) and (3) (A), (B), (E), and (F), no member of the Board may have any employment or other direct financial relationship with any railroad. A member of the Board who is not otherwise an employee of the Fed-

Compensation.

eral Government may receive \$300 per diem when engaged in the actual performance of his duties plus reimbursement for travel, subsistence, and other necessary expenses incurred in the performance of such duties.

(e) TERMS OF OFFICE.—The terms of office of the nongovernment members of the Board of Directors of the Association first taking office shall expire as designated by the President at the time of nomination—two at the end of the second year; two at the end of the fourth year; and three at the end of the sixth year. The term of office of the Chairman of such Board shall be 6 years. Successors to members of such Board shall be appointed in the same manner as the original members and, except in the case of government members, shall have terms of office expiring 6 years from the date of expiration of the terms for which their predecessors were appointed. Any individual appointed to fill a vacancy occurring prior to the expiration of any term of office shall be appointed for the remainder of that term.

(f) QUORUM.—Beginning 45 days after the date of incorporation of the Association, six members of the Board, including three of the nongovernment members, shall constitute a quorum for the transaction of any function of the Association.

(g) PRESIDENT.—The Board of Directors of the Association, upon the recommendation of the Secretary, shall appoint a qualified individual to serve as the President of the Association at the pleasure of the Board. The President of the Association, subject to the direction of the Board, shall manage and supervise the affairs of the Association.

(h) EXECUTIVE COMMITTEE.—The Board of Directors of the Association shall have an executive committee which shall consist of the Chairman of the Board, the Secretary, the Chairman of the Commission, and two other members who shall be selected by the members of the Board.

(i) MISCELLANEOUS.—(1) The Association shall have a seal which shall be judicially recognized.

(2) The Administrator of General Services shall furnish the Association with such offices, equipment, supplies, and services as he is authorized to furnish to any other agency or instrumentality of the United States.

(3) The Secretary is authorized to transfer to the Association or the Corporation rights in intellectual property which are directly related to the conduct of the functions of the Association or the Corporation, to the extent that the Federal Government has such rights and to the extent that transfer is necessary to carry out the purposes of this Act.

(j) USE OF NAMES.—No person, except the Association, shall hereafter use the words "United States Railway Association" as a name for any business purpose. No person, except the corporation directed to be established under section 301 of this Act, shall hereafter use the words "Consolidated Rail Corporation" as a name for any business purpose. Violations of these provisions may be enjoined by any court of general jurisdiction in an action commenced by the Association or the Corporation. In any such action, the Association or the Corporation may recover any actual damages flowing from such violation, and, in addition, shall be entitled to punitive damages (regardless of the existence or nonexistence of actual damage) in an amount not to exceed \$100 for each day during which such violation was committed. The district courts of the United States shall have jurisdiction over actions brought under this subsection, without regard to the amount in controversy or the citizenship of the parties.

Penalty.

SEC. 202. (a) GENERAL.—To carry out the purposes of this Act, the Association is authorized to—

- (1) engage in the preparation and implementation of the final system plan;
  - (2) issue obligations under section 210 of this title and make loans under section 211 of this title;
  - (3) provide assistance to States and local or regional transportation authorities in accordance with section 403 of this Act;
  - (4) sue and be sued, complain and defend, in the name of, and Association and through its own attorneys; adopt, amend, and repeal bylaws governing the operation of the Association and such rules and regulations as are necessary to carry out the authority granted under this Act; conduct its affairs, carry on operations, and maintain offices;
  - (5) appoint, fix the compensation, and assign the duties of such attorneys, agents, consultants, and other full- and part-time employees as it deems necessary or appropriate; except that (1) no officer of the Association, including the Chairman, may receive compensation at a rate in excess of that prescribed for level I of the Executive Schedule under section 5312 of title 5, United States Code; and (2) no individual may hold a position in violation of regulations which the Secretary shall establish to avoid conflicts of interest and to protect the interests of the public;
  - (6) acquire and hold such real and personal property as it deems necessary or appropriate in the exercise of its responsibilities under this Act, and to dispose of any such property held by it;
  - (7) consult with the Secretary of the Army and the Chief of Engineers and request the assistance of the Corps of Engineers, and the Secretary of the Army may direct the Corps of Engineers, to cooperate fully with the Association, the Corporation, or any entity designated in accordance with section 206(c)(1)(C) in order to carry out the purposes of this Act;
  - (8) consult on an ongoing basis with the Chairman of the Federal Trade Commission and the Attorney General to assess the possible anticompetitive effects of various proposals and to negotiate provisions which would, to the greatest extent practicable in accordance with the purposes of this Act and the goal set forth in section 206(a)(5) of this title, alleviate any such anticompetitive effects;
  - (9) consult with representatives of science, industry, agriculture, labor, environmental protection and consumer organizations, and other groups, as it deems advisable; and
  - (10) enter into, without regard to section 3709 of the Revised Statutes of the United States (41 U.S.C. 5), such contracts, leases, cooperative agreements, or other transactions as may be necessary in the conduct of its functions and duties with any person (including a government entity).
- (b) DUTIES.—In addition to its duties and responsibilities under other provisions of this Act, the Association shall—
- (1) prepare a survey of existing rail services in the region, including patterns of traffic movement; traffic density over identified lines; pertinent costs and revenues of lines; and plant, equipment, and facilities (including yards and terminals);
  - (2) prepare an economic and operational study and analysis of present and future rail service needs in the region; the nature and volume of the traffic in the region now being moved by rail or

Study.

likely to be moved by rail in the future; the extent to which available alternative modes of transportation could move such traffic as is now carried by railroads in reorganization; the relative economic, social, and environmental costs that would be involved in the use of such available alternative modes, including energy resource costs; and the competitive or other effects on profitable railroads;

- (3) prepare a study of rail passenger services in the region, in terms of scope and quality;
- (4) consider the views of the Office and of all government officials and persons who submit views, reports, or testimony under section 205(d)(1) of this title or in the course of proceeding under section 205(d)(1) of this title;
- (5) consider methods of achieving economies in the cost of rail system operations in the region including consolidation, pooling, and joint use or operation of lines, facilities, and operating equipment; relocation; rehabilitation and modernization of equipment, track, and other facilities; and abandonment of lines consistent with meeting needs and service requirements; together with the anticipated economic, social, and environmental costs and benefits of each such method;
- (6) consider the effect on railroad employees of any restructuring of rail services in the region;
- (7) make available to the Secretary, the Director of the Office and appropriate committees of the Congress all studies, data, and other information acquired or developed by the Association.

(c) INVESTMENT OF FUNDS.—Uncommitted funds of the Association shall be kept in cash on hand or on deposit, or invested in obligations of the United States or guaranteed thereby, or in obligations, participations, or other investments which are lawful investments for fiduciary, trust, or public funds.

(d) EXEMPTION FROM TAXATION.—The Association, including its franchise, capital reserves, surplus, security holdings, and income shall be exempt from all taxation now or hereafter imposed by the United States, any commonwealth, territory, dependency, or possession thereof, or by any State or political subdivision thereof, except that any real property of the Association shall be subject to taxation to the same extent according to its value as other real property is taxed.

(e) ANNUAL REPORT.—The Association shall transmit to the Congress and the President, not later than 90 days after the end of each fiscal year, a comprehensive and detailed report on all activities of the Association during the preceding fiscal year. Each such report shall include (1) the Association's statement of specific and detailed objectives for the activities and programs conducted and assisted under this Act; (2) statements of the Association's conclusions as to the effectiveness of such activities and programs in meeting the stated objectives and the purposes of this Act, measured through the end of the preceding fiscal year; (3) recommendations with respect to any legislation or administrative action which the Association deems necessary or desirable; (4) a statistical compilation of the obligations issued and loans made under this Act; (5) a summary of outstanding problems confronting the Association, in order of priority; (6) all other information required to be submitted to the Congress pursuant to any other provision of this Act; and (7) the Association's projections and plans for its activities and programs during the next fiscal year.

(f) BUDGET.—The receipts and disbursements of the Association (other than administrative expenses referred to in subsection (g) of

Report to Congress and President.

80 Stat. 4601  
84 Stat. 776.



87 STAT. 992

this section) in the discharge of its functions shall not be included in the totals of the budget of the United States Government, and shall be exempt from any annual expenditure and net lending (budget outlays) limitations imposed on a budget of the United States Government. The Chairman of the Association shall transmit annually to the Congress a budget for program activities and for administrative expenses of the Association. The Chairman shall report annually to the Congress the amount of net lending of the Association, which would be included in the totals of the budgets of the United States Government, if the Association's activities were not excluded from those totals as a result of this section.

(g) ACCOUNTABILITY.—(1) Section 201 of the Government Corporation Control Act (31 U.S.C. 856) is amended by striking out "and" at the end of clause (6) and by inserting immediately before the period at the end thereof the following: ", (5) the United States Railway Association".

(2) The Chairman of the Association shall transmit annually to the Office of Management and Budget a budget for administrative expenses of the Association. Whenever the Association submits any budget estimate or request to the Office of Management and Budget, it shall concurrently transmit a copy of the estimate or request to the Congress. Within budgetary constraints of the Congress, the maximum feasible and prudent budgetary flexibility shall be provided to the Association to permit effective operations.

Budget transmittal to Congress.

70 Stat. 6673  
85 Stat. 37.

Budget transmittal to Office of Management and Budget and Congress.

ACCESS TO INFORMATION

SEC. 203. (a) PLANNING.—Each railroad operating in the region shall provide such relevant information as may be requested by the Secretary, the Office, or the Association in connection with the performance of their respective functions under any provision of this Act. No information may be requested under this subsection after the effective date of the final system plan.

(b) OTHER.—Each railroad or other person or government entity seeking financial assistance from the Association shall maintain and make available such records, make and submit such reports, and provide such data, materials, or other relevant information as may be requested by the Association.

(c) ENFORCEMENT.—Where authorized under subsection (a) or (b) of this section and upon presenting appropriate credentials and a written notice of inspection authority, any officer or employee duly designated by the Secretary, the Office, or the Association may, at reasonable times, inspect records, papers, processes, rolling stock, systems, equipment, or facilities and may, in furtherance of their respective functions under this Act, hold such hearings, sit and act at such times and places, administer such oaths, and require by subpoena or other order the attendance and testimony of such witnesses and the production of such information as is deemed advisable. Subpoenas shall be issued under the signature of the Secretary, the Director of the Office, or the Chairman or President of the Association and may be served by any duly designated individual. In case of contumacy or refusal to obey such subpoena or order by any person who resides, is found, or transacts business within the jurisdiction of any district court of the United States, such district court shall, upon petition, have jurisdiction to issue to such person an order requiring him to comply therewith. Failure to obey such an order is punishable by such court as a contempt of court.

(d) CONGRESS.—Nothing in this section shall authorize the withholding of information from any duly authorized committee of the Congress.

87 STAT. 993

REPORT

SEC. 204. (a) PREPARATION.—Within 30 days after the date of enactment of this Act, the Secretary shall prepare a comprehensive report containing his conclusions and recommendations with respect to the geographic zones within the region in and between which rail service should be provided and the criteria upon which such conclusions and recommendations are based. The Secretary may use as a basis for the identification of such geographic zones the standard metropolitan statistical areas, groups of such areas, counties, or groups of counties having similar economic characteristics such as mining, manufacturing, or farming.

(b) SUBMISSION.—The Secretary shall submit the report required by subsection (a) of this section to the Office, the Association, the Governor and public utilities commission of each State studied in the report, local governments, consumer organizations, environmental groups, the public, and the Congress. The Secretary shall further cause a copy of the report to be published in the Federal Register.

Publication in Federal Register.

RAIL SERVICES PLANNING OFFICE

SEC. 205. (a) ESTABLISHMENT.—There is established, on the date of enactment of this Act, a new Office in the Commission to be known as the Rail Services Planning Office. The Office shall function continuously pursuant to the provisions of this Act, and shall cease to exist 5 years after the date of enactment of this Act. The Office shall be administered by a director.

(b) DIRECTOR.—The Director of the Office shall be appointed by the Chairman of the Commission with the concurrence of 5 members of the Commission. The Director of the Office shall administer and be responsible for the discharge of the functions and duties of the Office from the date he takes office unless removed for cause by the Commission. He shall be compensated at a rate to be set by the Chairman of the Commission without regard to the provisions of title 5, United States Code, governing appointments in the competitive service, classification, and General Schedule pay rates, but at a rate not in excess of the maximum rate for GS-18 of the General Schedule under section 5332 of such title.

(c) POWERS.—The Director of the Office is subject to the direction of, and shall report to, such member of the Commission as the Chairman thereof shall designate. The Chairman may designate himself as such member or (in case of disagreement) the Chairman of the Commission, to—

- (1) appoint, fix the compensation, and assign the duties of employees of the Office without regard to the provisions of title 5, United States Code, governing appointments in the competitive service, and to procure temporary and intermittent services to the same extent as is authorized under section 3109 of title 5, United States Code, but at rates not to exceed \$250 a day for qualified experts. Each department, agency, and instrumentality of the executive branch of the Federal Government and each independent regulatory agency of the United States is authorized and shall give careful consideration to a request to furnish to the Director of the Office, upon written request, on a reimbursable basis or otherwise, such assistance as the Director deems necessary to carry out the functions and duties of the Office. Such assistance includes transfer of personnel with their consent and without prejudice to their position and rating; and

5 USC 5332  
note.

80 Stat. 416.

(2) enter into, without regard to section 3709 of the Revised Statutes of the United States (41 U.S.C. 5), such contracts, leases, cooperative agreements, or other transactions as may be necessary in the conduct of the functions and duties of the Office, with any person (including a government entity).

(d) **DUTIES.**—In addition to its duties, and responsibilities under other provisions of this Act, the Office shall—

(1) study and evaluate the Secretary's report on rail services in the region required under section 204(a) of this Act and submit its report thereon to the Association within 120 days after the date of enactment of this Act. The Office shall also solicit, study, and evaluate the views with respect to present and future rail service needs of the region from Governors of States within the region; mayors and chief executives of political subdivisions within such States; shippers; the Secretary of Defense; manufacturers, wholesalers, and retailers within the region; consumers of goods and products shipped by rail; and all other interested persons. The Office shall conduct public hearings to solicit comments on such report and to receive such views;

Public hearings.

(2) employ and utilize the services of attorneys and such other personnel as may be required in order properly to protect the interests of those communities and users of rail service which, for whatever reason, such as their size or location, might not otherwise be adequately represented in the course of the hearings and evaluations which the Office is required to conduct and perform under other provisions of this Act;

(3) within 180 days after the date of enactment of this Act, determine and publish standards for determining the "revenue attributable to the rail properties", the "avoidable costs of providing service", and "a reasonable return on the value", as those phrases are used in section 304 of this Act, after a proceeding in accordance with the provisions of section 553 of title 5, United States Code; and

80 Stat. 383.

(4) assist States and local and regional transportation agencies in making determinations whether to provide rail service continuation subsidies to maintain in operation particular rail properties by establishing criteria for determining whether particular rail properties are suitable for rail service continuation subsidies. Such criteria should include the following considerations: Rail properties are suitable if the cost of the required subsidy for such properties per year to the taxpayers is less than the cost of termination of rail service over such properties measured by increased fuel consumption and operational costs for alternative modes of transportation; the cost to the gross national product in terms of reduced output of goods and services; the cost of relocating or assisting through unemployment, retraining, and welfare benefits to individuals and firms adversely affected thereby; and the cost to the environment measured by damage caused by increased pollution.

#### FINAL SYSTEM PLAN

Sec. 206. (a) **GOALS.**—The final system plan shall be formulated in such a way as to effectuate the following goals:

- (1) the creation, through a process of reorganization, of a financially self-sustaining rail service system in the region;
- (2) the establishment and maintenance of a rail service system adequate to meet the rail transportation needs and service requirements of the region;

(3) the establishment of improved high-speed rail passenger service, consonant with the recommendations of the Secretary in his report of September 1971, entitled "Recommendations for Northeast Corridor Transportation";

(4) the preservation, to the extent consistent with other goals, of existing patterns of service by railroads (including short-line and terminal railroads), and of existing railroad trackage in areas in which fossil fuel natural resources are located, and the utilization of those modes of transportation in the region which require the smallest amount of scarce energy resources and which can most efficiently transport energy resources;

(5) the retention and promotion of competition in the provision of rail and other transportation services in the region;

(6) the attainment and maintenance of any environmental standards, particularly the applicable national ambient air quality standards and plans established under the Clean Air Act Amendments of 1970, taking into consideration the environmental impact of alternative choices of action;

84 Stat. 1676,  
42 USC 1857b  
note.

(7) the movement of passengers and freight in rail transportation in the region in the most efficient manner consistent with safe operation, including the requirements of commuter and intercity rail passenger service; the extent to which there should be coordination with the National Railroad Passenger Corporation and similar entities; and the identification of all short-to-medium distance corridors in densely populated areas in which the major upgrading of rail lines for high-speed passenger operation would return substantial public benefits; and

(8) the minimization of job losses and associated increases in unemployment and community benefit costs in areas in the region presently served by rail service.

(b) **FACTORS.**—The final system plan shall be based upon due consideration of all factors relevant to the realization of the goals set forth in subsection (a) of this section. Such factors include the need for and the cost of rehabilitation and modernization of track, equipment, and other facilities; methods of achieving economies in the cost of rail operations in the region; means of achieving rationalization of rail services and the rail service system in the region; marketing studies; the impact on railroad employees; consumer needs; traffic analyses; financial studies; and any other factors identified by the Association under section 202(b) of this title or in the report of the Secretary required under section 204(a) of this title.

(c) **DESIGNATIONS.**—The final system plan shall designate—  
(1) which rail properties of railroads in reorganization in the region or of railroads leased, operated, or controlled by any railroad in reorganization in the region—

(A) shall be transferred to the Corporation;

(B) shall be offered for sale to a profitable railroad operating in the region and, if such offer is accepted, operated by such railroad; the plan shall designate what additions shall be made to the designation under subparagraph (A) of this paragraph in the event such profitable railroad fails to accept such offer;

(C) shall be purchased, leased, or otherwise acquired from the Corporation by the National Railroad Passenger Corporation in accordance with the exercise of its option under section 601(d) of this Act for improvement to achieve the goal set forth in subsection (a) (3) of this section;

note, p. 990.

(D) may be purchased or leased from the Corporation by a State or a local or regional transportation authority to meet the needs of commuter and intercity rail passenger service; and

(E) if not otherwise required to be operated by the Corporation, a government entity, or a responsible person, are suitable for use for other public purposes, including highways, other forms of transportation, conservation, energy transmission, education or health care facilities, or recreation. In carrying out this subparagraph, the Association shall solicit the views and recommendations of the Secretary, the Secretary of the Interior, the Administrator of the Environmental Protection Agency, and other agencies of the Federal Government and of the States and political subdivisions thereof within the region, and the general public; and

(2) which rail properties of profitable railroads operating in the region may be offered for sale to the Corporation or to other profitable railroads operating in the region subject to paragraphs (3) and (4) of subsection (d) of this section.

(d) TRANSFERS.—All transfers or conveyances pursuant to the final system plan shall be made in accordance with, and subject to, the following principles:

(1) All rail properties to be transferred to the Corporation by a profitable railroad, by trustees of a railroad in reorganization, or by any railroad leased, operated, or controlled by a railroad in reorganization in the region, shall be transferred in exchange for stock and other securities of the Corporation (including obligations of the Association) and the other benefits accruing to such railroad by reason of such transfer.

(2) All rail properties to be conveyed to a profitable railroad operating in the region by trustees of a railroad in reorganization, or by any railroad leased, operated, or controlled by a railroad in reorganization in the region, shall be conveyed in exchange for compensation from the profitable railroad.

(3) Notwithstanding any other provision of this Act, no acquisition under this Act shall be made by any profitable railroad operating in the region without a determination with respect to each such transaction and all such transactions cumulatively (A) by the Association, upon adoption and release of the preliminary system plan, that such acquisition or acquisitions will not materially impair the profitability of any other profitable railroad operating in the region or of the Corporation, and (B) by the Commission, which shall be made within 90 days after adoption and release by the Association of the preliminary system plan, that such acquisition or acquisitions will be in full accord and comply with the provisions and standards of section 5 of part I of the Interstate Commerce Act (49 U.S.C. 5). The determination by the Association shall not be reviewable in any court. The determination by the Commission shall not be reviewable in any court.

(4) Where the final system plan designates specified rail properties of a railroad in reorganization in the region, or of a railroad leased, operated, or controlled by a railroad in reorganization in the region, to be offered for sale to and operated by a profitable railroad operating in the region, such designation shall terminate 30 days after the effective date of the final system plan unless, prior to such date, such profitable railroad has notified the Association in writing of its acceptance of such offer. Where the final

system plan designates specified rail properties of a profitable railroad operating in the region as authorized to be offered for sale or lease to the Corporation or to other profitable railroads operating in the region, such designation and authorization shall terminate 60 days after the effective date of the final system plan unless, prior to such date, a binding agreement with respect to such properties has been entered into and concluded.

(6) All properties sold by the Corporation pursuant to sections 206(c)(1)(C) and 601(d) of this Act shall be transferred at a value related to the value received for the transfer to the Corporation of such properties.

(e) CURRENTLY EXISTING.—The final system plan shall set forth—

- (1) pro forma earnings for the Corporation, as reasonably projected and considering the additions or changes in the designation of rail properties to be operated by the Corporation which may be made under subsection (d)(4) of this section;
- (2) the capital structure of the Corporation, based on the pro forma earnings of the Corporation as set forth, including such debt capitalization as shall be reasonably deemed to conform to the requirements of the public interest with respect to railroad debt securities, including the adequacy of coverage of fixed charges; and
- (3) the manner in which employee stock ownership plans may, to the extent practicable, be utilized for meeting the capitalization requirements of the Corporation, taking into account (A) the relative cost savings compared to conventional methods of corporate finance; (B) the labor cost savings; (C) the potential for minimizing strikes and producing more harmonious relations between labor organizations and railway management; (D) the projected employee dividend incomes; (E) the impact on quality of service and prices to railway users; and (F) the promotion of the objectives of this Act of creating a financially self-sustaining railway system in the region which also meets the service needs of the region and the Nation.

(f) VALUE.—The final system plan shall designate the value of all rail properties to be transferred under the final system plan and the value of the securities and other benefits to be received for transferring those rail properties to the Corporation in accordance with the final system plan.

(g) OTHER PROVISIONS.—The final system plan may recommend arrangements among various railroads for joint use or operation of rail properties on a shared ownership, cooperative, pooled, or condominium-type basis, subject to such terms and conditions as may be specified in the final system plan. The final system plan shall also make such designations as are determined to be necessary in accordance with the provisions of section 402 or 403 of this Act.

(h) OBLIGATIONAL ATTESTATION.—The final system plan shall recommend the amount of obligations of the Association which are necessary to enable it to implement the final system plan.

(i) TERMS AND CONDITIONS FOR SECURITIES.—The final system plan may include terms and conditions for any securities to be issued by the Corporation in exchange for the conveyance of rail properties under the final system plan which in the judgment of the Association will minimize any actual or potential debt burden on the Corporation. Any such terms and conditions for securities of the Corporation which purport to directly obligate the Association shall not become effective without affirmative approval, with or without modification by a joint resolution of the Congress.

presented to the Commission. The submission shall reflect evaluation of all responses and summaries of responses received, testimony at any public hearings, and the results of additional study and review. Within 30 days thereafter, the Board of Directors of the Association shall by a majority vote of all its members approve a final system plan which meets all of the requirements of section 206 of this title.

(d) **REVIEW OF COMMISSION.**—Within 30 days following the adoption of the final system plan by the Association under subsection (c) of this section and the submission of such plan to Congress under section 208(a) of this title, the Commission shall submit to the Congress an evaluation of the final system plan delivered to both Houses of Congress.

#### REVIEW BY CONGRESS

**SEC. 208. (a) GENERAL.**—The Board of Directors of the Association shall deliver the final system plan adopted by the Association to both Houses of Congress and to the Committee on Interstate and Foreign Commerce of the House of Representatives and the Committee on Commerce of the Senate. The final system plan shall be deemed approved at the end of the first period of 60 calendar days of continuous session of Congress after such date of transmittal unless either the House of Representatives or the Senate passes a resolution during such period stating that it does not favor the final system plan.

(b) **REVERSAL PLAN.**—If either the House or the Senate passes a resolution of disapproval under subsection (a) of this section, the Association, with the cooperation and assistance of the Secretary and the Office, shall prepare, determine, and adopt a revised final system plan. Each such revised plan shall be submitted to Congress for review pursuant to subsection (a) of this section.

(c) **COMPUTATION.**—For purposes of this section—

- (1) continuity of session of Congress is broken only by an adjournment sine die; and
- (2) the days on which either House is not in session because of an adjournment of more than 3 days to a day certain are excluded in the computation of the 60-day period.

#### JUDICIAL REVIEW

**SEC. 209. (a) GENERAL.**—Notwithstanding any other provision of law, the final system plan which is adopted by the Association, and which becomes effective after review by the Congress is not subject to review by any court except in accordance with this section. After the final system plan becomes effective under section 208 of this title, it may be reviewed with respect to matters concerning the value of the rail properties to be conveyed under the plan and the value of the consideration to be received for such properties.

(b) **SPECIAL COURT.**—Within 30 days after the date of enactment of this Act, the Association shall make application to the judicial panel on multi-district litigation authorized by section 1407 of title 28, United States Code, for the consolidation in a single, three-judge district court of the United States of all judicial proceedings with respect to the final system plan. Within 30 days after such application is received, the panel shall make the consolidation in a district court (cited herein as the "special court") which the panel determines to be convenient to the parties and the one most likely to be able to conduct any proceedings under this section with the least delay and the greatest possible fairness and ability. Such proceedings shall be conducted by the special court, which shall be composed of three Federal judges who shall be selected by the panel, except that none of the judges selected

**SEC. 207. (a) PRELIMINARY SYSTEM PLAN.**—(1) Within 300 days after the date of enactment of this Act, the Association shall adopt and release a preliminary system plan prepared by it on the basis of reports and other information submitted to it by the Secretary, the Office, and interested persons in accordance with this Act and on the basis of its own investigations, consultations, research, evaluation, and analysis pursuant to this Act. Copies of the preliminary system plan shall be transmitted by the Association to the Secretary, the Office, the Governor and public utility commission of each State in the region, the Congress, each court having jurisdiction over a railroad in reorganization in the region, the special court, and interested persons, and a copy shall be published in the Federal Register. The Association shall invite and afford interested persons an opportunity to submit comments on the preliminary system plan to the Association within 60 days after the date of its release.

(2) The Office is authorized and directed to hold public hearings on the preliminary system plan and to make available to the Association a summary and analysis of the evidence received in the course of such proceedings, together with its critique and evaluation of the preliminary system plan, not later than 60 days after the date of release of such plan.

(b) **APPROVAL.**—Within 120 days after the date of enactment of this Act each United States district court or other court having jurisdiction over a railroad in reorganization shall decide whether the railroad is reorganizable on an income basis within a reasonable time under section 77 of the Bankruptcy Act (11 U.S.C. 205) and that the public interest would be better served by continuing the present reorganization proceedings than by a reorganization under this Act. Within 60 days after the submission of the report by the Office, under section 205(d)(1) of this title, on the Secretary's report on rail services in the region, each United States district court or other court having jurisdiction over a railroad in reorganization shall decide whether or not such railroad shall be reorganized by means of transferring some of its rail properties to the Corporation pursuant to the provisions of this Act. Because of the strong public interest in the continuance of rail transportation in the region pursuant to a system plan devised under the provisions of this Act, each such court shall order that the reorganization be proceeded with pursuant to this Act unless it (1) has found that the railroad is reorganizable on an income basis within a reasonable time under section 77 of the Bankruptcy Act (11 U.S.C. 205) and that the public interest would be better served by such a reorganization than by a reorganization under this Act, or (2) finds that this Act does not provide a process which would be fair and equitable to the estate of the railroad in reorganization in which case it shall dismiss the reorganization proceeding. If a court does not enter an order or make a finding as required by this subsection, the reorganization shall be proceeded with pursuant to this Act. An appeal from an order made under this section may be made only to the special court. Appeal to the special court shall be taken within 10 days following entry of an order pursuant to this subsection, and the special court shall complete its review and render its decision within 80 days after such appeal is taken. There shall be no review of the decision of the special court.

(c) **ADDITION.**—Within 420 days after the date of enactment of this Act, the executive committee of the Association shall prepare and submit a final system plan for the approval of the Board of Directors of the Association. A copy of such submission shall be simultaneously

Copies, transmittal to Congress.

Publication in Federal Register.

Public hearings.

49 Stat. 911,  
76 Stat. 572.



may be a judge assigned to a proceeding involving any railroad in reorganization in the region under section 77 of the Bankruptcy Act (11 U.S.C. 205). The special court is authorized to exercise the powers of a district judge in any judicial district with respect to such proceedings and such powers shall include those of a reorganization court. The special court shall have the power to order the conveyance of rail properties of railroads leased, operated, or controlled by a railroad in reorganization in the region. The panel may issue rules for the conduct of its functions under this subsection. No determination by the panel under this subsection may be reviewed in any court.

(c) DELIVERY OF PLAN TO SPECIAL COURT.—Within 90 days after its effective date, the Association shall deliver a certified copy of the final system plan to the special court and shall certify to the special court—

(1) which rail properties of the respective railroads in reorganization in the region and of any railroad leased, operated, or controlled by such railroads in reorganization are to be transferred to the Corporation, in accordance with the final system plan;

(2) which rail properties of the respective railroads in reorganization in the region or railroads leased, operated, or controlled by such railroads in reorganization are to be conveyed to profitable railroads, in accordance with the final system plan;

(3) the amount, terms, and value of the securities of the Corporation (including any obligations of the Association) to be exchanged for those rail properties to be transferred to the Corporation pursuant to the final system plan, and as indicated in paragraph (1) of this subsection; and

(4) that the transfer of rail properties in exchange for securities of the Corporation (including any obligations of the Association) and other benefits is fair and equitable and in the public interest.

(d) BANKRUPTCY COURTS.—Within 90 days after its effective date, the Association shall deliver a certified copy of the final system plan to each district court of the United States or any other court having jurisdiction over a railroad in reorganization in the region and shall certify to each such court—

(1) which rail properties of that railroad in reorganization are to be transferred to the Corporation under the final system plan; and

(2) which rail properties of that railroad in reorganization, if any, are to be conveyed to profitable railroads operating in the region, under the final system plan.

OBLIGATIONS OF THE ASSOCIATION

SEC. 210. (a) GENERAL.—To carry out the purposes of this Act, the Association is authorized to issue bonds, debentures, trust certificates, securities, or other obligations (herein cited as "obligations") in accordance with this section. Such obligations shall have such maturities and bear such rate or rates of interest as are determined by the Association with the approval of the Secretary of the Treasury. Such obligations shall be redeemable at the option of the Association prior to maturity in the manner stipulated in each such obligation, and may be purchased by the Association in the open market at a price which is reasonable.

(b) MAXIMUM OBLIGATIONAL AUTHORITY.—Except as otherwise provided in the last sentence of this subsection, the aggregate amount of obligations of the Association issued under this section which may be outstanding at any one time shall not exceed \$1,500,000,000 of which the aggregate amount issued to the Corporation shall not exceed

\$1,000,000,000. Of the aggregate amount of obligations issued to the Corporation by the Association, not less than \$500,000,000 shall be available solely for the rehabilitation and modernization of rail properties acquired by the Corporation under this Act and not disposed of by the Corporation pursuant to section 206(c)(1)(C) of this Act. Any modification to the limitations set forth in this subsection shall be made by joint resolution adopted by the Congress.

(c) GUARANTEES.—The Secretary shall guarantee the payment of principal and interest on all obligations issued by the Association in accordance with this Act and which the Association requests be guaranteed.

(d) VAULTING.—No obligation issued by the Association under this section shall be terminated, canceled, or otherwise revoked, except in accordance with lawful terms and conditions prescribed by the Association. Such an obligation shall be conclusive evidence that it is in compliance with this section, has been approved, and is legal as to principal, interest, and other terms. An obligation of the Association shall be valid and incontestable in the hands of a holder, except as to fraud, duress, mutual mistake of fact, or material misrepresentation by or involving such holder.

(e) THE SECRETARY OF THE TREASURY.—If at any time the moneys available to the Secretary are insufficient to enable him to discharge his responsibilities under subsection (c) of this section, he shall issue notes or other obligations to the Secretary of the Treasury in such forms and denominations, bearing such maturities, and subject to such terms and conditions as may be prescribed by the Secretary of the Treasury. Such obligations shall bear interest at a rate to be determined by the Secretary of the Treasury taking into consideration the current average market yield on outstanding marketable obligations of the United States of comparable maturities during the month preceding the issuance of such obligations. The Secretary of the Treasury is authorized and directed to purchase any such obligations and for such purpose is authorized to use as a public debt transaction the proceeds from the sale of any securities issued under the Second Liberty Bond Act, as amended. The purposes for which securities may be issued under such Act are extended to include any purchase of notes or other obligations issued under this subsection. At any time, the Secretary of the Treasury may sell any such obligations, and all sales, purchases, and redemptions of such obligations by the Secretary of the Treasury shall be treated as public debt transactions of the United States.

(f) AUTHORIZATION FOR APPROPRIATIONS.—There are hereby authorized to be appropriated to the Secretary such amounts as are necessary to discharge the obligations of the United States arising under this section.

(g) LAWFUL INVESTMENTS.—All obligations issued by the Association shall be lawful investments and may be accepted as security for all fiduciary, trust, and public funds, the investment or deposit of which shall be under the authority and control of the United States or any officer or officers thereof. All such obligations issued pursuant to this section shall be exempt securities within the meaning of laws administered by the Securities and Exchange Commission.

LOANS

SEC. 211. (a) GENERAL.—The Association is authorized, in accordance with the provisions of this section and such rules and regulations as it shall prescribe, to make loans to the Corporation, the National Railroad Passenger Corporation, and other railroads (including a

87 STAT. 1002  
49 Stat. 911f  
76 Stat. 572.  
11 USC 205.

117 Railroad in reorganization which has been found to be reorganizable under section 77 of the Bankruptcy Act pursuant to section 207 (b) of this title) in the region, for purposes of assisting in the implementation of the final system plan; to a State or local or regional transportation authority pursuant to section 403 of this Act; and to provide assistance in the form of loans to any railroad which (A) connects with a railroad in reorganization, and (B) is in need of financial assistance to avoid reorganization proceedings under section 77 of the Bankruptcy Act (11 U.S.C. 205). No such loan shall be made by the Association to a railroad unless such loans shall, where applicable, be treated as an expense of administration. The rights referred to in the last sentence of section 77 (j) of the Bankruptcy Act (11 U.S.C. 205 (j)) shall in no way be affected by this Act.

(b) **APPROPRIATIONS.**—Each application for such a loan shall be made in writing to the Association in such form and with such content and other submissions as the Association shall prescribe to protect reasonably the interests of the United States. The Association shall publish a notice of the receipt of each such application in the Federal Register and shall afford interested persons an opportunity to comment thereon.

(c) **TERMS AND CONDITIONS.**—Each loan shall be extended in such form, under such terms and conditions, and pursuant to such regulations as the Association deems appropriate. Such loan shall bear interest at a rate not less than the greater of a rate determined by the Secretary of the Treasury taking into consideration (1) the rate prevailing in the private market for similar loans as determined by the Secretary of the Treasury, or (2) the current average yield on outstanding marketable obligations of the Association with remaining periods of maturity comparable to the average maturities of such loans, plus such additional charge, if any, toward covering costs of the Association as the Association may determine to be consistent with the purposes of this Act.

(d) **MODIFICATIONS.**—The Association is authorized to approve any modification of any provision of a loan under this section, including the rate of interest, time of payment of interest or principal, security, or any other term or condition, upon agreement of the recipient of the loan and upon a finding by the Association that such modification is equitable and necessary or appropriate to achieve the policy declared in subsection (f) of this section.

(e) **PARRAQUISITS.**—The Association shall make a finding in writing, before making a loan to any applicant under this section, that—

- (1) the loan is necessary to carry out the final system plan or to prevent insolvency;
- (2) it is satisfied that the business affairs of the applicant will be conducted in a reasonable and prudent manner; and
- (3) the applicant has offered such security as the Association deems necessary to protect reasonably the interests of the United States.

(f) **POLICY.**—It is the intent of Congress that loans made under this section shall be made on terms and conditions which furnish reasonable assurance that the Corporation or the railroads to which such loans are granted will be able to repay them within the time fixed and that the goals of the final system plan are reasonably likely to be achieved.

RECORDS, AUDIT, AND EXAMINATION

SEC. 212. (a) **RECORDS.**—Each recipient of financial assistance under this title, whether in the form of loans, obligations, or other arrangements, shall keep such records as the Association or the Secretary shall prescribe, including records which fully disclose the amount and dis-

position by such recipient of the proceeds of such assistance and such other records as will facilitate an effective audit.

(b) **AUDIT AND EXAMINATION.**—The Association, the Secretary, and the Comptroller General of the United States, or any of their duly authorized representatives shall, until the expiration of 3 years after the implementation of the final system plan, have access for the purpose of audit and examination to any books, documents, papers, and records of such recipients which in the opinion of the Association, the Secretary, or the Comptroller General may be related or pertinent to the loans, obligations or other arrangements referred to in subsection (a) of this section. The Association or any of its duly authorized representatives shall, until any financial assistance received under this title has been repaid to the Association, have access to any such materials which concern any matter that may bear upon—

- (1) the ability of the recipient of such financial assistance to make repayment within the time fixed therefor;
- (2) the effectiveness with which the proceeds of such assistance is used; and
- (3) the implementation of the final system plan and the realization of the declaration of policy of this Act.

EMERGENCY ASSISTANCE PENDING IMPLEMENTATION

SEC. 213. (a) **EMERGENCY ASSISTANCE.**—The Secretary is authorized, pending the implementation of the final system plan, to pay to the trustees of railroads in reorganization such sums as are necessary for the continued provision of essential transportation services by such railroads. Such payments shall be made by the Secretary upon such reasonable terms and conditions as the Secretary establishes, except that recipients must agree to maintain and provide service at a level no less than that in effect on the date of enactment of this Act.

(b) **AUTHORIZATION FOR APPROPRIATIONS.**—There are authorized to be appropriated to the Secretary for carrying out this section such sums as are necessary, not to exceed \$85,000,000, to remain available until expended.

AUTHORIZATION FOR APPROPRIATIONS

SEC. 214. (a) **SECRETARY.**—There are authorized to be appropriated to the Secretary for purposes of preparing the reports and exercising other functions to be performed by him under this Act such sums as are necessary, not to exceed \$12,500,000, to remain available until expended.

(b) **OFFICER.**—There are authorized to be appropriated to the Commission for the use of the Office in carrying out its functions under this Act such sums as are necessary, not to exceed \$5,000,000, to remain available until expended. The budget for the Office shall be submitted by the Commission directly to the Congress and shall not be subject to review of any kind by any other agency or official of the United States. Moneys appropriated for the Office shall not be withheld by any agency or official of the United States or used by the Commission for any purpose other than the use of the Office. No part of any other moneys appropriated to the Commission shall be withheld by any other agency or official of the United States to offset any moneys appropriated pursuant to this subsection.

(c) **ASSOCIATION.**—There are authorized to be appropriated to the Association for purposes of carrying out its administrative expenses under this Act such sums as are necessary, not to exceed \$28,000,000, to remain available until expended.

Budget submittal to congress.

MAINTENANCE AND IMPROVEMENT OF PLANT

Sec. 213. Prior to the date upon which rail properties are conveyed to the Corporation under this Act, the Secretary, with the approval of the Association, is authorized to enter into agreements with railroads in reorganization in the region (or railroads leased, operated, or controlled by railroads in reorganization) for the acquisition, maintenance, or improvement of railroad facilities and equipment necessary to improve property that will be in the final system plan. Agreements entered into pursuant to this section shall specifically identify the type and quality of improvements to be made pursuant to such agreements. Notwithstanding section 210 (b) of this title, the Association shall issue obligations under section 210 (a) of this title in an amount sufficient to finance such agreements and shall require the Corporation to assume any such obligations. However, the Association may not issue obligations under this section in an aggregate amount in excess of \$150,000,000. The Secretary may not enter into any agreements under this section until he issues regulations setting forth procedures and guidelines for the administration of this section. The Corporation shall not be required under title III of this Act to compensate any railroad in reorganization for that portion of the value of rail properties transferred to it under this Act which is attributable to the acquisition, maintenance, or improvement of such properties under this section.

Arts. P. 1000.

TITLE III—CONSOLIDATED RAIL CORPORATION

FORMATION AND STRUCTURE

Sec. 301. (a) ESTABLISHMENT.—There shall be established within 300 days after the date of enactment of this Act, in accordance with the provisions of this section, a corporation to be known as the Consolidated Rail Corporation.

(b) STATUS.—The Corporation shall be a for-profit corporation established under the laws of a State and shall not be an agency or instrumentality of the Federal Government. The Corporation shall be deemed a common carrier by railroad under section 1(3) of the Interstate Commerce Act (49 U.S.C. 1(3)), shall be subject to the provisions of this Act and, to the extent not inconsistent with such Acts, shall be subject to applicable State law. The principal office of the Corporation shall be located in Philadelphia in the Commonwealth of Pennsylvania.

(c) INCORPORATORS.—The members of the executive committee of the Association shall be the incorporators of the Corporation and shall take whatever steps are necessary to establish the Corporation, including the filing of articles of incorporation. The incorporators shall also serve as the Board of Directors of the Corporation until the stock and other securities of the Corporation are distributed to the estates of the railroads in accordance with section 303(c) of this title and shall adopt the initial bylaws of the Corporation.

(d) BOARD OF DIRECTORS.—The Board of Directors of the Corporation shall consist of 15 individuals selected in accordance with the articles and bylaws of the Corporation: Provided, That so long as 50 per centum or more, as determined by the Secretary of the Treasury, of the outstanding indebtedness of the Corporation consists of obligations of the Association or other debts owing to or guaranteed by the United States, three of the members of such board shall be the Secretary, the Chairman and the President of the Association and five of the members of such board shall be individuals appointed as such by the President, by and with the advice and consent of the Senate.

41 Stat. 424.

(c) INITIAL CAPITALIZATION.—In order to carry out the final system plan the Corporation is authorized to issue stock and other securities. Common stock shall be issued initially to the estates of railroads in reorganization in the region in exchange for rail properties conveyed to the Corporation pursuant to the final system plan. Nothing in this subsection shall preclude the Corporation from repurchasing the common stock initially issued through payments out of profits in order to establish an employee stock ownership plan; and nothing in this subsection shall preclude the recipients of common stock initially issued from establishing an employee stock ownership plan.

(f) AUDIT AND EXPENDITURES.—So long as 50 per centum or more, as determined by the Secretary of the Treasury, of the outstanding indebtedness of the Corporation consists of obligations of the Association or other debts owing to or guaranteed by the United States, the Corporation shall be subject to the provisions of the Government Corporation Control Act for the purposes of a Federal Government audit. Section 201 of the Government Corporation Control Act (31 U.S.C. 856) is amended by inserting at the end thereof the following: "and (9) the Consolidated Rail Corporation to the extent provided in the Regional Rail Reorganization Act of 1973."

(g) ANNUAL REPORT.—The Corporation shall transmit to the Congress and the President, not later than 90 days after the end of each fiscal year, a comprehensive and detailed report on all activities and accomplishments of the Corporation during the preceding fiscal year.

POWERS AND DUTIES OF THE CORPORATION

Sec. 302. The Corporation shall have all of the powers and is subject to all of the duties vested in it under this Act, in addition to the powers conferred upon it under the laws of the State or States in which it is incorporated and the powers of a railroad in any State in which it operates. The Corporation is authorized and directed to—

- (a) acquire rail properties designated in the final system plan to be transferred or conveyed to it;
- (b) operate rail service over such rail properties except as provided under sections 304 (e) and 601 (d) (3) of this Act;
- (c) rehabilitate, improve, and modernize such rail properties; and
- (d) maintain adequate and efficient rail services.

So long as 50 per centum or more, as determined by the Secretary of the Treasury, of the outstanding indebtedness of the Corporation consists of obligations of the Association or other debts owing to or guaranteed by the United States, the Corporation shall not engage in activities which are not related to transportation.

VALUATION AND CONVEYANCE OF RAIL PROPERTIES

Sec. 303. (a) DEPOSIT WITH COURT.—Within 10 days after delivery of a certified copy of a final system plan pursuant to section 200 (c) of this Act—

(1) the Corporation, in exchange for the rail properties of the railroads in reorganization in the region and of railroads leased, operated, or controlled by railroads in reorganization in the region to be transferred to the Corporation, shall deposit with the special court all of the stock and other securities of the Corporation and obligations of the Association designated in the final system plan to be exchanged for such rail properties;

(2) each profitable railroad operating in the region purchasing rail properties from a railroad in reorganization in the region, or from a railroad leased, operated, or controlled by a railroad in

Report to Congress and President.

Arts. P. 992.

reorganization in the region, as provided in the final system plan shall deposit with the special court the compensation to be paid for such rail properties.

(b) CONVEYANCE OF RAIL PROPERTIES.—(1) The special court shall, within 10 days after deposit under subsection (a) of this section of the securities of the Corporation, obligations of the Association, and compensation from the profitable railroads operating in the region, order the trustee or trustees of each railroad in reorganization in the region to convey forthwith to the Corporation and the respective profitable railroads operating in the region, all right, title, and interest in the rail properties of such railroad in reorganization and shall itself order the conveyance of all right, title, and interest by such railroad in reorganization that are to be conveyed to them under the final system plan as certified to such court under section 209(d) of this Act.

(2) All rail properties conveyed to the Corporation and the respective profitable railroads operating in the region under this section shall be conveyed free and clear of any liens or encumbrances, but subject to such leases and agreements as shall have previously burdened such properties or bound the owner or operator thereof in pursuance of an arrangement with any State, or local or regional transportation authority under which financial support from such State, or local or regional transportation authority was being provided at the time of enactment of this Act for the continuance of rail passenger service or any lien or encumbrance of no greater than 5 years' duration which is necessary for the contractual performance by any person of duties related to public health or sanitation. Such conveyances shall not be restrained or enjoined by any court.

(3) Notwithstanding anything to the contrary contained in this Act, if railroad rolling stock is included in the rail properties to be conveyed, such conveyance may only be effected if the profitable railroad operating in the region or the Corporation to whom the conveyance is made assumes all of the obligations under any conditional sale agreement, equipment trust agreement, or lease in respect to such rolling stock and such conveyance is made subject thereto; and the provisions of this Act shall not affect the title and interests of any lessor, equipment trust trustee, or conditional sale vendee or assignee under such conditional sale agreement, equipment trust agreement or lease under section 77(j) of the Bankruptcy Act (11 U.S.C. 205(j)).

(4) Notwithstanding anything to the contrary contained in this Act, if a railroad in reorganization has leased rail properties from a lessor that is neither a railroad nor controlled by or affiliated with a railroad, and such lease has been approved by the lessee railroad's reorganization court prior to the date of enactment of this Act, conveyance of such lease may only be effected if the Corporation or the profitable railroad to whom the conveyance is made assumes all of the terms and conditions specified in the lease, including the obligation to pay the specified rent to the non-railroad lessor.

(c) FINDINGS AND DETERMINATION.—(1) After the rail properties have been conveyed to the Corporation and profitable railroads operating in the region under subsection (b) of this section, the special court, giving due consideration to the findings contained in the final system plan, shall decide—

(A) whether the transfers or conveyances—  
(i) of rail properties of each railroad in reorganization, or of each railroad leased, operated, or controlled by a railroad in reorganization, to the Corporation in exchange for the securities and the other benefits accruing to such rail-

road as a result of such exchange, as provided in the final system plan and this Act, and  
(ii) of rail properties of each railroad in reorganization, or of each railroad leased, operated, or controlled by a railroad in reorganization, to a profitable railroad operating in the region, in accordance with the final system plan.

are in the public interest and are fair and equitable to the estate of each railroad in reorganization in accordance with the standard of fairness and equity applicable to the approval of a plan of reorganization or a step in such a plan under section 77 of the Bankruptcy Act (11 U.S.C. 205), or fair and equitable to a railroad that is not itself in reorganization but which is leased, operated, or controlled by a railroad in reorganization; and  
(B) whether the transfers or conveyances are more fair and equitable than is required as a constitutional minimum.

(2) If the special court finds that the terms of one or more exchanges for securities and other benefits are not fair and equitable to an estate of a railroad in reorganization, or to a railroad leased, operated, or controlled by a railroad in reorganization, which has transferred rail properties pursuant to the final system plan, it shall—

(A) enter a judgment reallocating the securities of the Corporation in a fair and equitable manner if it has not been fairly allocated among the railroads transferring rail properties to the Corporation; and

(B) if the lack of fairness and equity cannot be completely cured by a reallocation of the Corporation's securities, order the Corporation to provide for the transfer to the railroad of other securities of the Corporation or obligations of the Association as designated in the final system plan in such nature and amount as would make the exchange or exchanges fair and equitable; and

(C) if the lack of fairness and equity cannot be completely cured by reallocation of the Corporation's securities or by providing for the transfer of other securities of the Corporation or obligations of the Association as designated in the final system plan, enter a judgment against the Corporation.

(3) If the special court finds that the terms of one or more conveyances of rail properties to a profitable railroad operating in the region in accordance with the final system plan are not fair and equitable, it shall enter a judgment against such profitable railroad. If the special court finds that the terms of one or more conveyances or exchanges for securities or other benefits are fairer and more equitable than is required as a constitutional minimum, then it shall order the return of any excess securities, obligations, or compensation to the Corporation or a profitable railroad so as not to exceed the constitutional minimum standard of fairness and equity.

(4) Upon making the findings referred to in this subsection, and special court shall order distribution of the securities, obligations, and compensation deposited with it under subsection (b) of this section to the trustee or trustees of each railroad in reorganization in the region and the respective profitable railroads under such subsection.

(d) APPEAL.—A finding or determination entered pursuant to subsection (c) of this section may be appealed directly to the Supreme Court of the United States in the same manner that an injunction order may be appealed under section 1253 of title 28, United States Code. *Provided*, That such appeal is exclusive and shall be filed in the Supreme Court not more than 5 days after such finding or determination is entered by the special court. The Supreme Court shall dismiss



any such appeal within 7 days after the entry of such an appeal if it determines that such an appeal would not be in the interest of an expedition conclusion of the proceedings and shall grant the highest priority to the determination of any such appeals which it determines not to dismiss.

TERMINATION OF RAIL SERVICE.

SEC. 304. (a) DISCONTINUANCE.—Except as provided in subsections (c) and (f) of this section, (1) rail service on rail properties of a railroad in the region which transfers to the Corporation or to profitable railroads operating in the region all or substantially all of its rail properties designated for such conveyance in the final system plan, and (2) rail service on rail properties of a profitable railroad operating in the region which transfers substantially all of its rail properties to the Corporation or to other railroads pursuant to the final system plan may be discontinued to the extent such discontinuance is not precluded by the terms of the leases and agreements referred to in section 303(b) (2) of this title if—

(A) the final system plan does not designate rail service to be operated over such rail properties; and

(B) not sooner than 30 days following the effective date of the final system plan the trustee or trustees of the applicable railroad in reorganization or a profitable railroad give notice in writing of intent to discontinue such rail service on a date certain which is not less than 60 days after the date of such notice; and

(C) the notice required by paragraph (B) of this subsection is sent by certified mail to the Governor and State transportation agencies of each State and to the government of each political subdivision of each State in which such rail properties are located and to each shipper who has used such rail service during the previous 12 months.

(b) ABANDONMENT.—(1) Rail properties over which rail service has been discontinued under subsection (a) of this section may not be abandoned sooner than 120 days after the effective date of such discontinuance except as provided in subsections (c) and (f) of this section. Thereafter, except as provided in subsection (c) of this section, such rail properties may be abandoned upon 30 days' notice in writing to all those required to receive notice under paragraph (2) (C) of subsection (a) of this section.

(2) In any case in which rail properties proposed to be abandoned under this section are designated by the final system plan as rail properties which are suitable for use for other public purposes (including roads or highways, other forms of mass transportation, conservation, and recreation), such rail properties shall not be sold, leased, exchanged, or otherwise disposed of during the 180-day period beginning on the date of notice of proposed abandonment under this section unless such rail properties have first been offered, upon reasonable terms, for acquisition for public purposes.

(c) LIMITATIONS.—Rail service may be discontinued and rail properties may be abandoned under subsections (a) and (b) of this section notwithstanding any provision of the Interstate Commerce Act, (40 U.S.C. 1 et seq.) or the constitution or law of any State or the declaration of any court or administrative agency of the United States or of any State. No rail service may be discontinued and no rail properties may be abandoned pursuant to this section—

(1) after 2 years after the final payment of any rail service continuation subsidy is received, whichever is later; or

(2) if a shipper, a State, the United States, a local or regional transportation authority, or any responsible person offers—

(A) a rail service continuation subsidy which covers the difference between the revenue attributable to such rail properties and the avoidable costs of providing service on such rail properties plus a reasonable return on the value of such rail properties;

(B) a rail service continuation subsidy which is payable pursuant to a lease or agreement with a State, or a local or regional transportation authority, under which financial support was being provided at the time of the enactment of this Act for the continuance of rail passenger service; or

(C) to purchase, pursuant to subsection (d) of this section, such rail properties in order to operate rail service over such properties.

If a rail service continuation subsidy is offered, the government or person offering the subsidy shall enter into an operating agreement with the Corporation or any responsible person (including a government entity) under which the Corporation or such person (including a government entity) will operate rail service over such rail properties and receive the difference between the revenue attributable to such properties and the avoidable costs of providing service on such rail properties and the trustee of any railroad in reorganization shall receive a reasonable rate of return on the value of any rail properties for which a rail service is operated under such subsidy.

(d) PURCHASE.—If an offer to purchase is made under subsection (c) (2) (C) of this section, such offer shall be accompanied by an offer of a rail service continuation subsidy. Such subsidy shall continue until the purchase transaction is completed, unless a railroad assumes operations over such rail properties on its own account pursuant to an order or authorization of the Commission. Whenever a railroad in reorganization in the region or a profitable railroad gives notice of intent to discontinue service pursuant to subsection (a) of this section, such railroad shall, upon the request of anyone apparently qualified to make a purchase offer promptly make available its most recent reports on the physical condition of such property together with such traffic and revenue data as would be required under subpart B of part 1121 of chapter X of title 49 of the Code of Federal Regulations and such other data necessary to ascertain the avoidable costs of providing service over such rail properties.

(e) ABANDONMENT BY CORPORATION.—After the rail system to be operated by the Corporation under the final system plan has been in operation for 2 years, the Commission may authorize the Corporation to abandon any rail properties as to which it determines that rail service over such properties is not required by the public convenience and necessity. The Commission may, at any time after the effective date of the final system plan, authorize additional rail service in the region or authorize the abandonment of rail properties which are not being operated by the Corporation or by any other person. Determinations by the Commission under this subsection shall be made pursuant to applicable provisions of the Interstate Commerce Act (49 U.S.C. 1).

(f) INTERIM ABANDONMENT.—After the date of enactment of this Act, no railroad in reorganization may discontinue service or abandon any line of railroad other than in accordance with the provisions of this Act, unless it is authorized to do so by the Association and unless no affected State or local or regional transportation authority reasonably opposes such action, notwithstanding any provision of any other Federal law, the constitution or law of any State, or decision of State court, agency, or authority.

## 87 STAT., 1010 TITLE IV—LOCAL RAIL SERVICES

## FINDINGS AND PURPOSE

SEC. 401. (a) FINDINGS.—The Congress finds and declares that—

(1) The Nation is facing an energy shortage of acute proportions in the next decade.

(2) Railroads are one of the most energy-efficient modes of transportation for the movement of passengers and freight and cause the least amount of pollution.

(3) Abandonment, termination, or substantial reduction of rail service in any locality will adversely affect the Nation's long-term and immediate goals with respect to energy conservation and environmental protection.

(4) Under certain circumstances the cost to the taxpayers of rail service continuation subsidies would be less than the cost of abandonment of rail service in terms of lost jobs, energy shortages, and degradation of the environment.

(b) PURPOSE.—Therefore, it is declared to be the purpose of the Congress to authorize the Secretary to maintain a program of rail service continuation subsidies.

## RAIL SERVICE CONTINUATION SUBSIDIES

SEC. 402. (a) GENERAL.—The Secretary shall provide financial assistance in accordance with this section for the purpose of rail service continuation subsidies. For purposes of subsection (b) (1) of this section the Federal share of a rail service continuation subsidy shall be 70 per centum and the State share shall be 30 per centum. For purposes of subsection (b) (2) of this section a State receiving discretionary assistance shall be required to contribute at least 30 per centum of the cost of the program for which the Federal assistance is provided.

(b) ENTITLEMENT.—(1) Each State in the region is entitled to an amount for rail service continuation subsidies from 50 per centum of the sums appropriated each fiscal year for such purpose in the ratio which the total rail mileage in such State, as determined by the Secretary and measured in point-to-point length (excluding yard tracks and sidings), bears to the total rail mileage in all the States in the region, measured in the same manner, except that the entitlement of each State shall be no less than 3 per centum, and the entitlement of no State shall be more than 10 per centum, of 50 per centum of the funds appropriated. In the event that the total amount allocated under this formula, due to the application of the maximum and minimum limitations which it establishes, is greater or less than 50 per centum of the funds appropriated, the excess or deficiency, as the case may be, shall be added to or deducted from the Secretary's discretionary fund provided for in paragraph (2) of this subsection. The entitlement of any State which is withheld in accordance with this section and any sums not used or committed by a State during the preceding fiscal year shall be paid into the discretionary fund provided for in paragraph (2) of this subsection.

(2) The Secretary is authorized to provide discretionary financial assistance to a State or a local or regional transportation authority in the region for the purpose of continuing local rail services, including assistance for the purposes enumerated in section 403 of this title.

(c) ELIGIBILITY.—A State in the region is eligible to receive rail service continuation subsidies pursuant to subsection (b) of this section in any fiscal year if—

(1) the State has established a State plan for rail transportation and local rail services which is administered or coordinated by a designated State agency and such plan provides for the equitable distribution of such subsidies among State, local, and regional transportation authorities;

(2) the State agency has authority and administrative jurisdiction to develop, promote, supervise, and support safe, adequate, and efficient rail services; employs or will employ, directly or indirectly, sufficient trained and qualified personnel; and maintains or will maintain adequate programs of investigation, research, promotion, and development with provision for public participation;

(3) the State provides satisfactory assurance that such fiscal control and fund accounting procedures will be adopted as may be necessary to assure proper disbursement of, and accounting for, Federal funds paid under this title to the State; and

(4) the State complies with the regulations of the Secretary issued under this section.

(d) REGULATIONS.—Within 90 days after the date of enactment of this Act, the Secretary shall issue, and may from time to time amend, regulations with respect to basic and discretionary rail service continuation subsidies.

(e) PAYMENT.—The Secretary shall pay to each State in the region an amount equal to its entitlement under subsection (b) (1) of this section. Any amounts which are not expended or committed by a State pursuant to subsection (b) during the ensuing fiscal year shall be returned by such State to the Secretary, who may use such amounts in accordance with subsection (b) (2) of this section.

(f) TERM.—A rail service continuation subsidy between a State, or a local or regional authority, and the Corporation or other responsible person (including a government entity) may not exceed a term of 2 years.

(g) RECEIPT, AUDIT, AND EXAMINATION.—(1) Each recipient of financial assistance under this section, whether in the form of grants, subgrants, contracts, subcontracts, or other arrangements, shall keep such records as the Secretary shall prescribe, including records which fully disclose the amount and disposition by such recipient of the proceeds of such assistance, the total cost of the project or undertaking in connection with which such assistance was given or used, the amount of that portion of the cost of the project supplied by other sources, and such other records as will facilitate an effective audit.

(2) The Secretary and the Comptroller General of the United States, or any of their duly authorized representatives shall, until the expiration of 3 years after completion of the project or undertaking referred to in paragraph (1) of this subsection, have access for the purpose of audit and examination to any books, documents, papers, and records of such receipts which in the opinion of the Secretary or the Comptroller General may be related or pertinent to the grants, contracts, or other arrangements referred to in such paragraph.

(h) WITHHOLDING.—If the Secretary, after reasonable notice and opportunity for a hearing to any State agency, finds that a State is not eligible for rail service continuation subsidies under subsections (c) and (d) of this section, payment to such State shall not be made until there is no longer any failure to comply.

(i) AUTHORIZATION FOR APPROPRIATIONS.—(1) There is authorized to be appropriated for the purposes of this section such sums as are necessary, not to exceed \$90,000,000 for each of the 2 fiscal years including and following the effective date of the final system plan. Such sums as are appropriated shall remain available until expended.

which is represented by a labor organization that has been duly authorized or recognized pursuant to the Railway Labor Act as its representative for purposes of collective bargaining;

(5) "representative of a class or craft of employees" means a labor organization which has been duly authorized or recognized as the collective bargaining representative of a class or craft of employees pursuant to the Railway Labor Act;

(6) "deprived of employment" means the inability of a protected employee to obtain a position by the normal exercise of his seniority rights with the Corporation after properly electing to accept employment therewith or, the subsequent loss of a position and inability, by the normal exercise of his seniority rights under the applicable collective bargaining agreements, to obtain another position with the Corporation: *Provided, however*, That provisions in existing collective bargaining agreements of a railroad in reorganization, which do not require a protected employee, in the normal exercise of seniority rights, to make a change in residence, in order to maintain his protection, will be preserved and will also be extended and be applicable to all other protected employees of that same craft or class. It shall not, however, include any deprivation of employment by reason of death, retirement, resignation, dismissal or disciplinary suspension for cause, failure to work due to illness or disability, nor any severance of employment covered by subsections (d) and (e) of section 503 of this title;

(7) "employee adversely affected with respect to his compensation" means a protected employee who suffers a reduction in compensation; this Act or the results thereof; and

(9) "change in residence" means transfer to a work location which is located either (A) outside a radius of 30 miles of the employee's former work location or (B) is located more than 30 normal highway route miles from his residence and also farther from his residence than was his former work location.

EMPLOYMENT OFFERS

SEC. 502. (a) APPLICABLE LAW.—The Corporation and, where applicable, the Association shall be subject to the provisions of the Railway Labor Act and shall be considered employers for purposes of the Railroad Retirement Act, Railroad Retirement Tax Act, and the Railroad Unemployment Insurance Act. The Corporation, in addition, shall, except as otherwise specifically provided by this Act, be subject to all Federal and State laws and regulations applicable to carriers by railroad.

(b) MANDATORY OFFER.—The Corporation shall offer employment, to be effective as of the date of a conveyance or discontinuance of service under the provisions of this Act, to each employee of a railroad in reorganization who has not already accepted an offer of employment by the Association, where applicable, or an acquiring railroad. Such offers of employment to employees represented by labor organizations will be confined to their same craft or class. The Corporation shall apply to said employees the protective provisions of this title.

(c) ASSOCIATION.—After the transfer of rail properties pursuant to section 303, the Association, in employing any additional employees, shall give priority consideration to employees of a railroad in reorganization and the provisions of this title shall apply to any such employees employed by the Association as if they were employees of the Corporation.

(2) One-half of the sums appropriated pursuant to the authorization of this subsection shall be reserved for allocation to States in the region under subsection (b) (1) of this section. One-half of the sums appropriated pursuant to the authorization of this subsection shall be reserved for distribution by the Secretary under subsection (b) (2) of this section.

(j) DEFINITION.—As used in this section, "rail service continuation subsidies" means subsidies calculated in accordance with the provisions of section 205(d) (3) of this Act to cover costs of operating adequate and efficient rail service, including where necessary improvement and maintenance of tracks and related facilities.

ACQUISITION AND MODERNIZATION LOANS

SEC. 403. (a) ACQUISITION.—If a State which is eligible for assistance under section 402(c) of this title or a local or regional transportation authority has made an offer to purchase any rail properties of a railroad pursuant to section 304(c) (2) (C) of this Act or other lawful authority, the Secretary is authorized to direct the Association to provide loans to such State or local or regional transportation authority not to exceed 70 per centum of the purchase price: *Provided, however*, That any recipient of such loan is no longer eligible for a rail service continuation subsidy pursuant to section 402 of this title.

(b) MODERNIZATION.—In addition to such acquisition loans, the Secretary is authorized to direct the Association to provide additional assistance not to exceed 70 per centum of the cost of restoring or repairing such rail properties to such condition as will enable safe and efficient rail transportation operations over such rail properties. Such financial assistance may be in the form of a loan or the guarantee of a loan. The Association shall provide such financial assistance as the Secretary may direct under this section and shall adopt regulations describing its procedures for such assistance. With the approval of the Secretary, a State may expend sums received by it under section 402 of this title for acquisition and modernization pursuant to this section.

TITLE V—EMPLOYEE PROTECTION

DEFINITIONS

SEC. 301. As used in this title unless the context otherwise requires— (1) "acquiring railroad" means a railroad, except the Corporation, which seeks to acquire or has acquired, pursuant to the provisions of this Act, all or a part of the rail properties of one or more of the railroads in reorganization, the Corporation, or a profitable railroad;

(2) "employee of a railroad in reorganization" means a person who, on the effective date of a conveyance of rail properties of a railroad in reorganization to the Corporation or to an acquiring railroad, has an employment relationship with either said railroad in reorganization or any carrier (as defined in parts I and II of the Interstate Commerce Act) which is leased, controlled, or operated by the railroad in reorganization except a president, vice president, treasurer, secretary, comptroller, and any other person who performs functions corresponding to those performed by the foregoing officers;

(3) "protected employee" means any employee of an acquiring railroad adversely affected by a transaction and any employee of a railroad in reorganization who on the effective date of this Act have not reached age 65;

(4) "class or craft of employees" means a group of employees, recognized and treated as a unit for purposes of collective bargaining,

40 Stat., 1283.  
26 USC 3201.  
45 USC 367.

49 USC 1,  
301.

ASSIGNMENT OF WORK

SEC. 503. The Corporation shall have the right to assign, allocate, reassign, reallocate, and consolidate work formerly performed on the rail properties acquired pursuant to the provisions of this Act from a railroad in reorganization to any location, facility, or position on its system provided it does not remove said work from coverage of a collective-bargaining agreement and does not infringe upon the existing classification of work rights of any craft or class of employees at the location or facility to which said work is assigned, allocated, re-assigned, reallocated, or consolidated and shall have the right to transfer to an acquiring railroad the work incident to the rail properties or facilities acquired by said acquiring railroad pursuant to this Act, subject, however, to the provisions of section 508 of this title.

COLLECTIVE-BARGAINING AGREEMENTS

SEC. 504. (a) INTERIM APPLICATION.—Until completion of the agreements provided for under subsection (d) of this section, the Corporation shall, as though an original party thereto, assume and apply on the particular lines, properties, or facilities acquired all obligations under existing collective-bargaining agreements covering all crafts and classes employed thereon, except that the Agreement of May 1936, Washington, D.C. and provisions in other existing job stabilization agreements shall not be applicable to transactions effected pursuant to this Act with respect to which the provisions of section 505 of this title shall be superseding and controlling. During this period, employees of a railroad in reorganization who have seniority on the lines, properties, or facilities acquired by the Corporation pursuant to this Act shall have prior seniority roster rights on such acquired lines, properties, or facilities.

(b) SINGLE IMPLEMENTING AGREEMENT.—On or before the date of the adoption of the final system plan by the Board of Directors of the Association as provided in section 207(c) of this Act, the representatives of the various classes or crafts of the employees of a railroad in reorganization involved in a conveyance pursuant to this Act and representatives of the Corporation shall commence negotiation of a single implementing agreement for each class and craft of employees affected providing (1) the identification of the specific employees of the railroad in reorganization to whom the Corporation offers employment; (2) the procedure by which those employees of the railroad in reorganization may elect to accept employment with the Corporation; (3) the procedure for acceptance of such employees into the Corporation's employment and their assignment to positions on the Corporation's system; (4) the procedure for determining the seniority of such employees in their respective crafts or classes on the Corporation's system which shall, to the extent possible, preserve their prior seniority rights; and (5) the procedure for determining equitable adjustment in rates of comparable positions. If no agreement with respect to the matters referred to in this subsection is reached by the end of 30 days after the commencement of negotiations, the parties shall within an additional 10 days select a neutral referee and, in the event they are unable to agree upon the selection of such a referee, then the National Mediation Board shall immediately appoint a referee. After a referee has been designated, a hearing on the dispute shall commence as soon as practicable. Not less than 10 days prior to the effective date of any conveyance pursuant to the provisions of

this Act, the referee shall resolve and decide all matters in dispute with respect to the negotiation of said implementing agreement or agreements and shall render a decision which shall be final and binding and shall constitute the implementing agreement or agreements between the parties with respect to the transaction involved. The salary and expenses of the referee shall be paid pursuant to the provisions of the Railway Labor Act.

(c) RELATIONSHIP TO OTHER PROVISIONS.—Notwithstanding failure for any reason to complete implementing agreements provided for in subsection (b) of this section, the Corporation may proceed with a conveyance of properties, facilities, and equipment pursuant to the provisions of this Act and effectuate said transaction: *Provided*, That all protected employees shall be entitled to all of the provisions of such agreements, as finally determined, from the time they are adversely affected as a result of any such conveyance.

(d) NEW COLLECTIVE-BARGAINING AGREEMENTS.—Not later than 60 days after the effective date of any conveyance pursuant to the provisions of this Act, the representatives of the various classes or crafts of the employees of a railroad in reorganization involved in a conveyance and representatives of the Corporation shall commence negotiations of new collective-bargaining agreements for each class and craft of employees covering the rates of pay, rules, and working conditions of employees who are employees of the Corporation, which collective-bargaining agreements shall include appropriate provisions concerning rates of pay, rules, and working conditions but shall not include any provisions for job stabilization resulting from any transaction effected pursuant to this Act which may exceed or conflict with those established or prescribed herein.

EMPLOYEE PROTECTION

SEC. 505. (a) EQUIVALENT POSITION.—A protected employee whose employment is governed by a collective-bargaining agreement will not, except as explicitly provided in this title, during the period in which he is entitled to protection, be placed in a worse position with respect to compensation, fringe benefits, rules, working conditions, and rights and privileges pertaining thereto.

(b) MONTHLY DISPLACEMENT ALLOWANCE.—A protected employee, who has been deprived of employment or adversely affected with respect to his compensation shall be entitled to a monthly displacement allowance computed as follows:

(1) Said allowance shall be determined by computing the total compensation received by the employee, including vacation allowances and monthly compensation guarantees, and his total time paid for during the last 12 months immediately prior to his being adversely affected in which he performed compensated service more than 50 per centum of each of such months, based upon his normal work schedule, and by dividing separately the total compensation and the total time paid for by 12, thereby producing the average monthly compensation and average monthly time paid for; and, if an employee's compensation in his current position is less in any month in which he performs work than the aforesaid average compensation, he shall be paid the difference, less any time lost on account of voluntary absences other than vacations, but said protected employee shall be compensated in addition thereto at the rate of the position filled for any time worked in excess of his average monthly time, *Provided*, However, That—

44 Stat. 577.  
45 USC 151.



(A) in determining compensation in his current employment the protected employee shall be treated as occupying the position, producing the highest rate of pay to which his qualifications and seniority entitle him under the applicable collective bargaining agreement and which does not require a change in residence;

(B) the said monthly displacement allowance shall be reduced by the full amount of any unemployment compensation benefits received by the protected employee and shall be reduced by an amount equivalent to any earnings of said protected employee in any employment subject to the Railroad Retirement Act and 50 per centum of any earnings in any employment not subject to the Railroad Retirement Act;

(C) a protected employee's average monthly compensation shall be adjusted from time to time thereafter to reflect subsequent general wage increases;

(D) should a protected employee's service total less than 12 months in which he performs more than 50 per centum compensated service based upon his normal work schedule in each of said months, his average monthly compensation shall be determined by dividing separately the total compensation received by the employee and the total time for which he was paid by the number of months in which he performed more than 50 per centum compensated service based upon his normal work schedule; and

(E) the monthly displacement allowance provided by this section shall in no event exceed the sum of \$2,500 in any month except that such amount shall be adjusted to reflect subsequent general wage increases.

(2) A protected employee's average monthly compensation under this section shall be based upon the rate of pay applicable to his employment and shall include increases in rates of pay not in fact paid but which were provided for in national railroad labor agreements generally applicable during the period involved.

(3) If a protected employee who is entitled to a monthly displacement allowance served as an agent or a representative of a class or craft of employees on either a full- or part-time basis in the 12 months immediately preceding his being adversely affected, his monthly displacement allowance shall be computed by taking the average of the average monthly compensation and a average monthly time paid for of the protected employees immediately above and below him on the same seniority roster or his own monthly displacement allowance, whichever is greater.

(4) An employee and his representative shall be furnished with a protected employee's average monthly compensation and a average monthly time paid for, computed in accordance with the terms of this subsection, together with the data upon which such computations are based, within 30 days after the protected employee notifies the Corporation in writing that he has been deprived of employment or adversely affected with respect to his compensation.

(c) DURATION OF DISPLACEMENT ALLOWANCE.—The monthly displacement allowance provided for in subsection (b) of this section shall continue until the attainment of age 65 by a protected employee with 5 or more years of service on the effective date of this Act and, in the case of a protected employee who has less than 5 years service on such date, shall continue for a period equal to his total prior years of service: *Provided*, That such monthly displacement allowance shall terminate:

nate upon the protected employee's death, retirement, resignation, or dismissal for cause; and shall be suspended for the period of disciplinary suspension for cause, failure to work due to illness or disability, voluntary furlough, or failure to retain or obtain a position available to him by the exercise of his seniority rights in accordance with the provisions of this section.

(4) TRANSFER.—(1) A protected employee who has been deprived of employment may be required by the Corporation, in inverse seniority order and upon reasonable notice, to transfer to any bona fide vacancy for which he is qualified in his same class or craft of employee on any part of the Corporation's system and shall then be governed by the collective-bargaining agreement applicable on the seniority district to which transferred. If such transfer requires a change in residence, any such protected employee may choose (A) to voluntarily furlough himself at his home location and have his monthly displacement allowance suspended during the period of voluntary furlough, or (B) to be severed from employment upon payment to him of a separation allowance computed as provided in subsections (e) and (f) of this section, which separation allowance shall be in lieu of all other benefits provided by this title.

(2) Such protected employee shall not be required to transfer to a location requiring a change in residence unless there is a bona fide need for his services at such location. Such bona fide need for services contemplates that the transfer be to a position which has not and cannot be filled by employees who are not required to make a change in residence in the seniority district involved and which, in the absence of this section, would have required the employment of a new employee.

(3) Such protected employee who, at the request of the Corporation, has once accepted and made a transfer to a location requiring a change in residence shall not be required again to so transfer for a period of 3 years.

(4) Transfers to vacancies requiring a change in residence shall be subject to the following:

(A) The vacancy shall be first offered to the junior qualified protected employee deprived of employment in the seniority district where the vacancy exists, and each such employee shall have 20 days to elect one of the options set forth in paragraph (1) of this subsection. If that employee elects not to accept the transfer, it will then be offered in inverse seniority order to the remaining qualified, protected employees deprived of employment on the seniority district, who will each have 20 days to elect one of the options set forth in paragraph (1) of this subsection.

(B) If the vacancy is not filled by the procedure in paragraph (A) of this subsection, the vacancy will then be offered in the inverse order of seniority to the qualified protected employees deprived of employment on the system and each of such employees will be afforded 30 days to elect one of the options set forth in paragraph (1) of this subsection.

(C) The provisions of this paragraph shall not prevent the adoption of other procedures pursuant to an agreement made by the Corporation and representative of the class or craft of employees involved.

(e) SEPARATION ALLOWANCE.—A protected employee who is tendered and accepts an offer by the Corporation to resign and sever his employment relationship in consideration of payment to him of a separation allowance, and any protected employee whose employment

relationship is severed in accordance with subsection (d) of this section, shall be entitled to receive a lump-sum separation allowance not to exceed \$50,000 in lieu of all of other benefits provided by this title. Said lump-sum separation allowance, in the case of a protected employee who had not less than 3 nor more than 5 years of service as of the date of this Act, shall amount to 270 days' pay at the rate of the position last held and, in the case of a protected employee having had 5 or more years' service, shall amount to the number of days' pay indicated below at the rate of the position last held dependent upon the age of the protected employee at the time of such termination of employment:

60 or under.....	360 days' pay
61.....	300 days' pay
62.....	240 days' pay
63.....	180 days' pay
64.....	120 days' pay.

(f) **TERMINATION ALLOWANCE.**—The Corporation may terminate the employment of an employee of a railroad in reorganization, who has less than 3 years' service as of the effective date of this Act: *Provided, however,* That in such event the terminated employee shall be entitled to receive a lump sum separation allowance in an amount determined as follows:

2 to 3 years' service.....	180 days' pay at the rate of the position last held.
1 to 2 years' service.....	90 days' pay at the rate of the position last held.
Less than 1 year's service.....	3 days' pay at the rate of the position last held for each month of service.

(g) **MOVISO EXPENSE BENEFITS.**—Any protected employee who is required to make a change of residence as the result of a transaction shall be entitled to the following benefits—

(1) Reimbursement for all expenses of moving his household and other personal effects, for the traveling expense of himself and members of his family, including living expenses for himself and his family, and for his own actual wage loss, not to exceed 10 working days. *Provided,* That the Corporation or acquiring railroad shall, to the same extent provided above, assume said expenses for any employee furloughed within 3 years after changing his point of employment as a result of a transaction, who elects to move his place of residence back to his original point of employment. No claim for reimbursement shall be paid under the provisions of this section unless such claim is presented to the Corporation or acquiring railroad within 90 days after the date on which the expenses were incurred.

(2) (A) (i) If the protected employee owns, or is under a contract to purchase, his own home in the locality from which he is required to move and elects to sell said home, he shall be reimbursed for any loss suffered in the sale of his home for less than its fair market value. In each case the fair market value of the home in question shall be determined as of a date sufficiently prior to the date of the transaction so as to be unaffected thereby. The Corporation or an acquiring railroad shall in each instance be afforded an opportunity to purchase the home at such fair market value before it is sold by the employee to any other person.

(ii) A protected employee may elect to waive the provisions of paragraph (2) (A) (i) of this subsection and to receive, in lieu thereof, an amount equal to his closing costs which are ordinarily paid for and assumed by a seller of real estate in the jurisdiction

in which the residence is located. Such costs shall include a real estate commission paid to a licensed realtor (not to exceed \$3,000 or 6 per centum of sale price, whichever is less), and any prepayment penalty required by the institution holding the mortgage; such costs shall not include the payment of any "points" by the seller.

(B) If the protected employee holds an unexpired lease on a dwelling occupied by him as his home, he shall be protected from all loss and cost in securing the cancellation of said lease.

(C) No claim for costs or loss shall be paid under the provisions of this paragraph unless the claim is presented to the Corporation or an acquiring railroad within 90 days after such costs or loss are incurred.

(D) Should a controversy arise with respect to the value of the home, the costs or loss sustained in its sale, the costs or loss under a contract for purchase, loss or cost in securing termination of a lease, or any other question in connection with these matters, it shall be decided through joint conference between the employee, or his representative, and the Corporation or an acquiring railroad. In the event they are unable to agree, the dispute or controversy may be referred by either party to a board of competent real estate appraisers, selected in the following manner: One to be selected by the employee or his representative and one by the Corporation or acquiring railroad and these two, if unable to agree upon a valuation within 30 days, shall endeavor by agreement within 10 days thereafter to select a third appraiser, or to agree to a method by which a third appraiser shall be selected, and, failing such agreement, either party may request the National Mediation Board to designate, within 10 days a third qualified real estate appraiser whose designation will be binding upon the parties. A decision of a majority of the appraisers shall be required and said decision shall be final and conclusive. The salary and expenses of the third or neutral appraiser, including the expenses of the appraisal board, shall be borne equally by the parties to the proceedings. All other expenses shall be paid by the party incurring them, including the compensation of the appraiser selected by such party.

(h) **APPLICATION OF TITLE.**—Should a railroad rearrange or adjust its forces in anticipation of a transaction with the purpose or effect of depriving a protected employee of benefits to which he otherwise would have become entitled under this title, the provisions of this title will apply to such employee.

CONTRACTING OUT

Sec. 506. All work in connection with the operation or services provided by the Corporation on the rail lines, properties, equipment, or facilities acquired pursuant to the provisions of this Act and the maintenance, repair, rehabilitation, or modernization of such lines, properties, equipment, or facilities which has been performed by practice or agreement in accordance with provisions of the existing contracts in effect with the representatives of the employees of the classes or crafts involved shall continue to be performed by said Corporation's employees, including employees on furlough. Should the Corporation lack a sufficient number of employees, including employees on furlough, and be unable to hire additional employees, to perform the work required, it shall be permitted to subcontract that part of such

work which cannot be performed by its employees, including those on furlough, except where agreement by the representatives of the employees of the classes or crafts involved is required by applicable collective-bargaining agreements. The term "unable to hire additional employees" as used in this section contemplates establishment and maintenance by the Corporation of an apprenticeship, training, or recruitment program to provide an adequate number of skilled employees to perform the work.

ARBITRATION

Sec. 507. Any dispute or controversy with respect to the interpretation, application, or enforcement of the provisions of this title, except section 504(d) and those disputes or controversies provided for in subsection (g)(2)(D) of section 505 and subsection (b) of section 504 which have not been resolved within 90 days, may be submitted by either party to an Adjustment Board for a final and binding decision thereon as provided in section 3 Second, of the Railway Labor Act, in which event the burden of proof on all issues so presented shall be upon the Corporation or, where applicable, the Association.

44 Stat. 578; 80 Stat. 208. 45 USC 153.

ACQUIRING RAILROADS

Sec. 508. An acquiring railroad shall offer such employment and afford such employment protection to employees of a railroad from which it acquires properties or facilities pursuant to this Act, and shall further protect its own employees who are adversely affected by such acquisition, as shall be agreed upon between the said acquiring railroad and the representatives of such employees prior to said acquisition: *Provided, however,* That the protection and benefits provided for protected employees in such agreements shall be the same as those specified in section 505 of this title: *And provided further, however,* That unless and until such agreements are reached, the acquiring railroad shall not enter into purchase agreements pursuant to section 303 of this Act.

PAYMENTS OF BENEFITS

Sec. 509. The Corporation, the Association (where applicable), and acquiring railroads, as the case may be, shall be responsible for the actual payment of all allowances, expenses, and costs provided protected employees pursuant to the provisions of this title. The Corporation, the Association (where applicable), and acquiring railroads shall then be reimbursed for such actual amounts paid protected employees, not to exceed the aggregate sum of \$250,000,000, pursuant to the provisions of this title by the Railroad Retirement Board upon certification to said Board by the Corporation, the Association (where applicable), and acquiring railroads of the amounts paid such employees. Such reimbursement shall be made from a separate account maintained in the Treasury of the United States to be known as the Regional Rail Transportation Protective Account. There is hereby authorized to be appropriated to such protective account annually such sums as may be required to meet the obligations payable hereunder, not to exceed in the aggregate, however, the sum of \$250,000,000. There is further authorized to be appropriated to the Railroad Retirement Board annually such sums as may be necessary to provide for additional administrative expenses to be incurred by the Board in the performance of its functions under this section.

Appropriation.

TITLE VI—MISCELLANEOUS PROVISIONS

RELATIONSHIP TO OTHER LAWS

Sec. 601. (a) ANTI-TRUST.—(1) Except as specifically provided in paragraph (2) of this subsection, no provision of this Act shall be deemed to convey to any railroad or employee or director thereof any immunity from civil or criminal liability, or to create defenses to actions, under the antitrust laws.

(2) The antitrust laws are inapplicable with respect to any action taken to formulate or implement the final system plan where such action was in compliance with the requirements of such plan.

(3) As used in this subsection, "antitrust laws" includes the Act of July 2, 1890 (ch. 647, 26 Stat. 209), as amended; the Act of October 15, 1914 (ch. 323, 38 Stat. 780), as amended; the Federal Trade Commission Act (38 Stat. 717), as amended; sections 73 and 74 of the Act of August 27, 1894 (28 Stat. 570), as amended; the Act of June 19, 1936 (ch. 592, 49 Stat. 1526), as amended; and the antitrust laws of any State or subdivision thereof.

(b) COMMERCE AND BANKRUPTCY.—The provisions of the Interstate Commerce Act (49 U.S.C. 1 et seq.) and the Bankruptcy Act (11 U.S.C. et seq.) are inapplicable to transactions under this Act to the extent necessary to formulate and implement the final system plan whenever a provision of any such Act is inconsistent with this Act.

(c) ENVIRONMENT.—(1) The provisions of section 102(2)(C) of the National Environmental Policy Act of 1969 (42 U.S.C. 4332-2)(C) shall not apply with respect to any action taken under authority of this Act before the effective date of the final system plan.

(d) NORTHWEST CORRIDOR.—(1) Rail properties designated in accordance with section 206(c)(1)(C) of this Act shall be leased or may (at its option) be purchased or otherwise acquired by the National Railroad Passenger Corporation. The Corporation shall negotiate an appropriate sale or lease agreement with the National Railroad Passenger Corporation as provided in the final system plan.

(2) Properties acquired by purchase, lease, or otherwise pursuant to this subsection shall be improved in order to meet the goal set forth in section 206(a)(3) of this Act, relating to improved high-speed passenger service, by the earliest practicable date after the date of enactment of this Act.

(3) The Secretary shall begin the necessary engineering studies and improvements upon enactment.

(4) The final system plan shall provide for any necessary coordination with freight or commuter services of use of the facilities designated in section 206(c)(1)(C) of this Act. Such coordination may be effectuated through a single operating entity, designated in the final system plan, or as mutually agreed upon by the interested parties.

(5) Construction or improvements made pursuant to this subsection may be made in consultation with the Corps of Engineers.

(e) EMERGENCY SERVICE.—Section 1(16) of the Interstate Commerce Act (49 U.S.C. 1(16)) is amended by inserting "(a)" before the word "Whenever" in the first sentence and adding the following new paragraph:

"(b) Whenever any carrier by railroad is unable to transport the traffic offered it because—  
"(1) its cash position makes its continuing operation impossible;  
"(2) it has been ordered to discontinue any service by a court:

15 USC 2. 15 USC 12. 15 USC 58. 15 USC 8, 9. 15 USC 13.

24 Stat. 379. 30 Stat. 544.

83 Stat. 853.

41 Stat. 477.

"(3) it has abandoned service without obtaining a certificate from the Commission pursuant to this section; the Commission may, upon the same procedure as provided in paragraph (1) of this section, make such just and reasonable directions available to the handling, routing, and movement of the traffic as in the opinion of the Commission will best promote the service in the interest of the public and the commerce of the people subject to the following conditions:—

"(A) Such direction shall be effective for no longer than 60 days unless extended by the Commission for cause shown for an additional designated period, not to exceed 180 days.

"(B) No such directions shall be issued that would cause a carrier to operate in violation of the Federal Railroad Safety Act of 1970 (45 U.S.C. 421) or that would substantially impair the ability of the carrier so directed to serve adequately its own patrons or to meet its outstanding common carrier obligations.

"(C) The directed carrier shall not, by reason of such Commission direction, be deemed to have assumed or to become responsible for the debts of the other carrier.

"(D) The directed carrier shall hire employees of the other carrier to the extent such employees had previously performed the directed service for the other carrier, and, as to such employees as shall be so hired, the directed carrier shall be deemed to have assumed all existing employment obligations and practices of the other carrier relating thereto, including, but not limited to, agreements governing rate of pay, rules and working conditions, and all employee protective conditions commencing with and for the duration of the direction.

"(E) Any order of the Commission entered pursuant to this paragraph shall provide that if, for the period of its effectiveness, the cost, as hereinafter defined, of handling, routing, and moving the traffic of another carrier over the other carrier's lines of road shall exceed the direct revenues therefor, then upon request, payment shall be made to the directed carrier, in the manner hereinafter provided and within 90 days after expiration of such order, of a sum equal to the amount by which such cost has exceeded said revenues. The term 'cost' shall mean those expenditures made or incurred in or attributable to the operations as directed, including the rental or lease of necessary equipment, plus an appropriate allocation of common expenses, overheads, and a reasonable profit. Such cost shall be then currently recorded by the carrier or carriers in such manner and on such forms as by general order may be prescribed by the Commission and shall be submitted to and subject to audit by the Commission. The Commission shall certify promptly to the Secretary of the Treasury the amount of payment to be made to said carrier or carriers under the provisions of this paragraph. Payments required to be made to a carrier under the provisions of this paragraph shall be made by the Secretary of the Treasury from funds hereby authorized to be appropriated in such amounts as may be necessary for the purpose of carrying out the provisions hereof."

"Cost."

ANNUAL EVALUATION BY THE SECRETARY

Sec. 602. As part of his annual report each year, the Secretary shall transmit to Congress each year a comprehensive report on the effectiveness of the Association and the Corporation in implementing the purposes of this Act, together with any recommendations for additional legislative or other action.

Report to Congress.

FREIGHT RATES FOR RECYCLABLES

Sec. 603. The Commission shall, by expedited proceedings, adopt appropriate rules under the Interstate Commerce Act (49 U.S.C. 1 et seq.) which will eliminate discrimination against the shipment of recyclable materials in rate structures and in other Commission practices where such discrimination exists.

SEPARABILITY

Sec. 604. If any provision of this Act or the application thereof to any person or circumstances is held invalid, the remainder of this Act and the application of such provision to other persons or circumstances shall not be affected thereby.

Approved January 2, 1974.

LEGISLATIVE HISTORY:

HOUSE REPORTS: No. 93-620 (Comm. on Interstate and Foreign Commerce) and No. 93-744 (Comm. of Conference). CONGRESSIONAL RECORD, Vol. 119 (1973):

Nov. 6, considered and passed House.

Dec. 11, considered and passed House.

Dec. 13, Proceedings voted; reconsidered and passed Senate, amended.

Dec. 20, House agreed to conference report.

Dec. 21, Senate agreed to conference report.

WEEKLY COMPILATION OF PRESIDENTIAL DOCUMENTS, Vol. 10, No. 1 (1974):

Jan. 2, Presidential statement.





Public Law 93-488  
93rd Congress, S. J. Res. 250  
October 26, 1974

## Joint Resolution

To extend the Regional Rail Reorganization Act's reporting date, and for other purposes.

Whereas the Senate and Congress recently enacted major reorganization legislation to prevent economic disaster in the area served by the Penn Central Railroad and six other bankrupt Class I railroads (Regional Rail Reorganization Act of 1973, Public Law 93-286); and

Whereas such legislation provided for the immediate establishment of a new entity, the United States Railway Association, to plan such reorganization and to adopt and release a "preliminary system plan" within 300 days after the enactment of the legislation, and to prepare and submit the "final system plan" to the directors of the Association within 420 days after enactment, pursuant to a funding authorization not to exceed \$26,000,000; and

Whereas, as a result of circumstances not within the control of the Congress or the United States Railway Association, the Association was unable to commence full-scale operations until more than four months later than was contemplated in the legislation, and whereas the Association will not be able to prepare reorganization plans for an efficient, adequate, safe, and reliable rail transportation system in the Midwest and Northeast region of the United States unless it is granted an additional 120 days in which to adopt the preliminary system plan and an additional 120 days in which to prepare the final system plan and authorization for funding for such additional period; and

Whereas such legislation provided a system of rail service continuation subsidies so that shippers and local and State governments could, on a matching basis with the Federal Government, continue rail service on selected lines within a State which might not otherwise continue to be operated; and

Whereas confusion has been engendered by the failure to include in such legislation a definition of which rail services are eligible for such subsidies: Now, therefore, be it

*Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That (a) section 207 (a) (1) Regional Rail Reorganization Act of 1973 (87 Stat. 985) is amended by striking the figure "300" in the first sentence thereof and substituting therefor the figure "420";*

*(b) Section 207 (c) of the Regional Rail Reorganization Act of 1973 (87 Stat. 985) is amended by striking the figure "420" in the first sentence thereof and substituting therefor the figure "540";*

*(c) Section 214 (c) of the Regional Rail Reorganization Act of 1973 (87 Stat. 985) is amended by striking the figure "\$40,000,000" and substituting therefor the figure "\$26,000,000";*

*(d) Section 402 (c) of the Regional Rail Reorganization Act of 1973 (87 Stat. 985) is amended by inserting "(1)" before the first 45 USC 762 sentence thereof, redesignating paragraphs (1), (2), (3), and (4) as subparagraphs (A), (B), (C), and (D), respectively, and by adding the following new paragraph:*

*"(2) Rail freight services eligible for rail service continuation rail service subsidies pursuant to subsection (b) of this section are—*  
*"(A) those rail services of railroads in reorganization in the region which the final system plan does not designate to be eligible; and*  
*"(B) those rail services in the region which have been at any time during the 5 year period prior to the date of enactment of*

88 STAT. 1465

Pub. Law 93-488

- 2 -

October 26, 1974

this Act, or which are subsequent to the date of enactment of this Act, owned, leased, or operated by a State agency or a local or regional transportation authority or with respect to which a State, a political subdivision thereof, or a local or regional transportation authority has invested at any time during the 5 year period prior to the date of enactment of this Act, or invests subsequent to the date of enactment of this Act, substantial sums for improvement or maintenance of rail service; and

"(C) those rail services in the region with respect to which the Commission issues a certificate of abandonment effective on or after the date of enactment of this Act."

45 USC 763.

*(e) The last sentence of section 403 (a) of the Act is amended to read: "Provided, however, That any rail service for which a State agency or local or regional transportation authority receives such loan is no longer eligible for a rail service continuation subsidy pursuant to section 402 of this title."*

Ante, p. 1464.

Approved October 26, 1974.

### LEGISLATIVE HISTORY:

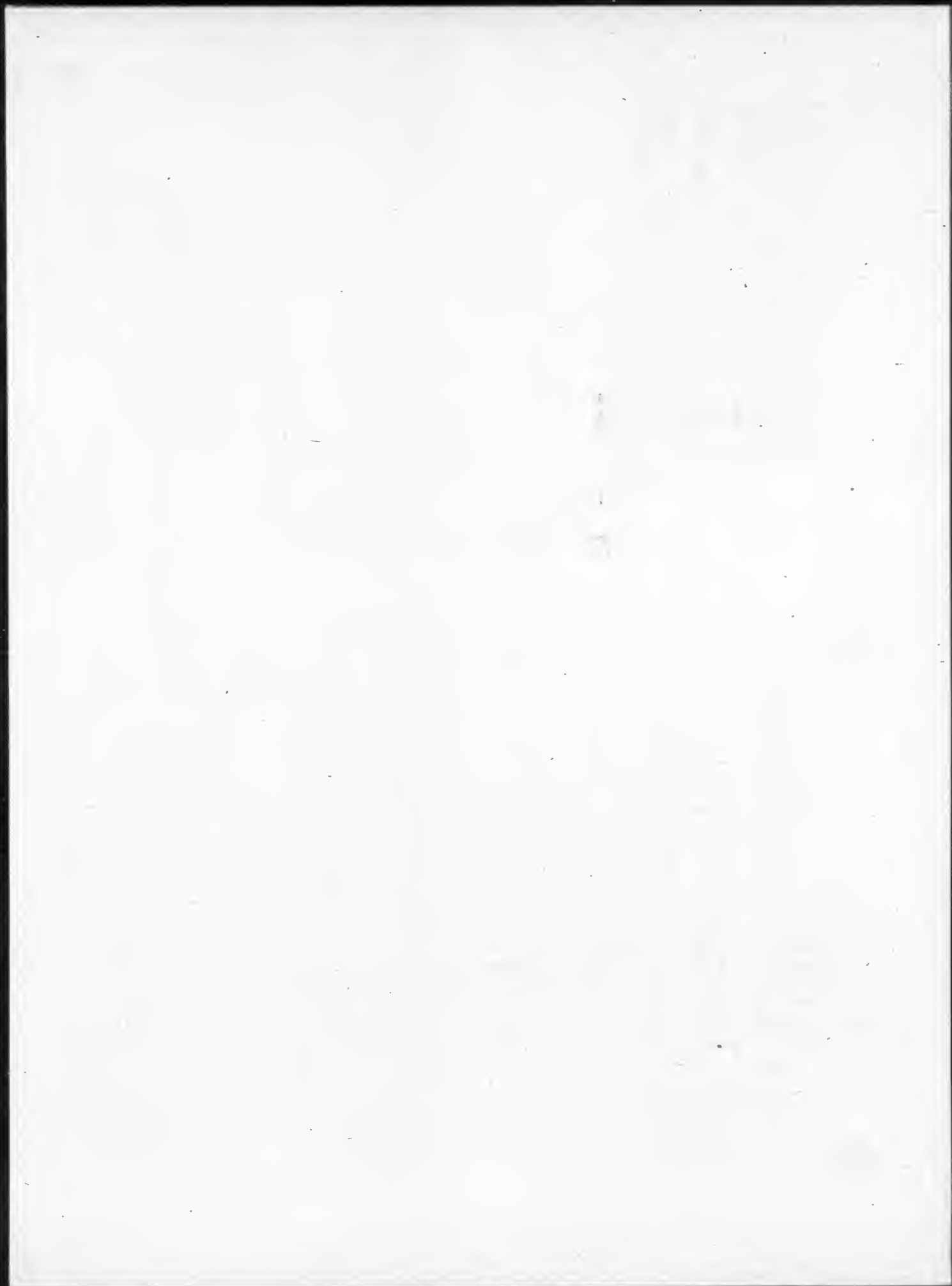
CONGRESSIONAL RECORD, Vol. 120 (1974):  
Oct. 10, considered and passed Senate.  
Oct. 15, considered and passed House.

88 STAT. 1464

45 USC 701 note.

45 USC 717.

45 USC 724.



## APPENDIX B

# Financial Condition of the Railroad Industry

The financial condition of the carriers to be consolidated under USRA auspices is precarious. Not only are the carriers bankrupt, several have run out of cash and might have ceased operations without interim grants from the federal government.

Conditions specific to the Region undoubtedly have contributed to the intensity of these financial difficulties, but there are indications that railroad financial conditions are weak across the industry. Railroad earnings have been considered substandard for almost all the post-World War II period. Warnings have been issued at many junctures in the interim concerning the precariously low and erratic nature of earnings for such an important part of our national transportation system.<sup>1</sup> The following discussion will attempt to highlight the current financial condition of the U.S. railroad industry and provide comparative historical data for the bankrupt candidates for consolidation in the Region.

No single measure of financial condition is adequate to delineate and assess the financial condition of the railroads. Railroad accounts are highly complex, and several basic problems must be recognized.

First, accounting entries are not always matched by rail cash transactions and often are subject to man-

agerial discretion as to timing and amount. The standard example is depreciation, a bookkeeping entry allowable as an expense but not representing cash disbursement. The profits reported depend on the amount of depreciation expenses recorded, and the funds generated by the activities of firms, commonly termed cash flow, will be influenced at the same time.

Second, railroads using retirement (betterment) accounting can exercise even more discretionary control over many forms of reported income, since retirement accounting results in capital account adjustment only in the year in which the property is retired or replaced.<sup>2</sup>

Third, railroads have substantial non-transportation activities and investments whose income has been used to augment transport earnings. Fourth, aggregate data may be misleading since they are comprised of many individual railroads of widely disparate nature which operate in geographic regions of varying economic makeup. Finally, extensive interlocking ownership complicates analysis of rail accounts.

The size of the Penn Central's (PC) financial disaster alone has strongly influenced industry statistics. For example, ordinary net income (after fixed charges) for Class I railroads in 1970 amounted to \$226.6 million.

<sup>1</sup> For example, see the quite current passages on pp. 228-229 in James C. Nelson, *Railroad Transportation and Public Policy* (Brookings, 1959).

<sup>2</sup> Retirement accounting results in a single end-of-life charge rather than annual depreciation charges.

Penn Central alone lost \$325.7 million, or more than the industry profit. The financial results of seven bankrupts<sup>3</sup> are incorporated into the Eastern District statistics reported by the ICC for 30 Class I railroads, and the Eastern District showed a deficit of \$276.3 million on 1970 ordinary net income.<sup>4</sup>

### Net Railway Operating Income

An indicator of the return or profitability from railroad operations alone is net railway operating income (NROI), which is measured before the deduction of fixed charges for capital and excludes income from nonrail activities. Thus, ignoring "other" sources of income, NROI represents flows of income available to reward suppliers of transportation capital. The level of this flow can be influenced by whether equipment is leased and charged as an operating cost or purchased and incurring fixed charges.

Table 1 shows NROI for railroads of Class I summarized for the U.S. and the Eastern District. The Eastern District is subdivided into the six bankrupt Class I carriers under USRA purview as of January, 1975 (inclusive of the Erie Lackawanna) and the "Other Eastern" Class I railroads.

Class I railroads as a group show a distinct decline in NROI over the postwar era. The decline in NROI for the Eastern District railroads has been dramatic, falling from \$439 million in 1952 to \$38.6 million in 1972, and substantial NROI deficits were incurred in 1970 and 1971. A slight recovery to \$50.1 million was experienced in 1973, and the first nine months of 1974 have continued the upward trend.

Not surprisingly, the USRA bankrupt carriers as a whole and the PC in particular have recorded deficits in NROI since 1967. The consolidated bankrupt carriers bottomed out in 1970 with a NROI deficit of \$256.2 million, of which \$236.5 million was attributable to the PC, and in 1973 they showed a deficit of \$123.7 million with PC contributing \$92.7 million. Thus, in 1973, the PC was responsible for about 75 percent of the net operating losses for the USRA bankrupts, though all showed 1973 deficits on NROI.

There are three reservations regarding the NROI figures which merit discussion. First, railroad operations, particularly in the east, have included substantial passenger service in years past. The amount of the passenger service deficit has been much disputed, but its existence seems unquestionable, and Amtrak's large deficits are confirmation. The decline in NROI, however, would not be eliminated by cutting out the pas-

<sup>3</sup> The eighth, the Lehigh & Hudson River Railroad (L&HRR) is not included in Class I statistics.

<sup>4</sup> For a more complete discussion, see Final Report of the Task Force on Railroad Productivity, *Improving Railroad Productivity*, Chapter III; also, U.S. Senate, Committee on Commerce, *The Penn Central and Other Railroads*, (Dec. 1972) Special Staff Report (92:2), p. 235 ff. Figures are summarized in AAR, *Yearbook on Railroad Facts*, 1973.

TABLE 1.—Net railway operating income for Class I railroads<sup>1</sup>

[In millions of dollars]

	United States	Eastern District railroads		
		All Eastern	USRA bankrupts <sup>2</sup>	Other Eastern
1929.....	1,251.7	634.6		
1930.....	588.8	331.1		
1947.....	790.7	304.4		
1952.....	1,078.2	439.1		
1957.....	922.3	385.3		
1962.....	725.7	196.6		
1967.....	676.4	174.6	-16.2	190.8
1968.....	677.6	139.7	-54.4	194.1
1969.....	654.7	118.7	-60.2	187.9
1970.....	485.9	-101.6	-256.2	154.6
1971.....	605.5	-32.3	-184.5	152.2
1972.....	827.7	38.6	-141.5	180.1
1973.....	849.3	50.1	-123.7	173.8

<sup>1</sup> After taxes, but before other income or fixed charges.

<sup>2</sup> Excludes Amtrak.

<sup>3</sup> 6 bankrupts, includes Erie Lackawanna, but excludes Lehigh & Hudson River RR., as non-Class I.

Source: Association of American Railroads.

senger deficit, according to most estimates. The reversal of the downward trend in recent years would be expected, as Amtrak assumed most of the financial burden of passenger service in 1971.

Second, the Eastern District and "Other Eastern" figures include the Long Island Railroad (LIRR), primarily a commuter line. In 1973, the LIRR contributed a deficit of about \$79 million to the Eastern District. Third, operating income is probably an overstatement of railroad earning power due to the apparent deterioration of physical plant during the past few years and the rapid inflation in replacement costs.

### Rate of Return on Net Investment

The relationship of net railway operating income to net investment in transportation property is representative of the rate of return to railroad operations. It is shown in Table 2 for the same subgrouping of railroads discussed in the previous section. The rate of return thus defined gives a clear indication of the problems of the railroad industry: it has been historically low and declining.

At no time in the postwar period has the rate of return for Class I railroads in the U.S. has been as high as 5 percent, and the rate has trended downward gradually from 1952 to 1972. New lows have been set in each successive economic downturn and, although returns have rebounded over the past 3 years, the 1973 rate is hardly attractive in terms of new investment.

Returns on transportation investment by the railroads are unquestionably below the cost of raising capital in money markets and are substantially below the rates which could be earned if available funds were channeled by rail management into certificates of de-



TABLE 2.—Rate of return for Class I railroads<sup>1</sup>

(In millions of dollars)

	United States <sup>2</sup>	Eastern District railroads		
		All Eastern	USRA bankrupts <sup>3</sup>	Other Eastern
1929.....	5.30	6.08		
1939.....	2.56	3.14		
1947.....	3.44	3.02		
1952.....	4.16	3.90		
1957.....	3.36	3.29		
1962.....	2.74	1.80		
1967.....	2.46	1.58	-0.28	3.57
1968.....	2.44	1.27	-0.98	3.56
1969.....	2.36	1.10	-1.29	3.44
1970.....	1.73	-.93	-4.80	2.78
1971.....	2.47	-30	-3.57	2.74
1972.....	2.96	.37	-2.83	3.25
1973.....	3.04	.48	-2.54	3.16

<sup>1</sup> Net railway operating income to net investment in transportation property—including cash, materials, and supplies.

<sup>2</sup> Excludes Amtrak.

<sup>3</sup> 6 bankrupts, includes Erie Lackawanna, but excludes Lehigh & Hudson River R.R., as non-Class I.

Source: Association of American Railroads.

posit or even simple savings accounts. The rail rates are also below those earned by almost all other industrial sectors in the economy, and most comparisons of financial performance show rail near the bottom.<sup>4</sup> Such low rates will not allow recovery of invested capital, much less attract new capital required for continuation and improvement of rail operations.

Eastern District returns are almost uniformly lower than the U.S. average, though the prosperous past of the east is reflected in the high returns prior to World War II. The USRA bankrupts as a whole, recording NROI deficits for all the years tabulated, also have shown negative rates of return, which sank to almost -5 percent in 1970 before recovering in the most recent years. The PC is responsible for most of the deficit, but all six railroads considered were recording negative rates of return. The remaining Eastern District Class I railroads have shown moderate stability in their average rates of return for the last seven years.

The very long accounting lives of much railroad equipment cause two types of difficulty in evaluating rate of return. First, the capital investment which took place twenty or more years ago is in many instances obsolete due to changed circumstances in goods shipment and production locations, although it has not been fully depreciated. Thus, the amount of ongoing investment in transportation facilities which is still useful would be less than that stated on the books.

For example, passenger equipment which was surplus or damaged beyond serviceability has remained on the books over long periods of time, overstating the ac-

<sup>4</sup> See, for example, "Monthly Letter," First National City Bank of New York, April, 1973, as displayed in *Improving Railroad Productivity*, p. 80.

tual "useful" investment in place.<sup>5</sup> However, excessive capitalization does not appear to be a problem, since the ICC ordered adequately supported adjustments in book value in 1963, and more than 85 percent of the gross investment on the books is new gross capital expenditure since 1947.<sup>7</sup> Further, a convincing offset is the understated value of that investment which is "useful" relative to its replacement cost in an inflationary economy, again, emphasized by the long service life of rail investment. Replacement or reproduction cost certainly would be high relative to historical costs.

One attempt to account for these problems, especially the latter, has assumed that gross capital expenditures represent a more accurate measure than depreciation of the capital assets consumed in the industry. Further assuming that investment has been purely to maintain plant since 1950, capital expenditures charged against cash flow based on NROI (NROI plus depreciation) will then yield true operating return on transport investment (as of 1950). The implied rates of return are uniformly lower when this adjustment is made, with no annual rate over two percent since 1962, and very little or no return at all in six of the nine years from 1964 to 1972.<sup>8</sup>

#### Rail and Crosstie Replacement

The low rates of return earned on transport investment by Class I railroads resulted in a sharp downward trend in the installation of rails and ties from the 1940's into the early 1960's. Figures 1 and 2 compare the installation rates for rail and crossties required to maintain the rail system while satisfying assumed life cycles, sixty years for rail and thirty-five years for crossties. The declining rates required to maintain plant, shown in Figures 1 and 2, reflect continued abandonment at a modest rate and otherwise are premised on replacement needs which follow a straight linear proportion of existing plant. There are some reservations about even this conservative assumption about the maintenance of the existing rail plant, but the sharp downward trends into the early 1960's clearly were inadequate to maintain current trackage.

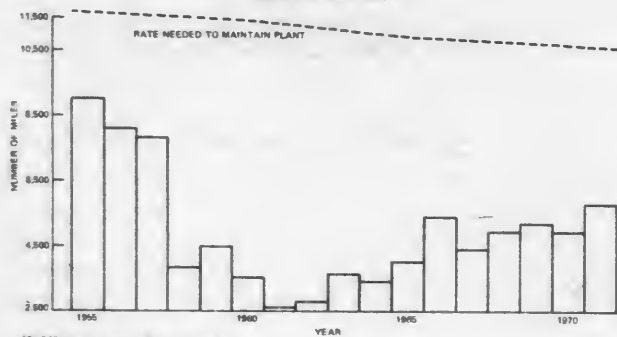
Rail and tie replacement rates have risen moderately and erratically since 1961, but have never approached the required rates, especially for rail. The rail-crosstie situation may be worse than indicated in the figures, since there has been a gap over such a long time span, implying an older than average plant and a need for more than normal replacement to catch up. In 1970, the

<sup>5</sup> Depreciation on this obsolete passenger equipment was being charged as a solely related cost of current passenger service; see Porter K. Wheeler, "Amtrak: Economic Aspects of Federal Railroad," Transportation Research Forum *Proceedings* (1972). The existence of obsolete investment could imply that capital consumption charged to past production had been understated, meaning that past earnings were in fact lower still.

<sup>7</sup> *Improving Railroad Productivity*, Final Report of the Task Force on Railroad Productivity, p. 88.

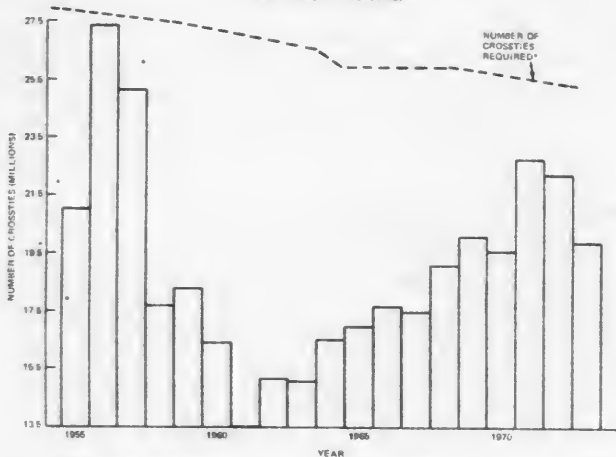
<sup>8</sup> *Ibid.*, pp. 94-97.

FIGURE 1  
MILES OF NEW RAIL INSTALLED  
VS.  
NORMAL REQUIREMENTS OF  
80-YEAR LIFE CYCLE  
(THOUSANDS OF MILES)



SOURCE: ASTRO, THE AMERICAN RAILROAD INDUSTRY: A PROSPECTUS, p. 14 AND TABLE 20, p. 57 WITH AAR UPDATE.

Figure 2  
NUMBER OF CROSSTIES INSTALLED  
VS.  
NORMAL REQUIREMENTS OF  
35-YEAR LIFE CYCLE  
(MILLIONS OF CROSSTIES)



SOURCE: ASTRO, THE AMERICAN RAILROAD INDUSTRY: A PROSPECTUS, p. 14 AND TABLE 20, p. 57 WITH AAR UPDATE.

\* EXCLUDING SWITCH AND BRIDGE TIES, COMPRISING 7 PERCENT OF TOTAL TRACK

ASTRO Report estimated that new rail would have to be installed at three times the average actual rate during the 1960's and that crossties required a 50 percent increase to meet industry standards for replacement.<sup>9</sup>

### Coverage of Fixed Charges

The ultimate financial integrity of any firm vests on its ability to meet contractual fixed charges, such as interest and rents, with the income derived from operations. Fixed charges generally have been rising fairly steadily while net railway operating income has declined and total income, including other non-rail activities, has been fairly stable or drifting slightly downward. Increased levels of funded debt, especially rapidly increased equipment obligations in the late 1970's, and

<sup>9</sup> America's Sound Transportation Review Organization (ASTRO), *The American Railroad Industry: A Prospectus*, p. 14; see also Harry S. Meislahn, "The Present Plight of the Railroads," paper sponsored by Temple, Barker & Sloane and Illinois Central Gulf (revision of May, 1973).

rising interest rates for continuing capital expenditures, which the railroads were unable to finance out of income, are the basic sources of rising fixed charges.

Table 3 presents income available for fixed charges (total income after miscellaneous deductions), the fixed charges themselves and the coverage ratio for fixed charges. The coverage ratio measures the ability of the railroads to cover fixed charges<sup>10</sup> with total operating income from all activities: a ratio of unity would imply that income was just sufficient to cover fixed charges.

It can be seen from Table 3 that fixed charges for U.S. Class I railroads rose by 70 percent from 1963 to 1973, while total income available to cover fixed charges rose only 14 percent. As a consequence, the coverage ratio declined from about three times fixed charges in the mid-1960's to a low of 1.44 in 1970. Other non-rail income is included in the numerator of this coverage ratio, as fixed charges are not assigned to specific transportation investments, but it is clear that NROI by itself would have been barely sufficient to cover fixed charges in recent years.

In 1970, NROI coverage was less than unity, meaning that operating income from all Class I railroads was in the aggregate insufficient to cover their fixed charges, a precarious state of affairs.

Examined by district, the coverage ratio for the Eastern District as shown in Table 3 is, of course, dismally low, reaching a near-zero level of 0.07 in 1970, but other regions have also experienced moderate declines in cov-

TABLE 3.—Total income, fixed charges and fixed charge coverage ratio for Class I railroads

(Dollar amounts in millions)

Years	United States <sup>1</sup>			Eastern district		
	Total income <sup>2</sup>	Fixed charges <sup>3</sup>	Coverage ratio	Total income	Fixed charges	Coverage ratio
1947	\$964	\$437	2.21			
1952	1,316	422	3.12			
1957	1,157	369	3.14			
1962	980	367	2.67	\$147	\$165	0.89
1963	1,062	368	2.89	188	163	1.15
1964	1,120	381	2.94	200	153	1.31
1965	1,256	401	3.14	457	206	2.22
1966	1,367	426	3.21	507	215	2.36
1967	1,050	461	2.28	326	227	1.44
1968	1,087	484	2.25	333	239	1.39
1969	1,066	521	2.05	291	264	1.10
1970	846	589	1.44	19	290	.07
1971	977	601	1.63	43	287	.15
1972	1,122	606	1.85	119	279	.43
1973	1,209	626	1.93	150	282	.53

<sup>1</sup> Excludes Amtrak.

<sup>2</sup> NROI plus other income, after miscellaneous deductions; same as income available for fixed charges.

<sup>3</sup> Does not include allowances for repayment of principal.

Sources: Association of American Railroads and "Moody's Transportation Manual."

<sup>10</sup> Fixed charges here are used parallel to Moody's Transportation Manual and do not include interest charges on hired equipment and joint facility rents. Total fixed charges do not include allowance for repayment of principal.

erage, suggesting that the Eastern District is only a more extreme example of negative financial trends in the railroad industry. It is interesting to note that fixed charges in the troubled Eastern District rose by 73 percent in the past decade, only slightly more than the overall U.S. figure increased.

As must be anticipated from the Eastern figures and the occurrence of several bankruptcies, the USRA bankrupt carriers in aggregate have not generated sufficient income to cover fixed charges in any year tabulated and are therefore insolvent. The negative ratios of the last four years indicate a consolidated deficit before any fixed charges at all were covered. The PC in particular did not cover fixed charges in any year since 1966, though some of the smaller companies were able to do so. Table 4 shows the supporting data.

TABLE 4.—Total income, fixed charges, and fixed charge coverage ratio for Class I railroads, Eastern District subgroups

Years	[Dollar amounts in millions]					
	USRA bankrupts			Other eastern		
	Total income	Fixed charges	Coverage ratio	Total income	Fixed charges	Coverage ratio
1967.....	\$81	\$117	0.69	\$245	\$110	2.23
1968.....	81	128	.63	252	111	2.27
1969.....	49	150	.32	242	114	2.12
1970.....	-195	170	-1.15	214	120	1.78
1971.....	-150	168	-.92	193	124	1.56
1972.....	-103	156	-.66	222	123	1.80
1973.....	-79	160	-.49	229	122	1.88

Note: See notes to Table 3.

### Cash Flow

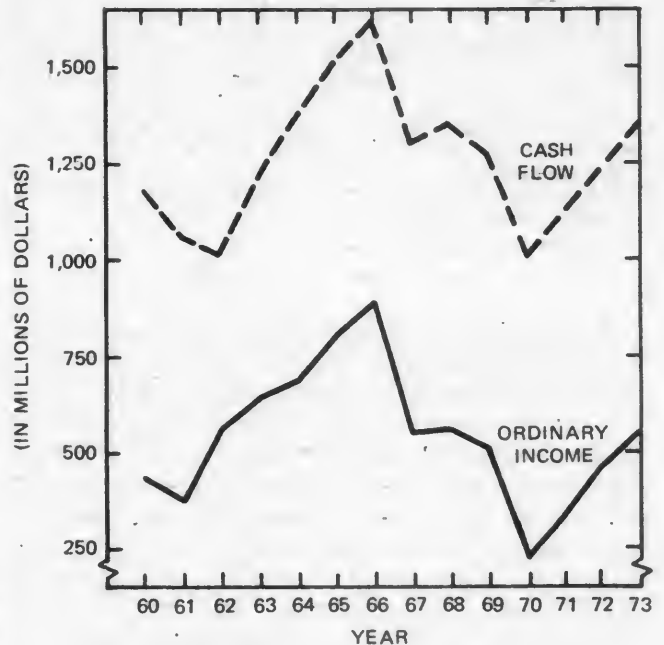
The level of cash flow is more important than the coverage figures discussed above in determining the technical ability of the railroads to meet fixed charges with internal funds, because it more accurately reflects the flow of funds accruing to the firm from operations by correcting for the fact that net income figures reflect many non-cash bookkeeping entries.

Figure 3 shows ordinary income and cash flow based on ordinary income for all Class I railroads. Ordinary income (net income before extraordinary charges) had fallen precipitously in the latter half of the 1960's and has only partially recovered in the past three years of improved earnings. Cash flow from Class I railroads has dropped, but not as sharply as NROI, and the inclusion of depreciation reflects a flow of funds sufficient to cover fixed charges by a substantial margin and allow some debt repayment or internally financed capital projects.

However, the level of cash flow has generally not been sufficient to cover gross capital expenditures, especially in light of dividend payments (discussed later): The ratio of fixed charges to cash flow has also been rising

FIGURE 3

ORDINARY INCOME<sup>1</sup> AND CASH FLOW<sup>2</sup>  
FOR CLASS I RAILROADS 1960-1973



1 ORDINARY INCOME IS NET INCOME BEFORE EXTRAORDINARY ITEMS.

2 CASH FLOW BASED ON ORDINARY INCOME PLUS DEPRECIATION ACCOUNTS FOR ROAD AND EQUIPMENT; EXCLUDES RETIREMENTS

SOURCE: ICC TRANSPORT STATISTICS; U. S. SENATE, COMMITTEE ON COMMERCE; THE PENN CENTRAL AND OTHER RAILROADS

sharply over the past decade. For Class I railroads the ratio rose from 27.5 percent in 1964 to 58 percent in 1970, and it has not fallen much in the most recent years.

Table 5 shows ordinary income cash flow for Class I railroads in the United States and the Eastern sub-groupings. The Eastern District again shows a substantially more precarious financial condition, with essentially no cash flow in 1970 and 1971. The consolidated USRA bankrupts have been unable to record positive cash flow since 1970, and PC has not done so since 1968.

Negative cash flow signals an inability to cover fixed charges with either net income or depreciation allowances and signals serious insolvency. Other regions have experienced weak cash flow and sharp increases in the ratio of fixed charges to cash flow. Generally, cash flow has not been sufficient to finance new capital investment or pay dividends on equity shares in recent years.

TABLE 5.—Ordinary income cash flow<sup>1</sup> for Class I railroads

	United States <sup>2</sup>	Eastern District railroads		
		All Eastern	USRA bankrupts <sup>3</sup>	Other Eastern
1967.....	1,338.4	370.5	88.0	282.5
1968.....	1,363.1	364.0	73.1	290.9
1969.....	1,289.1	289.5	17.9	271.6
1970.....	1,025.7	[4.0]	[247.3]	243.3
1971.....	1,155.3	20.1	[199.5]	219.6
1972.....	1,247.9	102.4	[149.9]	252.3
1973.....	1,366.0	130.9	[130.8]	261.7

<sup>1</sup> Ordinary income before extraordinary items, plus depreciation, but excluding retirements.

<sup>2</sup> Excludes Amtrak.

<sup>3</sup> 6 bankrupts, includes Erie Lackawanna, but excludes Lehigh and Hudson River Railroad as non-Class I.

Note: Figures in brackets indicate deficit.

Sources: ICC "Transport Statistics" (partly from FRA tapes), Moody's.

A look at cash flow in relation to equipment investment will dramatize the financial woes of the railroad industry. It commonly is perceived that shortages of rolling stock are an important detriment to expanded freight volume and improved service quality.<sup>11</sup> Assuming that minimal rail investment policy will require replacement of rolling stock currently in operation (if not an expansion to resolve shortages), a financial analyst has compared cash generation per car owned to the cost of a unit of rolling stock.<sup>12</sup>

Figure 4 shows that the annualized cash cost per new unit of rolling stock has been rising rapidly and surpassed \$2,300 in 1968, whereas the cash flow per unit owned (here defined as NROI plus depreciation plus federal income taxes) has not been above \$1,300 per car for Class I railroads between 1950 and 1973.

It comes as no surprise to find the Penn Central with rather low unit cash flow which turned negative in the late 1960's, but the Class I railroads overall have only been generating about one-half the funds necessary, and the cash flow per unit has shown no tendency to keep up with rising acquisition costs.

Most individual railroads are not generating enough cash flow with current utilization and revenues to replace existing rolling stock, much less to continue other capital improvement programs and pay dividends. The number of freight cars owned and leased by Class I railroads did in fact decline over the 1960's from about 2 million to 1.8 million and had continued to fall to nearly 1.7 million in 1973.

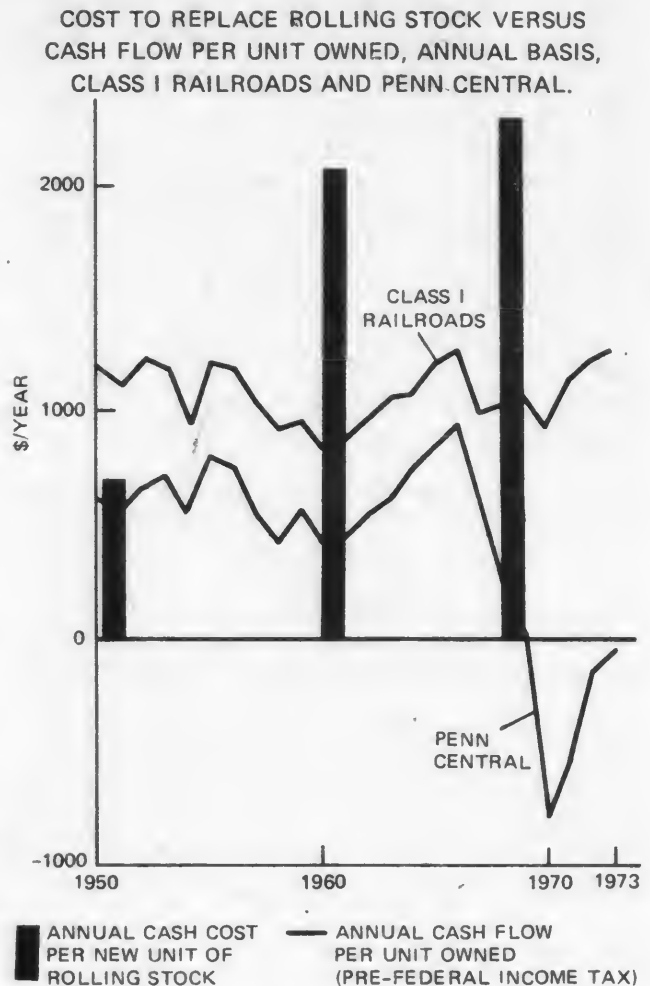
### Dividends

In the face of declining earnings and cash flow, Class I railroads increased the level of dividends paid over

<sup>11</sup> Utilization of rolling stock may be equally or even more important.

<sup>12</sup> Harry S. Meislahn, "The Present Plight of the Railroads". No attempt was made to update the rolling stock cost, since the insufficiency of earnings was apparent.

FIGURE 4



SOURCE: HARRY S. MEISLAHN, "THE PRESENT PLIGHT OF THE RAILROADS."

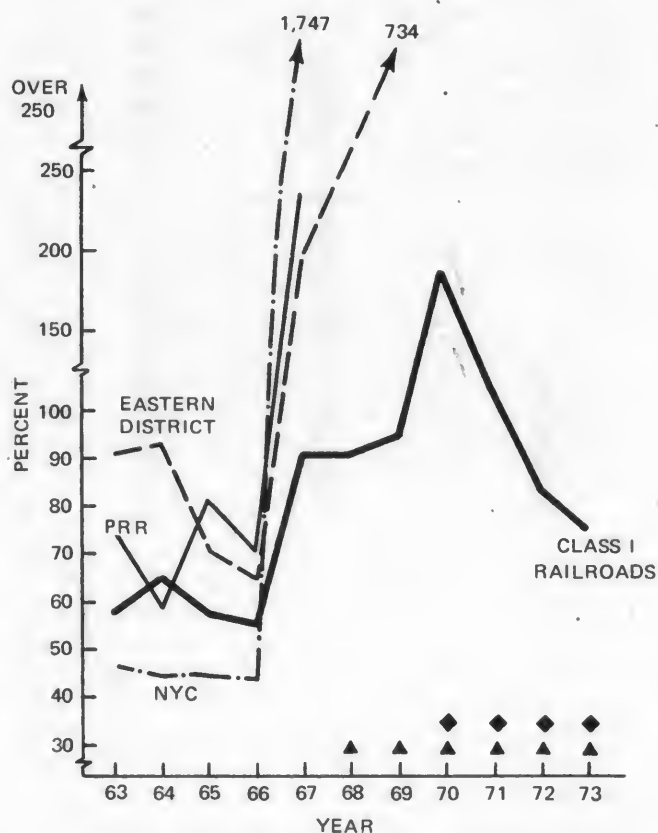
the 1960's. Cash dividends reached a high of \$516 million in 1969. The payout ratio of dividends to ordinary net income is shown in Figure 5. After remaining in the 50-70 range as a percent of ordinary net income in the early 1960's cash dividends of Class I railroads rose sharply from 1967 onward, and were in excess of net income in 1970 and 1971.

Figure 5 also shows the dividend payout ratio for the Eastern District and for the two partners in the Penn Central merger, the PRR and the NYC. As earnings fell from 1967, dividends were relatively stable, and the Eastern District payout ratio rose dramatically, with dividends in 1969 amounting to 734 percent of ordinary income. Further, the two merger partners, whose payouts were not very different from all Class I railroads in the early 1960's, continued to pay high dividends in the face of disappearing earnings, and NYC



FIGURE 5

CASH DIVIDENDS AS A PERCENT OF ORDINARY INCOME, 1963-1973, CLASS I RAILROADS, EASTERN DISTRICT RAILROADS, PRR AND NYC.



- ▲ PRR & NYC WERE MERGED IN 1968 INTO THE PENN CENTRAL WHICH HAD POSITIVE DIVIDENDS ON NEGATIVE ORDINARY INCOME IN 1968 AND 1969, NO DIVIDENDS THEREAFTER.
- ◆ EASTERN DISTRICT RAILROADS HAD POSITIVE DIVIDENDS ON NEGATIVE ORDINARY INCOME IN 1970-1973.

SOURCES: ASSOCIATION OF AMERICAN RAILROADS; MOODY'S TRANSPORTATION MANUAL

dividends hit an astronomical 1,747 percent of income before income turned negative. Dividends continued to be paid in the face of losses in 1968 and 1969 and represented a considerable cash drain on the foundering Penn Central.

It is clear that a substantial portion of the available flow of funds has been diverted to dividends, though presumably funds are needed for capital betterment in the industry. This is true for all Class I railroads as well as the bankrupts. The maintenance of dividend levels does serve to keep equity issues attractive, and to the extent that management decisions promote the interests of the equity holders (owners), dividends could sub-

stitute for earnings growth while allowing gradual disinvestment from a declining industry.

Very little new funding has been done through equity issues so the attraction of new capital is not a likely motive for high dividends. The payout ratio does reflect to some extent the corporate structure of the railroad industry; ownership of subsidiary rail companies has been common practice, and dividends would facilitate transfers of funds to more profitable endeavors. Thus, it is evident that a sizeable portion of the flow of funds available to the rail industry intentionally is being paid out in the face of apparent internal needs for capital. Surely, this is a consequence of very low level of profits in the rail industry and is not unique to the Eastern District.

### Working Capital

The end result of many years of desperate financial problems in the Eastern District, along with moderate declines of a similar but less immediately severe nature for the entire railroad industry, has been a sharp reduction in net working capital for Class I railroads, especially severe since the mid-1960's. Net working capital for all Class I railroads, excluding materials and supplies and before impending debt maturities, as shown in Table 6, amounted to \$678.7 million in 1952, \$646.8 million in 1962, but only \$21.1 million in 1972.

Many individual railroads show deficits in this short-term capital measure, and Class I railroads have shown

TABLE 6.—Net working capital<sup>1</sup> and current ratio<sup>2</sup> for Class I railroads

Year	Eastern District railroads							
	United States <sup>3</sup>		All Eastern		USRA bankrupts <sup>4</sup>		Other Eastern	
	Net working capital	Current ratio	Net working capital	Current ratio	Net working capital	Current ratio	Net working capital	Current ratio
1947.....	867.6	1.84	192.6	1.59				
1952.....	678.7	1.67	121.3	1.50				
1957.....	555.4	1.66	125.1	1.52				
1962.....	646.8	1.59	37.8	1.28				
1967.....	276.3	1.33	[ 42.5]	1.17	[ 73.6]	1.08	31.1	1.27
1968.....	152.7	1.25	[140.7]	1.05	[154.6]	.90	13.9	1.21
1969.....	56.1	1.20	[140.1]	1.06	[126.4]	.97	[13.7]	1.15
1970.....	109.1	1.23	[ 51.8]	1.14	[ 24.5]	1.14	[27.3]	1.13
1971.....	14.3	1.19	[105.4]	1.08	[ 89.6]	1.00	[15.8]	1.15
1972.....	21.1	1.18	[107.1]	1.06	[137.1]	.91	30.0	1.20
1973.....	194.1	1.27	[ 19.3]	1.13	[110.6]	.97	91.3	1.25

<sup>1</sup> Current assets (exclusive of material and supplies) less current liabilities (before impending maturities).

<sup>2</sup> Ratio of current assets (unadjusted) to current liabilities.

<sup>3</sup> Excludes Amtrak.

<sup>4</sup> 6 bankrupts, includes Erie Lackawanna, but excludes Lehigh and Hudson River Railroad as non-Class I.

Note: Figures in brackets indicate deficit.

Sources: Association of American Railroads; ICC "Transport Statistics" (partly from FRA tape); "Moody's Transportation Manual."

debt maturing within one year (not included in current liabilities) exceeding working capital since 1966. A major improvement during 1973, increasing to \$194.1 million, can be traced to a large expansion of long-term debt in the Southern District and reduced deficits in working capital in the east.

The net working capital of the Eastern District has been negative since 1967, and the six Class I USRA bankrupts have also shown negative net working capital as well as a current ratio (current assets to current liabilities) of less than unity. The "Other Eastern" carriers showed a weakness in working capital in 1969-1971, but they have maintained a current ratio above unity and have recovered sharply in the last two years. It should be noted that many industrial corporations were able to reduce their levels of net working capital during the 1960's, presumably reflecting tighter control on short-term balances and stable growth patterns in the economy, yet the sharp decline in the railroad industry's short-term financial position is much too dramatic to be explained by such economies.

### Summary

Several measures of the financial condition of the railroads have been examined, with attention to Class I overall and subgroupings of the Eastern railroads. The earnings from railroad operations and the rate of return on net investment provide a clear picture of insufficient earnings for the bankrupt carriers under USRA auspices. The Penn Central has been recording operating deficits since 1967, and the rate of return levels for "Other Eastern" carriers has not been particularly encouraging.

The 1973 rate of 3.04 percent for all Class I railroads is hardly attractive for new investment. Short-term financial problems also will render it much more difficult to find capital for long-term expansion, when earnings are so poor as to render every year a crisis period in covering fixed costs and require continual refunding of debt. General shortages in capital markets in the face of pressing investment requirements across the economy could leave many railroads with no lender of last resort other than the federal government.

## APPENDIX C

### Industry Structure

A tentative operating structure was defined for each option described in Chapter 3. The objective was to quantify as many elements as possible, including such factors as: system size, including route and track miles; fleet size, including number of locomotives and cars; operating patterns, including train miles and locomotive unit miles operated; yarding functions required, including location and level of activity; the estimated service level for carload and intermodal traffic; the financial performance of each system, including profitability, cash flow and level of investment (both government and private); the impact of each structure on competition, as measured by market share and each county now served by a potential ConRail candidate carrier; and the estimated impact of each structure on solvent carriers and existing traffic flows in the Region.

#### Steps in the Analytical Process

ConRail I (excluding EL) was used as the base case in the analysis; the inefficiency of bankrupt carriers made any comparison with present services inconclusive. Therefore, an efficient ConRail I option was determined, with identification of all the specific factors listed above. For all other structures it was assumed each would be operated as efficiently as possible. For example, on the north/south split, the duplication of terminals and trackage which existed prior to the merger was not recreated; rather, a new "unmerged" system was synthesized which relied heavily on joint usage of

track and facilities to minimize operational costs. Without this basic assumption, it would be quite easy to load the answer against any structure except ConRail I.

The basic building block for analysis was the 1973 traffic flows and the estimated traffic growth factors from Temple, Barker & Sloane. In deriving the ConRail I baseline case, the present flows were adjusted to reflect operating changes which could occur with a merger of the carriers. The Marketing Group at USRA also studied the traffic flow information to determine what flows could be rerouted to ConRail long-haul operations and made estimates as to the amount of traffic which could be diverted.

Rail operations involve complex interrelationships between local switching, intermediate switching and the operation of mainline trains, and at every step there is a trade-off between capital requirements (yards, main and secondary tracks, locomotives and cars) and labor (road crews, crews at classification yards, local switching crews, maintenance of way forces, maintenance of equipment forces). The process is described in detail in Chapter 5.

Once the ConRail I baseline case was defined in a marketing and operational sense, then each of the other options was derived by adjusting the base ConRail I information. For example, with the vertical split at Selkirk (Albany) and Enola (Harrisburg), adjustments had to be made in both costs and revenues. Some moves were local to the eastern terminal district, many moves were local to the lines west, but a significant

portion crossed the boundary between ConRail East and West and revenue apportionment was therefore necessary.

Similarly, the specific costs of maintenance, rehabilitation, road operations, switching operations and classification operations had to be assigned to either the ConRail East or to ConRail West. Further adjustments had to be made which reflected additional activity that might occur because of the split, e.g., additional switching at Selkirk and Enola. Again, adjustments in revenue were necessary, for example, opening this large terminal district to direct access by Norfolk & Western and Chessie System has a potential for diversion of traffic which presently originates on PC lines in Newark and Philadelphia (for example) and is destined to Chicago or St. Louis.

Once the revenue and forecasts were made and the cost factors identified, by account, these basic revenues and operational factors were utilized by Financial Planning in determining profit (or loss) for each of the structures, and, within each structure, for each component element, e.g., ConRail North profit (or loss) versus ConRail South profit (or loss), the cash flow and investment requirements, both public and private. There are any number of financial options which are possible in terms of method of funding, interest rates, inflation factors, etc.; these are explained in detail in Chapter 14. Each comparison between structural options was made on a consistent basis.

The competitive impact of each of the alternative structures was analyzed by considering originations and terminations in the affected areas. County-by-county analysis was completed for the states of Pennsylvania, New York, New Jersey, Connecticut, Rhode Island and Massachusetts to determine how various combinations of bankrupt carriers would change competitive levels. The presence of solvent carriers elsewhere negated the need for such detailed analysis in other states. The competitive analysis focused on the issue of the level of market dominance created through each of the various structures and the distance from the individual county to the nearest competitive point where use of intermodal services or short hauling, etc., could be utilized.

In determining impact on other carriers, the initial analysis dealt only with the Norfolk & Western, Chessie System and Erie Lackawanna. Discussions were held with these carriers, and estimates received on how much revenue might be vulnerable under the ConRail I change. Estimates as to impact under other structural options were made by USRA's staff.

The above describes those items where an attempt was made to quantify the differences between the structures. Given the complexity of the industry structure decision and the ramifications of the various alternatives, no analytical technique gives a complete answer. For this reason, the options were identified in the USRA Annual Report so that public discussions could be fostered.

Members of the staff discussed the options with shippers, rail carriers in the Region (both bankrupt and solvent), state transportation representatives and members of the academic community. It was in this public discussion that the identification of certain options upon which individuals could focus was invaluable, as individuals and groups tended to hold fairly firm opinions on each of the structures presented and provided specific reasons why they liked or did not like certain aspects of each. It was not the acceptance or rejection of any concept (few accepted any concept unequivocally) which was so important, but rather the reasons given.

From the argumentation, it became possible to develop some idea of the basic elements of a solution. In addition, the public response was such that the early USRA decision to drop the Middle Atlantic Rail alternative from the detailed analysis clearly was determined to be a mistake. It was decided in early December to begin a detailed in-house study of the concept (one such analysis had been done by a consultant<sup>1</sup> but this analytical effort was overtaken by events—the admission by the Erie Lackawanna that it could not be reorganized under Section 77 and its request that it be reorganized under the Act.

Change in the status of the Erie-Lackawanna had a significant impact on the industry structure decision. Prior to this change, the evidence was clear that any structural alternative which significantly strengthened either ConRail I or the present solvent carriers would first and foremost impact on the Erie-Lackawanna. For example, it had become obvious that a possible transfer of Lehigh Valley route to either Norfolk & Western or Chessie, or a structure which essentially set up the Lehigh Valley as a feeder to one or both of those lines, would have serious ramifications upon Erie-Lackawanna. Change in the status of EL eliminated the need for certain very difficult decisions but presented new issues to be resolved.

### Evaluating the Alternatives

The following is a detailed description of each of the operating structures considered by USRA: ConRail I, ConRail I Plus Neutral Terminal Companies, ConRail East and West, and ConRail North and South. In addition, the Middle Atlantic Rail concept is discussed, despite the fact that no analysis was completed. Each of the structural alternatives includes discussions of service and operating patterns, implications for competition, impact on solvent carriers, the results of the operational and financial analysis, RSPO and other public comments and the ramifications of the collapse of the Erie Lackawanna. The discussion concludes with USRA recommendation for each structure.

*ConRail I* contemplates first merger and then rehabilitation of all the carriers under the Act (but

<sup>1</sup> Strong, Wishart & Associates, Inc.



not EL). As originally envisioned, this option should have resulted in the maximum reduction in duplicate facilities and thus solved the most critical problem of finding the money and material to rebuild the fixed plant of the bankrupt carriers. It was presumed that this option would also offer the greatest opportunity for increased efficiency and utilization of equipment and therefore greater productivity of owned equipment and increased rents for foreign cars. Additional economies were anticipated as a result of the more concentrated traffic flows resulting from the dominant market share which ConRail I would enjoy along the eastern seaboard.

As delineated, the operating structure would consist of a merger of the Penn Central, the Reading, the Lehigh Valley, the Central of New Jersey, the Lehigh & Hudson River and the Ann Arbor. The ConRail I operating structures studied would have eliminated the Lehigh Valley as a main route north of Wilkes-Barre (but maintained it for north/south flows south of that point) and allowed for elimination of duplicate mainlines from the Harrisburg area into Philadelphia and Newark, making maximum utilization of the more favorable Reading route via Allentown for east/west routes.

Yard operations in the Harrisburg, Allentown, Philadelphia and Newark area would be integrated, with the best existing facilities being upgraded. It was originally thought that a significant amount of traffic originating on the lesser bankrupts could be rerouted for ConRail long haul; after an analysis of the traffic flows, it was apparent that this potential was significant but not overwhelming. The major traffic flows are eastbound and the present solvent carriers control the routings. The ConRail I alternative therefore assumed that major interchanges would continue to exist at Buffalo and at Lurgan; the operating plan was developed accordingly.

Despite the fact that it was assumed that major gateways would be continued, the potential exists for a ConRail rail service monopoly. The major impact is in southeastern Pennsylvania and central New Jersey—an area roughly bounded by Harrisburg, Allentown, Elizabeth, thence south to Trenton and Philadelphia. For example, the balance in Philadelphia and Montgomery Counties in Pennsylvania would shift from a 49-51 percent split between Reading and Penn Central originations and terminations to 92 percent ConRail I (Chessie has the remaining 8 percent) and 99 percent in Northampton County (the Allentown, Bethlehem-Easton area). Middlesex County, New Jersey (New Brunswick area) would shift from a 55 percent Penn Central share to 94 percent for ConRail I.

The impact on solvent carriers is rated as moderate. USRA estimates the total revenue diversion resulting from shifting traffic off the smaller bankrupts onto a

ConRail long haul would be in the range of \$50 to \$100 million. This figure has been essentially confirmed by the solvent carriers themselves. Chessie would suffer some loss of traffic over the Lurgan Gateway for east-west movements and from north-south traffic now moving between the Newark area and the Potomac Yard Gateway (Alexandria, Va.). Norfolk & Western's major loss would be the Lehigh Valley interchange at Buffalo including in all likelihood the present through container movements on that route; loss of some "Alphabet Route" traffic at Connellsville is also likely. Erie Lackawanna would lose Port Newark traffic off the Central of New Jersey and traffic from the Reading connection at Rupert (Pa.).

Because of its tenuous financial condition, this loss, while modest, would probably be the most severe of any of the carriers. As the ConRail I planning assumes that the Wilkes-Barre/Allentown/Philadelphia route will be maintained for through service, the Delaware & Hudson should remain competitive for north-south flows, although the Lehigh Valley's being eliminated as an east-west carrier would deny D&H one of their two interchanges for east-west traffic. There was little evidence that this would be detrimental, presuming that the Erie Lackawanna remained open to the west.

It must be noted that the USRA operating plan contemplated leaving the major junctions open, but this fact by itself does not guarantee the position of the present solvent carriers. ConRail I will be an independent entity and could seek to close routings in the future. Therefore, the risks exist that certain major flows would be affected.

The operational and financial results indicate that, of the operational structures analyzed, ConRail I has the best financial results. These results however are not sufficient to call ConRail I a truly private sector solution. The federal funding requirements are well in excess of the Act and it appears that there will be government involvement for a long duration. As noted above, these results for ConRail I are not based on significant traffic diversion. What ConRail I can achieve is a rationalization of the debilitated route structure east of Harrisburg, and it has maximum flexibility in developing more efficient yard and switching operations along the eastern seaboard—largely by making use of yards, such as Enola and Conway as staging areas for the east coast cities. Elimination of duplication and use of the best remaining facilities are therefore the critical elements in its relative performance.

In terms of implementation, ConRail I is not assessed to be a difficult merger to implement. It represents the folding of a number of the smaller carriers into one large carrier—the type of merger which historically has been the easiest to consummate. The process, to be effective, would nevertheless require several years.

Comments by the Rail Services Planning Office, shippers, rail carriers and members of the general public indicate grave reservations about the ConRail I alternative. The RSPO notes that "as a result of ConRail's virtual monopoly on the major traffic generating area of the east, traffic now handled by the competing line-haul carriers would no longer be readily available to them." It further notes that the "impact on Erie Lackawanna . . . would almost certainly be devastating." RSPO expressed a special concern over the lack of alternative competitive north/south routes; as noted earlier, USRA's operating plan allowed continuation of the Philadelphia to Wilkes-Barre link, but certainly the potential exist for ConRail closing it in the future.

The State of Pennsylvania was especially vocal in its objection to the monopoly created by ConRail I in southeastern Pennsylvania. New York State expressed less concern *provided* that some means was found to strengthen the Erie Lackawanna (a comment made of course before the Erie Lackawanna's collapse). Delaware & Hudson expressed special concern over the potential loss of the north-south route. Chessie and Norfolk & Western were concerned about possible diversions of traffic, but their greatest fear was ConRail I would emerge as a government-financed competitor which, once rebuilt, would severely undermine their competitive position.

The effect of the Erie Lackawanna change makes all of the above objections to ConRail I even more telling. So long as the Erie Lackawanna remained as a competitor, then the Northern New Jersey markets had competition (Erie Lackawanna counts for 35 percent of the originations and terminations in the Newark SMSA), New York state had a competitive alternative along the southern tier and competition would have remained in Utica and Syracuse. Had Erie Lackawanna remained independent, then Delaware & Hudson would have a connection for its east-west traffic—a route which is important not only to D&H but also to Boston & Maine and its eastern connections.

With the inclusion of Erie Lackawanna in ConRail I, the Boston & Maine would essentially be turned into a feeder to the ConRail system at Selkirk (Albany); the Delaware & Hudson would lose its base traffic volume and probably would no longer be able to continue as an independent entity; Northern New Jersey would join Central New Jersey and Southeastern Pennsylvania as being a complete monopoly area; and most of New York State and Northeast Pennsylvania would be denied rail-rail competition. In effect the monopolistic area of the original ConRail I concept—roughly a triangle from Harrisburg to New Brunswick to Philadelphia—would be expanded to encompass virtually all of New Jersey, New York and Pennsylvania with the inclusion of EL into CRC.

It was the conclusion of the Association that, even discounting the impact of the Erie Lackawanna and its

possible inclusion in the CRC I, the CRC I concept was too insensitive to adequate rail competition in key markets. The monopoly power of the railroad in these markets would perhaps be justified if the financial viability of ConRail I was dependent on the achievement of this monopoly position.

#### ConRail I/Neutral Terminal Companies

The ConRail I/Neutral Terminal Company structure was originally proposed as a means of assuring continued competition in certain key markets along the eastern seaboard without the attendant duplication of facilities and operations which would otherwise result. ConRail I would have to be formed in the same manner as outlined previously, with the exception that neutral terminal companies would be formed in the Newark/New Brunswick area, in the Philadelphia metropolitan area and perhaps in the Allentown area. As envisioned, these terminal companies would be jointly used subsidiaries of the line haul carriers serving the markets.

The operating pattern studied would have had Chessie System with access to Philadelphia (from the south over its own line, or from the Harrisburg area over trackage rights or joint facilities with ConRail through Reading), and either the Norfolk & Western or the Chessie System with access into the Newark area; Chessie over the present Reading/LV and Norfolk & Western would have access from Buffalo over the LV. This structure also presumed that the Erie-Lackawanna would not open up its traffic in the Newark area, and therefore the neutral terminal company would not be all inclusive.

As compared to the present situation, competition would be somewhat diminished as many lesser markets would have single carrier service only. The major markets of Newark, Philadelphia and Allentown would, however, gain a greater degree of competition than exist today. Except for Jersey City, these markets do not have reciprocal switching; thus a shipper located on the Penn Central, for example, must generally route traffic over that carrier to the first open junction.

With the neutral terminal company, a shipper presently on the Penn Central could route traffic out directly on either Penn Central (ConRail I) or Chessie System; similarly a shipper on the Reading could route either Chessie or ConRail direct. Clearly this structure is more competitive than the ConRail I alternative and, even compared to today's situation, would represent increased competition in the major markets.

With the exception of Erie Lackawanna, the impact on solvents of the ConRail I/Neutral Terminal Company option was judged to be minimal. Both Chessie and Norfolk & Western would gain direct access into the major eastern seaboard markets and could provide single carrier service without reliance on bankrupt connections.

In addition, all industries would be "open" in these major markets and, because Penn Central tends to be the largest carrier in both markets now, Chessie and Norfolk & Western potentially could gain traffic at ConRail's expense. This threat of diversion is especially critical in the early years when ConRail's debilitated plant and equipment shortages would place it at a competitive disadvantage.

The impact on Erie-Lackawanna would be negative. While that carrier could have participated in additional Newark area traffic, this would be offset by additional single-carrier competition between Newark and the midwest. This additional service could be an especially critical factor for service sensitive TOFC traffic. In addition to the Erie Lackawanna's potential problems, the possibility of ConRail severing the Wilkes-Barre-to-Philadelphia competitive link and isolating Delaware & Hudson's north-south flows remains a possibility under this alternative.

From an operational and financial point of view, the ConRail I/Neutral Terminal Company option was assessed as only slightly worse than the ConRail I structure. The neutral terminal concept would allow terminal rationalization in the major markets, and provision of solvent carrier access over trackage rights would eliminate the requirement for duplicative mainlines (except for the present Lehigh Valley main from Sayre to Buffalo, if the Norfolk & Western or Chessie were provided access from that Gateway).

There would be an increase in yard switching hours at the neutral terminals resulting from the requirement that cars be sorted into and out of line haul trains in the terminal area rather than making direct moves to larger and potentially more efficient classification facilities such as Rutherford and Enola. Also, there would be a slight increase in car requirements due to less efficient handling between line haul carriers and the neutral terminal companies at these points, as there would be some division of responsibility at the operational level; the priorities for the terminal company would not always mesh with that of the line haul operator.

Implementation was not judged to be a serious problem. More entities would be formed than with CRCI but they would be relatively small, controlled by the line haul companies and would encompass areas requiring specialized management under any configuration.

Overall, the Rail Service Planning Office comments and those received from shippers and the general public were much more favorable towards this solution than that of ConRail I, as it began to solve some of the competitive problems. There was some concern expressed regarding the possible deterioration of service; the experience of many shippers with neutral terminal companies has not been good. Additional concern was expressed regarding the level of surcharges which these terminal companies might have to impose to cover their

costs. While these terminals are costly to serve the same can be said for most highly congested urban terminal areas, whether on the eastern seaboard or in the midwest or on the west coast.

To the extent that certain terminals may be unprofitable, it is probably more a function of the type of traffic handled than the fact that it originates or terminates in a major urban area. For example, the major eastern seaboard population centers are important receivers of agricultural commodities, such as fruits and vegetables, which historically move at low rate levels.

The failure of the Erie-Lackawanna and potential loss of competition in Northern New Jersey makes the ConRail I/Neutral Terminal Company option much more attractive. The EL's failure also renders moot the issue of whether a solvent carrier should have access to the Newark area because of the impact on EL. While the neutral terminal concept does tend to solve the Newark competitive problem, it does not resolve the question of competition in New York State nor the continuation of a friendly connection for the Delaware & Hudson at Binghamton for east-west. The change in EL's status of the Erie thus makes the concept more compelling but renders the implementation more difficult.

It was the conclusion of the Association that the basic objective of the ConRail I/Neutral Terminal Company option—that of maintaining competition in important markets while minimizing the duplication of mainlines, terminal facilities, and operations is a start towards a possible resolution of the structure problem. It was the Board's assessment however, that the precise operational plan outlined would require substantial revision in light of the Erie Lackawanna situation. Also, the Association was reluctant to create new institutions which would be a barrier to the efficient functioning of the line haul carrier.

#### **ConRail East and West**

As originally envisioned, this option would respond to the unique operating environment of an area in which the majority of duplicate services and facilities of the bankrupt carriers are located and in which the Northeast Corridor Passenger Improvement Program will restrict current patterns of freight operations. The alternative organizes ConRail East as a major terminal operation in the area east of Albany and Harrisburg; ConRail West would be a separate entity consisting of the Penn Central lines and the Ann Arbor. ConRail East would provide all switching services for cars originating and terminating in the area and would then provide line haul service to the major interchange points of Selkirk, N.Y. (Albany), Allentown, Enola (Harrisburg, Pa.) and Potomac Yard (Alexandria, Va.)

At each of these Gateways, connecting services would be available from two or more carriers. The boundaries were drawn to encompass the lines of the former New



Haven and Southern New England (except those in the Boston area), the Hudson and River Divisions of the Penn Central as far as Selkirk, thence a line east of the Delaware & Hudson/Lehigh Valley main line to Allentown. Allentown would be in the ConRail East area from that point, CRC East would go to Enola and then turn southeasterly to the Penn Central's Columbia and Port Deposit Branch to Perryville.

The Delmarva peninsula was assumed to be in CRC East. Finally, it was assumed that ConRail East would have the responsibility for all of the present Penn Central's north-south traffic moving between Selkirk, Newark, Philadelphia and Washington. Baltimore and Boston were excluded from the CRC East as they have competitive services.

On long haul traffic, more competition would be available than now exists for shippers within this geographic area. Conversely, for short haul traffic (such as New Haven to Baltimore), ConRail East would enjoy a total monopoly. The routing options for a shipper at Philadelphia would be even more extensive than would be the case if a neutral terminal company existed. For example, a shipper now located on the Penn Central in Philadelphia would have an option of routing a car to Harrisburg where two carriers (Chessie and ConRail West) would be available, or the car could be routed to Allentown for delivery to the Norfolk & Western.

Similarly, a shipper in New Haven, now captive on the Penn Central's system, would have the capability of sending a car destined for Chicago to either Selkirk or Allentown or Harrisburg and would have a choice of ConRail West, Chessie, Norfolk & Western or (prior to its failure) the Erie Lackawanna for line haul movement. Thus, the ConRail concept opens up a large area to more competitive long haul service than exists today, even though it would create a monopoly for the limited number of short haul moves within the defined area.

Except for the Erie Lackawanna and perhaps the Delaware & Hudson for its north-south flows over Wilkes-Barre, the impact on the solvents would generally be favorable in comparison to what exists today. A very large traffic base—some two million-plus carloads originating and terminating annually—would be potentially available; much of this traffic is now captive to the Penn Central System.

The operational factors and the financial results for ConRail East and West show a marked deterioration from the ConRail I baseline. ConRail East functions as a "giant New Haven." Because of its size, it is unlikely that it could be managed as a joint operation under the managerial control of the connecting carriers; its objectives are not therefore likely to mesh with those of its connecting lines.

This option allows virtually the same degree of plant and terminal rationalization as with ConRail I, the major deterioration in operating and financial performance is in the area of car requirements and switching.

This poor performance is due in turn to the balkanization of responsibility; as a connector to many trunk line carriers, ConRail East is really responsible to no one, nor does it have great incentives to form a "natural alliance" such as Boston & Maine has with Delaware & Hudson.

Financially, ConRail East appeared to be a major loser throughout the 10-year forecast. These losses were not offset by profits of the western company; it was about as profitable as the larger CRI. By opening up a large portion of the present east coast Penn Central traffic base, the ConRail West could suffer substantial traffic losses to both Chessie and the Norfolk & Western, in addition, the rehabilitation costs are highly concentrated on ConRail West.

This structure presents some implementation problems. It breaks through flows presently moving over the Penn Central. ConRail East is formed by amalgamating most of the smaller bankrupts with the Penn Central lines within that territory and, these Penn Central lines must be sheared from the present operating company; an "unmerger" and a merger are occurring simultaneously. It is believed that the implementation problems are manageable, however, as the interface points have been kept to a minimum and are located at yards where there is already a significant amount of intermediate switching activity.

Furthermore, the present Penn Central operational management structure already recognizes the unique problems in the east—especially those dealing with the heavy flows of intercity passenger and commuter trains—and thus, to a large degree, an autonomous management structure has already been developed.

While RSPO had little to say about this alternative beyond a reference that it was largely an expansion of the neutral terminal company structure, shippers and states had much stronger opinions. Both groups tended to view ConRail East as an expanded version of the old New Haven and expressed concern that it embodied the worst of all possible worlds—a potentially monopolistic attitude (unlike neutral terminal companies, the line haul carriers would have little influence on its operating policies) and a feeling that, if it failed, it would fail on such a large scale as effectively to destroy rail transportation on the eastern seaboard.

Also, many shippers and states saw it as an attempt to "contain" nationalization and visualized the ConRail East company as being a permanent loser, forever on the federal dole. The concept did receive considerable support from solvent carriers; they felt that the eastern seaboard had so many problems in terms of passenger operations and duplicative, obsolete facilities that it would be a hopeless drain on profitability were they to participate in any aspects of these markets. Thus, ConRail East effectively walled off what they believed to be an extremely high risk area (especially because of the passenger service), while concurrently providing them



with access to a far larger traffic base than they presently enjoy.

As was the case with the neutral terminal option, failure of the Erie Lackawanna makes the concept easier to implement (EL had indicated no desire to transfer its eastern properties to ConRail East), and the difficult decision as to whether a solvent carrier should be allowed access east from Buffalo to the detriment of Erie-Lackawanna is avoided.

Inclusion of the EL into the planning process, coupled with a ConRail East, would also allow extension of the solvent carrier from Buffalo with a minimum of facility duplication. CRC East does not resolve the basic dilemma of what to do with the Erie Lackawanna route through Southern New York to Binghamton. The implications of a failure to solve this access problem could result in the ConRail East effectively encompassing the Delaware & Hudson and Boston & Maine as they would lack friendly connections for their traffic.

In the judgment of the Association, the ConRail East/Penn Central West solution should be rejected. The financial results indicate a high probability that ConRail East effectively would be a nationalized feeder system on the eastern seaboard. This, coupled with the hostility of the eastern seaboard states to the concept, make it extremely unattractive.

#### **ConRail North and ConRail South**

In the ConRail North and ConRail South alternative, consideration was given to the unmerging of the Penn Central system. There is a large body of both professional and lay opinion that the Penn Central merger was a mistake and that many of the difficulties of that carrier can be ascribed to its size. This alternative would break up the Penn Central into two firms with route structures roughly following the mainlines of the pre-merger Pennsylvania and New York Central Railroads.

The smaller bankrupts would then be merged into one of the two systems. The operational plans studied assumed that the Reading would be merged with ConRail South and that the Central of New Jersey, the Lehigh Valley, the Lehigh & Hudson River and the Ann Arbor would be merged with ConRail North. The former New Haven properties would go to ConRail North.

In developing this structure, a primary goal was to hold duplication of plant and facilities to an absolute minimum and to minimize fragmentation of traffic flows insofar as was feasible. The huge cost of rehabilitation made it apparent that, were the Pennsylvania and New York Central recreated in their former duplicative fashion, there could be no possible financial justification for this alternative. Therefore, joint trackage and joint terminal operations were assumed wherever possible, except for New York to Chicago and New

York to St. Louis, and the overriding goal elsewhere was to avoid fragmentation of traffic flow facilities. To a large degree, the basic system configuration, except for the densest mainlines, was a derived function based on minimizing the fragmentation traffic flows.

Overall, some deterioration of service could be measured. For those flows which had to be interchanged, an additional delay was added to the process. Overall, however, this service degradation was not assessed to be very severe and not of sufficient magnitude to warrant rejection of the concept.

As the lesser bankrupts have been assigned to ConRail North or ConRail South in such a manner as to reduce duplication, the resulting competitive structure is quite similar to that of ConRail I in that area east of the Ohio/Pennsylvania line. The exception is the Newark area where both carriers would provide service. Philadelphia, as was the case with ConRail I, would find itself virtually monopolized by the ConRail South system. There would be some addition in competition in the States of Ohio, Indiana and Illinois, but this was held to an absolute minimum to minimize costs and because the solvent carriers' presence in these states already provides adequate competition.

While competition, measured by market dominance in individual markets, is not much different from CRC I, there is an intangible factor which must be considered. Unmerging the Penn Central does provide two carriers more similar in size to Chessie and Norfolk & Western and thereby results in a system less likely to affect adversely either of those carriers. Furthermore, if only one of the resulting systems were to fail, it is less likely to require major federal intervention.

The impact on solvents is judged to be about the same as under ConRail I, given the alignment of smaller carriers which has been set up. There is an offset to this, however, in that each of the solvent carriers would tend to form a working relationship with ConRail North (a likely partner would be Chessie for many flows), and ConRail South would find "friendly" connections such as N&W and DT&I. The primary advantage, as noted above, would be that the solvents would no longer be up against a system largely dominating most market pairs in the Region.

The operational and financial results for ConRail North and ConRail South are the least attractive of the structures analyzed. Despite attempts to operate the two systems as efficiently as possible, including joint use of yards and tracks, the operation of run through trains wherever practical, and actually building the systems around the traffic flows as much as possible, the results are significantly worse than for ConRail I.

The fixed plant costs, including rehabilitation, stayed approximately the same, reflecting the heavy use of joint operations, but the introduction of two systems has a significant impact on car turnaround times for certain flows which now must be switched between railroads

and also because flows are fragmented, e.g., heavy flows between New York and Chicago are split between the North and South systems. Furthermore, car rents go up significantly because of the need of the two competitive systems to maintain surplus cars for competitive purposes.

In terms of the ability to implement, this is by far the most complex structural option. Dismemberment of a railway firm this size has never been attempted before. Based on industry experience that effective implementation of a large scale merger takes approximately five years (Seaboard Coast Line, Burlington Northern), it is USRA's assessment that the unmerger of Penn Central would take at least that long and possibly could run to a full decade.

Staffing of the two separate entities is difficult, given existing shortages of qualified management. Many of the work functions have been consolidated since merger; this structure would involve relocation of personnel; work now concentrated at Altoona and Samuel Ray Shop at Holidaysburg, for example, would be split with a significant number of the skilled workers being required at a new major shop on ConRail North.

The RSPO expressed concern about the duplication of facilities which would result from the ConRail North and South split. Comments from state and local planners, from transportation economists and from a large segment of the general public, however, indicate a broad support for the unmerger alternative. This support seems to be based on three factors: (1) the feeling that the merger was a grievous mistake, (2) a fear that if Penn Central stays intact and in fact grows somewhat larger, another failure of that company would likely lead to nationalization, and (3) that unmerging of the Penn Central would provide better competitive balance based on a four-system east competitive network.

It is further argued that the unmerging would allow, eventually, amalgamation with the solvents in the region to produce a basic two-carrier system or facilitate end-to-end mergers. While many shippers supported the idea in the abstract, there was concern expressed about whether it could in fact be implemented and a fear of service deterioration during the implementation process. Most rail carriers, even those that stood to gain competitively, were dubious about the possibilities for implementation.

Erie Lackawanna's changed status complicates the ConRail North and South structure significantly. The EL does not fit with the North System without creating a monopoly in New England and all of New York State. It could be merged with ConRail South, but this

in essence would be adding to the duplication of facilities, an unattractive choice given the financial results for ConRail North and South. This structural option therefore does not solve the Erie Lackawanna problem.

It was the judgment of the Association that the ConRail North and South structure should be rejected because of its poor financial performance compared against the other alternatives and, more importantly, the serious question of how the process of breaking up the Penn Central could be accomplished. While the structure was attractive in terms of its long term possibilities, it was judged that these advantages did not warrant the risk inherent in creating another five or possibly 10 years of instability in the Region's rail services caused by the unmerging process.

#### **Middle Atlantic Rail Proposal**

In the public discussions following the issuance of the Annual Report, there was considerable opinion voiced that USRA should have also studied merger of CNJ, RDG and LV into a single entity—Middle Atlantic Rail (MARC). This alternative, it was argued, could be implemented readily and would provide the necessary competition.

The original USRA rejection of the concept was based on several factors. A USRA consultant, Strong Wishart & Associates, looked at the financial projections that indicated the MARC amalgamation would be a disaster. MARC had too much duplication, resulting in excessive rehabilitation costs. It was a system which was inherently dependent on the solvent carriers in the Region; if they chose to give MARC active support, it could have a degree of success, but if they did not it would fail. MARC alone would not result in effective competition; it was the link up of MARC with the solvent carriers which truly provided the balance to Penn Central.

In working with the other structural options, ways were found to achieve some of the benefits of competition without having to duplicate facilities everywhere. Detailed analysis of line haul coordination projects in the west indicated that one could, in fact, operate competitive services over the same fixed plant without degradation in service levels. As a result of the Erie Lackawanna change, the Association began to undertake a more detailed study of how MARC might function and what its financial results would be if the MARC roads were merged with EL. This MARC-EL alternative is still under study by USRA but definitive results are not yet available.

## APPENDIX D

# Coordination Projects

### Significance of Section 206(d)(3) Findings

The specific requirements of Section 206(d)(3) are clearly intended to place certain limitations on acquisitions by profitable railroads as part of the restructuring of a regional rail system. At the same time Section 206(d)(3) must be applied in a way which balances its specific intent with the general purposes of the Act and goals of the Final System Plan. This means that Section 206(d)(3) should be applied so as (i) to eliminate from further consideration those proposed acquisitions by a profitable railroad as to which, whether singly or cumulatively, USRA is now unable to find a lack of material impairment of profitability of ConRail or any other railroad in the Region, but (ii) not to preclude, prematurely and permanently, as possible final system plan designations, various proposed acquisitions which may ultimately be shown to further the purposes and goals of the Act and plan.

It must be emphasized that the Association's determinations under Section 206(d)(3) cover nothing more than the issue of material impairment of profitability. They are not general public interest findings, nor are they addressed to whether any particular acquisitions would ultimately prove consistent with the goals and purposes of the plan and Act.

Section 206(d)(3) requires that USRA's "material impairment of profitability" determinations be made at the time of adoption and release of the preliminary system plan. Within the next 90 days the I.C.C. is re-

quired to make further determinations as to the consistency of those proposed acquisitions not excluded from further consideration by the Association with the standards of Section 5 of the Interstate Commerce Act.

Those proposed acquisitions which remain following all the processes of Section 206(d)(3) may or may not be included in the final system plan, whether as actual designations under Section 206(c) or as recommendations for future considerations under Section 206(g).

### Coordination and Minor Market Extensions

Appendix D-1 is comprised of proposals by carriers within the Region to implement trackage coordination agreements and minor market extensions. The former type of proposals will produce cost savings and do not involve any shift in markets. The latter involves extensions to relatively small markets. Savings which would be realized by the railroads through implementation of trackage right agreements will not adversely affect any other railroad in the Region. Consequently, USRA has determined that they will not, either singly or cumulatively, materially impair the profitability of any railroad including ConRail in the Region. It has also determined that the minor market changes which involve insignificant traffic shifts will not, either singly or cumulatively, impair the profitability of any railroad including ConRail in the Region. Objection from other railroads to any of these projects has been minimal.

Appendix D-1 (Coordination and Minor Market Extensions)

Coordinations and minor market extensions that will not materially impair the profitability, either singly or cumulatively, of any railroad in the Region or ConRail

Project ID	Location	Description of project	Service continued		Note
			Location	By	
IL-1.....	Bement, Ill., Sullivan, Ill.....	Norfolk & Western to abandon its line from Bement to Sullivan, with intersecting railroads to acquire the N&W track and traffic at or near the points shown under "Service continued."	Hammend, Ill.....	B&O.....	1
			[Lovington, Ill.].....	PC.....	2
IL-2.....	Elvaston, Ill., Versailles, Ill.....	Norfolk & Western to abandon its line from Versailles to Elvaston, its trackage rights over Toledo, Peoria & Western from Elvaston to Keokuk, Iowa, and its trackage rights over Burlington Northern from Quincy to Golden, and turn its Keokuk traffic over to TP&W at either Peoria or Forrest for handling into Keokuk for a per car charge. Intersecting railroads would acquire the N&W track and traffic at or near the points shown under "Service continued."	Sullivan, Ill.....	C&EI.....	
			Sullivan, Ill.....	ICG.....	
IL-3.....	Joan, Ill., Mitchell, Ill.....	Burlington Northern and Chicago & Eastern Illinois (Missouri Pacific) to jointly acquire the Penn Central line from Joan to Mitchell over which C&EI currently has trackage rights. Penn Central (ConRail) would retain trackage rights over the line if it so desired.	All points on acquired segment.....	BN.....	3
				C&EI.....	
IL-4.....	Beardstown, Ill., Springfield, Ill.....	Baltimore & Ohio (Chesle System) to abandon its line from Springfield to Beardstown with intersecting railroads to acquire the B&O track and traffic at or near the points shown under "Service Continued."	Ashland, Ill.....	ICG.....	
			Beardstown, Ill.....	BN.....	
IL-5.....	Flora, Ill., Shawneetown, Ill.....	Baltimore & Ohio (Chesle System) to abandon its line from Flora to Shawneetown, with intersecting railroads to acquire the B&O track and traffic at or near the points shown under "Service continued."	Duncan, Ill.....	L&N.....	2
			Enfield, Ill.....	L&N.....	
			Fairfield, Ill.....	SOU.....	
			Junction, Ill.....	L&N.....	
			New Eshawneetown, Ill.....	L&N.....	
			[Norris City, Ill.].....	PC.....	
			Shawneetown, Ill.....	L&N.....	
			Wyatt, Ill.....	L&N.....	
IL-6.....	Danville, Ill., Westville, Ill.....	Chicago & Eastern Illinois (Missouri Pacific) to acquire from Penn Central a line from Westville north to the Peoria & Eastern (PC) near Tilton and east over the P&E to a point within Danville. C&EI currently has trackage rights over this segment, and Penn Central (ConRail) could retain trackage rights over the segment if it so desired.	All points on acquired segment.....	C&EI.....	
IL-7.....	Chicago, Ill., Danville, Ill., Paris, Ill.....	Louisville & Nashville (Family Lines) to grant Penn Central (ConRail) trackage rights over its line from Paris to Danville and The Milwaukee Road to grant PC trackage rights from Danville to Chicago (Blue Island), allowing PC to abandon its line from Paris through Danville to Chicago. PC track and traffic at or near the points shown under "Service continued" would be acquired by intersecting railroads.	Chrisman, Ill.....	B&O.....	4
			Handy, Ind.....	N&W.....	2
			Ridge Farm, Ill.....	N&W.....	
			St. John, Ind.....	L&N.....	
			Westville, Ill.....	C&EI.....	
			[Kentland, Ill.].....	PC.....	
			[Sheff, Ind.].....	PC.....	
			[St. John, Ind.].....	PC.....	
			Schneider, Ind.....	PC.....	
			All points on acquired segment.....	C&EI.....	3
IL-8.....	E. St. Louis, Ill., Pana, Ill., Terre Haute, Ind.	Chicago & Eastern Illinois (Missouri Pacific) to acquire from Penn Central its line from E. St. Louis to Pana, allowing PC to downgrade or abandon its line from Pana to Terre Haute (Paris). C&EI now has trackage rights over this segment, and would grant Penn Central (ConRail) trackage rights should it desire to keep the line intact as a through route.			
IL-9.....	E. Peoria, Ill., Farmdale Jct., Ill.....	Norfolk & Western to abandon its line from east Peoria to Farmdale Junction and acquire trackage rights between those points over Toledo, Peoria & Western. Illinois Terminal Railroad, which now has trackage rights over N&W, would also operate over TP&W.	No industries on abandoned line.....		
IL-10.....	Bridge Jct., Ill., East Alton, Ill.....	Illinois Central Gulf to acquire Penn Central's line from Bridge Junction to East Alton, a large portion of which ICG and PC currently operate on a paired track basis. Burlington Northern, Chicago & Eastern Illinois (Missouri Pacific), and Illinois Terminal now have trackage rights over this segment and such rights would continue. PC (ConRail) would also be granted trackage rights if it so desired.	All points on acquired segment.....	ICG.....	3

See notes at end of table.



Appendix D-1 (Coordination and Minor Market Extensions)—Continued

Coordinations and minor market extensions that will not materially impair the profitability, either singly or cumulatively, of any railroad in the Region or ConRail—Continued

Project ID	Location	Description of project	Service continued		Note
			Location	By	
IL-11	Indianapolis, Ind., Decatur, Ill.	Baltimore & Ohio (Chessie System) to abandon its lines from Indianapolis (Speedway), Ind., to Newman, Ill., and from Ficklin, Ill., to Decatur, Ill., and acquire trackage rights over Penn Central from Indianapolis to Decatur via Terre Haute. B&O would also acquire trackage rights over Illinois Central Gulf from Arcola to Tuscola so it could continue service on its remaining line between Ficklin and Newman. Intersecting railroads would acquire the abandoned B&O track and traffic at or near the points shown under "Service continued."	Chrisman, Ill. [Guion, Ind.] Hammond, Ill. Hillsdale, Ind. Metcalf, Ill. Roachdale, Ind. W. Dana, Ind.	PC PC N&W L&N N&W L&N MILW	5 2
IL-12	Boody, Ill., Springfield, Ill., Taylorville, Ill.	Baltimore & Ohio (Chessie System) to abandon its line from Boody to Springfield and either acquire trackage rights over Norfolk & Western from Boody to Taylorville and operate over its own line from Taylorville to Springfield, or acquire trackage rights over N&W directly from Decatur to Springfield.	None on the abandoned segment		6
IL-13	Flora, Ill., Springfield, Ill.	Baltimore & Ohio to abandon its line from Flora to Springfield, with intersecting railroads to acquire the B&O track and traffic at or near the points shown under "Service Continued."	[Altamont, Ill.] Cowden, Ill. Edgewood, Ill. [Pana, Ill.] Pana, Ill. Taylorville, Ill. [Tower Hill, Ill.]	PC N&W ICG PC ICG N&W PC	2 7
IL-14	America, Ill., Forman, Ill.	Burlington Northern to acquire Penn Central's line from America to Forman.	All points on acquired segment now receiving rail service.	BN	
IL-AO	Various	For other coordinations and minor market extensions that involve the State of Illinois to a lesser extent, see projects IN-5, IN-8, and IN-14.	Not applicable	N/A	
IN-1	Jeffersonville, Ind., Louisville, Ky., N. Vernon, Ind., Seymour, Ind.	Baltimore & Ohio (Chessie System) to abandon its line from North Vernon to Jeffersonville (Louisville) and acquire trackage rights over Penn Central (ConRail) from Seymour to Jeffersonville; or B&O to grant PC (ConRail) trackage rights from North Vernon to Jeffersonville allowing PC (ConRail) to abandon Seymour to Jeffersonville.	None on the segment to be abandoned.		
IN-2	Connersville, Ind., New Castle, Ind.	Norfolk & Western to abandon its lines from New Castle to Cambridge City and from Beeson to Connersville, with Penn Central (ConRail) to acquire the portion between Cambridge City and Beeson over which it now has trackage rights. Intersecting railroads would acquire the N&W, track and traffic at or near the points shown under "Service continued."	[Beeson, Ind.] Connersville, Ind. [Connersville, Ind.] [Milton, Ind.]	PC B&O PC PC	2 8
IN-3	Cottage Grove, Ind., Indianapolis, Ind.	Baltimore & Ohio (Chessie System) to abandon its line from Cottage Grove to Indianapolis and acquire trackage rights over Penn Central (ConRail) from Cincinnati to Indianapolis. Intersecting railroads would acquire the B&O track and traffic at or near the points shown under "Service Continued."	Connersville, Ind. [Connersville, Ind.] Rushville, Ind. [Rushville, Ind.]	N&W PC N&W PC	2 9
IN-4	Dillon, Ind., Gary, Ind.	Norfolk & Western to abandon its line from Dillon to Gary (Tolleston) with intersecting railroads to acquire the N&W track and traffic at or near the points shown under "Service Continued."	Westville, Ind.	L&N	
IN-5	Chicago Hts., Ill., Porter, Ind.	Elgin, Joliet & Eastern to grant Penn Central (ConRail) trackage rights over its line from Porter to Chicago Heights, allowing PC (ConRail) to abandon its parallel line.	None on the segment to be abandoned.		
IN-6	Fort Wayne, Ind., Muncie, Ind.	Norfolk & Western to abandon its lines from Fort Wayne (Waynedale) to Kingsland and Bluffton to Muncie, with Erie-Lackawanna to acquire the remaining segment between Kingsland and Bluffton. Intersecting railroads would acquire the N&W track and traffic at or near the points shown under "Service Continued."	Bluffton, Ind. Hartford City, Ind. Kingsland, Ind.	E-L PC E-L	10
IN-7	Montpeller, Ohio, Wakarusa, Ind.	Norfolk & Western to abandon its lines from Montpeller (Pergo), Ohio, to Topeka, Indiana, and from Millersburg, Indiana, to Wakarusa, Indiana, with the remaining segment between Topeka and Millersburg to be acquired by Penn Central (ConRail) or also abandoned. Intersecting railroads would acquire the N&W track and traffic at or near the points shown under "Service Continued."	Millersburg, Ind. New Paris, Ind. Topeka, Ind. [Walcottville, Ind.]	PC PC PC PC	2

See notes at end of table.

Appendix D-1 (Coordination and Minor Market Extensions)—Continued

Coordinations and minor market extensions that will not materially impair the profitability, either singly or cumulatively, of any railroad in the Region or ConRail—Continued

Project ID	Location	Description of project	Service continued		Note
			Location	By	
IN-8	Chicago, Ill., Fort Wayne, Ind.	Norfolk & Western and Penn Central (ConRail) to acquire trackage rights on each others line between Fort Wayne and Chicago (Hobart, Ind.) and operate on a paired track basis.	All on each line by its owner		
IN-9	Griffith, Ind., LaCrosse, Ind., Pine Jct., Ind., State Line, Ind., Wellsboro, Ind.	Chesapeake & Ohio (Chessie System) to abandon its line from LaCrosse to Griffith and acquire trackage rights over Baltimore & Ohio (Chessie System) from Wellsboro to Pine Junction. The C&O line from Griffith to State Line would be acquired by Erie-Lackawanna, which is currently a joint operator on that segment.	None on the segment to be abandoned.		11
IN-10	New Castle, Ind., Rushville, Ind.	Norfolk & Western to abandon its line from New Castle to Rushville, with intersecting railroads to acquire the N&W track and traffic at or near the points shown under "Service Continued."	Dunreith, Ind. Rushville, Ind. [Rushville, Ind.]	PC B&O PC	12
IN-11	Greencastle, Ind., Indianapolis, Ind.	Louisville & Nashville (family lines) to acquire trackage rights over Penn Central's (ConRail) line from Greencastle to Indianapolis.	All points would continue to be served by Con Rail.	PC	
IN-12	Straight Line Junction, Ind., Oakland City, Ind.	Louisville & Nashville (Family Lines) to acquire the Penn Central (ConRail) line from Straight Line Junction to Oakland City.	All points on acquired segment	L&N	
IN-13	Clay City, Ind., Spring Hill, Ind.	Louisville & Nashville (Family Lines) to acquire the Penn Central (ConRail) line from Clay City to Spring Hill.	All points on acquired segment	L&N	
IN-14	Evansville, Ind., Mt. Carmel, Ill.	Southern Railway System to acquire the Penn Central (Con Rail) line between the SOU-PC intersection at Mt. Carmel and Evansville.	All points on acquired segment	SOU	
IN-AO	Various	For other coordinations and minor market extensions that involve the State of Indiana to a lesser extent, see projects IL-7, IL-11, MI-1, OH-8, OH-9, and OH-12.	Not applicable	N/A	
MA-1	Chelsea, Mass., E. Boston, Mass.	Boston & Maine to acquire the Penn Central (Con-Rail) line from Mystic Junction Yard to East Boston; or, in the alternative, that portion of the line between the out-of-service PC bridge over Chelsea Creek and East Boston.	All points on acquired segment	B&M	
MA-2	Chelmsford, Mass., Framingham Center, Mass., Lowell, Mass.	Boston & Maine to acquire the Penn Central (Con-Rail) line from Chelmsford to Lowell, allowing PC to abandon its line from Framingham Center to Chelmsford. B&M would also acquire the PC track and traffic at or near West Concord, where another B&M line intersects the PC line to be abandoned.	All points on acquired segment W. Concord, Mass.	B&M B&M	13
MA-3	Fitchburg, Mass., Framingham Center, Mass.	Boston & Maine to acquire the Penn Central (Con-Rail) line from Framingham Center to Fitchburg.	All points on acquired segment	B&M	
MA-4	N. Adams, Mass., N. Adams Junction, Mass.	Boston & Maine to acquire the Penn Central (Con-Rail) track and traffic at or near North Adams, allowing PC to abandon its line between North Adams Junction and North Adams.	N. Adams, Mass.	B&M	
MA-5	Easthampton, Mass., Westfield, Mass.	Boston & Maine to acquire the Penn Central (Con Rail) track and traffic at or near Easthampton, allowing PC to abandon its line between Westfield and Easthampton.	Easthampton, Mass.	B&M	
MA-6	Holyoke, Mass., Westfield, Mass.	Boston & Maine to acquire the Penn Central (Con-Rail) track and traffic at or near Holyoke, allowing PC to abandon its line between Westfield and Holyoke.	Holyoke, Mass.	B&M	
MA-AO		There are no other coordinations and minor market extensions that involve the State of Massachusetts.	Not applicable	N/A	
MD-1	Dawson, Md., Tonoloway, Md.	Western Maryland (Chessie System) to abandon its line from Dawson to Tonoloway and acquire trackage rights over a parallel line of Baltimore & Ohio (Chessie System).	None on the segments to be abandoned.		
MD-AO	Various	For other coordinations and minor market extensions that involve the State of Maryland to a lesser extent, see projects PA-5, PA-9 and WV-1.	Not applicable	N/A	
ME-1	Danville, Maine, Portland, Maine	Grand Trunk to abandon its line from Danville to Portland and acquire trackage rights over Maine Central between those points. Maine Central would assume service to GT patrons at Yarmouth either by contract or acquisition.	Yarmouth, Maine	MEC	
ME-AO		There are no other coordinations and minor market extensions that involve the State of Maine.	Not applicable	N/A	

See notes at end of table.

## Appendix D-1 (Coordination and Minor Market Extensions)—Continued

Coordinations and minor market extensions that will not materially impair the profitability, either singly or cumulatively, of any railroad in the Region or ConRail—Continued

Project ID	Location	Description of project	Service continued		Note
			Location	By	
MI-1	Detroit, Mich., Hammond, Ind.	Norfolk & Western and Penn Central (ConRail) to coordinate their operations between Detroit and Hammond, with PC acquiring trackage rights over N&W from Detroit to Butler, Ind., and N&W acquiring trackage rights over PC from Butler to Hammond.	All on each line by its owner		14
MI-2	Clare, Mich., Coleman, Mich., Mt. Pleasant, Mich.	Chesapeake & Ohio (Chessie System) to abandon its line from Coleman to Mt. Pleasant and acquire trackage rights over Ann Arbor (ConRail) from Clare to Mt. Pleasant.	None on the segment to be abandoned.		15
MI-3	Grand Haven, Mich., Marne, Mich.	Grand Trunk Western to abandon its line from Marne to Grand Haven, with intersecting railroads to acquire the GTW track and traffic at or near the points shown under "Service Continued."	Ferrysburg, Mich. Grand Haven, Mich.	C&O C&O	
MI-4	Battle Creek, Mich.	Grand Trunk Western and Penn Central (ConRail) to acquire trackage rights on each other's line as required to create a single, jointly-operated main line through downtown Battle Creek in cooperation with city redevelopment plans.	Not applicable.	N/A.	
MI-5	Bay City, Mich., Saginaw, Mich.	Grand Trunk Western to abandon its line from Saginaw to Bay City and acquire trackage rights over Penn Central (ConRail) between those points; or PC to abandon their line and acquire trackage rights over GTW.	None on the segment to be abandoned.		16
MI-6	Ionia, Mich., Portland, Mich.	Chesapeake & Ohio (Chessie System) to abandon its line from Portland to Ionia, with intersecting railroads to acquire the C&O track and traffic at or near the points shown under "Service Continued."	Ionia, Mich.	GTW	
MI-7	Ashley, Mich., Greenville, Mich., Owosso, Mich.	Grand Trunk Western to abandon its line from Ashley to Greenville and its trackage rights over Ann Arbor (ConRail) from Owosso to Ashley, with intersecting railroads to acquire the GTW track and traffic at or near the points shown under "Service Continued."	Ashley, Mich. Greenville, Mich.	AA C&O	17
MI-8	Tecumseh, Mich., Wauseon, Ohio	Detroit, Toledo & Ironton to abandon its line from Wauseon to Tecumseh, with intersecting railroads to acquire the DT&I track and traffic at or near the points shown under "Service Continued."	Adrian, Mich. [Adrian, Mich.] [Tecumseh, Mich.]	N&W PC PC	2
MI-9	Bay City, Mich., Pinconning, Mich.	Detroit & Mackinac to abandon its line from Bay City to Pinconning and acquire trackage rights over the Penn Central (Con Rail) line between those points. Yard operations of the two railroads at Bay City would be combined and jointly operated.	None on the segment to be abandoned.		18
MI-10	Cheboygan, Mich., Gaylord, Mich., Mackinaw City, Mich.	Detroit & Mackinac to acquire the Penn Central (Con Rail) lines from Cheboygan to Gaylord, and Cheboygan to Mackinaw City, allowing PC to abandon its line from Pinconning to Gaylord.	All points on acquired segments.	D&M	
MI-11	Caseville, Mich., Imlay City, Mich.	Grand Trunk Western to abandon its line from Imlay City to Caseville, with intersecting railroads to acquire the GTW track and traffic at or near the points shown under "Service Continued."	Clifford, Mich. Pigeon, Mich.	C&O C&O	
MI-AO		There are no other coordinations and minor market extensions that involve the State of Michigan.	Not applicable.	N/A.	
NJ-1	Little Ferry, N.J., Marion Jct., N.J.	New York, Susquehanna & Western to grant Penn Central (Con Rail) trackage rights over its line from Marion Jct. to Little Ferry, then acquire trackage rights over (or outright) the PC line through Weehawken Yard and assume PC local services.	All on each line by its owner.		
NJ-AO		There are no other coordinations and minor market extensions that involve the State of New Jersey.	Not applicable.	N/A.	
NY-1	Ashford, N.Y., Buffalo, N.Y., Rochester, N.Y.	Baltimore & Ohio (Chessie System) to abandon its line from Ashford to LeRoy and acquire trackage rights over Penn Central (Con Rail) from Buffalo to Rochester. B&O would continue to serve LeRoy to Rochester from the Rochester end of the line, while intersecting railroads would acquire the B&O track and traffic at or near the points shown under "Service Continued."	B&O Jct., N.Y. Machias, N.Y. Silver Springs, N.Y.	E-L PC E-L	27
NY-2	Blasdell, N.Y.	Norfolk & Western to acquire trackage rights over or outright a short segment of Penn Central (Con Rail) in Blasdell to provide a better connection to Lehigh Valley.	Not applicable.	N/A.	19

See notes at end of table.

Appendix D-1 (Coordination and Minor Market Extensions)—Continued

Coordinations and minor market extensions that will not materially impair the profitability, either singly or cumulatively, of any railroad in the Region or ConRail—Continued

Project ID	Location	Description of project	Service continued		Note
			Location	By	
NY-3...	Bradford, Pa., Buffalo, N.Y., Kellogg, N.Y.	Baltimore & Ohio (Chessie System) to abandon its line from Bradford to Kellogg, with Penn Central (ConRail) to acquire the B&O line from Kellogg to Buffalo. Intersecting railroads would acquire the B&O track and traffic at or near the points shown under "Service Continued."	All points on acquired segment Salamanca, N.Y.	PC..... EL.....	28
NY-AO.....		There are no other coordinations and minor market extensions that involve the State of New York.	Not applicable.....	N/A.....	
OH-1.....	Chillicothe, Ohio, Washington Court House, Ohio, Waverly, Ohio.	Detroit, Toledo & Ironton to abandon its line from Washington Court House to Waverly and acquire trackage rights over Baltimore & Ohio (Chessie System) from Washington Court House to Chillicothe and over Norfolk & Western from Chillicothe to Waverly. Intersecting railroads would acquire the DT&I track and traffic at or near the points shown under "Service Continued."	Thrifton, Ohio.....	B&O.....	
OH-2.....	Girard, Ohio, Youngstown, Ohio.....	Baltimore & Ohio (Chessie System) to downgrade its main line through Youngstown and acquire trackage rights over Lake Erie & Eastern (Pittsburgh & Lake Erie) from Youngstown (Gateway Yard) to Girard.	All services continued.....		
OH-3.....	Toledo, Ohio.....	Baltimore & Ohio (Chessie System) and Penn Central (ConRail) to abandon their jointly-owned Lakefront Dock and contract for the joint use of Chesapeake & Ohio's (Chessie System) adjacent Presque Isle Dock for handling of coal and ore to/from lake boats.	All services continued.....		
OH-4.....	Lodi, Ohio, Warwick, Ohio, Wooster, Ohio.	Baltimore & Ohio (Chessie System) to abandon its line from Lodi to Wooster and acquire trackage rights over Penn Central (ConRail) from Warwick to Wooster. Intersecting railroads would acquire the B&O track and traffic at or near the points shown under "Service Continued."	Burbank, Ohio.....	EL.....	
OH-5.....	Chardon, Ohio, Painesville, Ohio, Warren, Ohio.	Baltimore & Ohio (Chessie System) to abandon its line from Warren (Copperweid) to Chardon and acquire trackage rights over Penn Central (ConRail) or Norfolk & Western from Cleveland to Painesville. B&O would continue to serve the segment from Painesville to Chardon from the Painesville end.	None on the segment to be abandoned.....		
OH-6.....	Akron Jct., Ohio, Cleveland, Ohio, Ravenna, Ohio.	Baltimore & Ohio (Chessie System) to abandon its line from Akron Junction to Cleveland and acquire trackage rights over the Penn Central (ConRail) line from Ravenna to Cleveland.	None on the segment to be abandoned.....		
OH-7.....	Baltic, Ohio, Coshocton, Ohio, Fresno, Ohio, Zanesville, Ohio.	Norfolk & Western to abandon its lines from Baltic to Fresno and Coshocton to Zanesville, with Penn Central (ConRail) to acquire the segment from Fresno to Coshocton and intersecting railroads to acquire the N&W track and traffic at or near the points shown under "Service Continued."	Zanesville, Ohio..... [Zanesville, Ohio].....	B&O..... PC.....	2
OH-8.....	Frankfort, Ind., Waterville, Ohio.....	Norfolk & Western to abandon its line from Waterville to Frankfort, with intersecting railroads to acquire the N&W track and traffic at or near the points shown under "Service Continued."	Bluffton, Ind..... Decatur, Ind..... Delphus, Ohio..... Holgate, Ohio..... Malinta, Ohio..... Marion, Ind..... Marion, Ind..... Ohio City, Ohio.....	EL..... EL..... PC..... B&O..... DT&I..... C&O..... PC..... EL.....	20
OH-9.....	White House, Ohio, Woodburn, Ind.....	Norfolk & Western to abandon its line from White House to Woodburn, with intersecting railroads to acquire the N&W track and traffic at or near the points shown under "Service Continued."	[Cecl, Ohio]..... Defiance, Ohio..... Napoleon, Ohio.....	PC..... B&O..... DT&I.....	2
OH-10.....	Sandusky, Ohio, Willard, Ohio.....	Baltimore & Ohio (Chessie System) to abandon its line from Willard to Sandusky and acquire trackage rights over Norfolk & Western from Attica Junction to Sandusky. Intersecting railroads would acquire the B&O track and traffic at or near the points shown under "Service Continued."	Kimball, Ohio..... Monroeville, Ohio.....	N&W..... N&W.....	21
OH-11.....	Manhattan Junction, Ohio.....	Norfolk & Western to acquire a short segment of Penn Central (ConRail) line from Manhattan Junction to a connection with the Detroit & Toledo Shore Line.	All points on acquired segment.....	N&W.....	
OH-12.....	Cincinnati, Ohio, New Castle, Ind.....	Norfolk & Western to acquire trackage rights over, or outright, the Penn Central (ConRail) line from Cincinnati to New Castle.	All points..... All points on acquired segment.....	PC..... N&W.....	

See notes at end of table.



Appendix D-1 (Coordination and Minor Market Extensions)—Continued

Coordinations and minor market extensions that will not materially impair the profitability, either singly or cumulatively, of any railroad in the Region or ConRail—Continued

Project ID	Location	Description of project	Service continued		Note
			Location	By	
OH-13...	Cincinnati, Ohio.....	Norfolk & Western to acquire trackage rights over, or outright, one of two Penn Central (ConRail) tracks from Clare Yard to a connection with the Louisville & Nashville (Family Lines) and acquire trackage rights over PC from the L&N connection to a connection with the Southern Railway System.	All points..... All points on acquired segment.....	PC..... N&W.....	
OH-14...	Elyria, Ohio, Millbury, Ohio.....	Norfolk & Western to acquire the Penn Central (ConRail) line from Bellevue to Yeomans, allowing PC to abandon Millbury to Bellevue and Yeomans to Elyria. Intersecting railroads would acquire the PC track and traffic at or near the points shown under "Service Continued."	Bellevue, Ohio..... Clyde, Ohio..... Fremont, Ohio..... Monroeville, Ohio..... Monroeville, Ohio..... Norwalk, Ohio.....	N&W..... N&W..... N&W..... B&O..... N&W..... N&W.....	22
OH-AO	Various.....	For other coordinations and minor market extensions approved under Section 206(d)(3) that involve the State of Ohio to a lesser extent, see projects IN-7, MI-1, MI-8, and PA-4.	Not applicable.....	N/A.....	
ON-1...	Pelton, Ont., St. Thomas, Ont.....	Chesapeake & Ohio (Chessie System) to abandon its line from Pelton to St. Thomas and acquire trackage rights over Penn Central (ConRail) between those points. All yard and mechanical operations at St. Thomas would be combined and jointly operated. C&O would continue to serve its patrons in the Leamington area either by retention of part of its line as a branch or by trackage rights over PC from Comber to Leamington.	None on the segments to be abandoned.....		23
ON-AO		There are no other coordinations and minor market extensions that involve the Province of Ontario.	Not applicable.....	N/A.....	
PA-1...	Connellsville, Pa., McKeesport, Pa., W. Newton, Pa.	Pittsburgh & Lake Erie to abandon its line from W. Newton to Connellsville and acquire trackage rights over Baltimore & Ohio (Chessie System) from McKeesport to Connellsville plus such rights within Connellsville as required to continue service to present customers.	None on the segment to be abandoned.....		
PA-2...	Connellsville, Pa., W. Liberty, Pa.....	Norfolk & Western to abandon its line from W. Liberty to Connellsville and acquire trackage rights over Penn Central (ConRail) from Woodvale to Carnegie, over Pittsburgh, Chartiers & Youghiogheny from Carnegie to McKees Rocks and over Pittsburgh & Lake Erie from McKees Rocks to Connellsville. Intersecting railroads would acquire the N&W track and traffic at or near the points shown under "Service Continued."	Belle Vernon, Pa..... Bruceeton, Pa..... Clairton, Pa.....	P&LE..... B&O..... PC.....	24
PA-3...	Girard Junction, Pa., Lexington, Pa.	Bessemer & Lake Erie to acquire the Penn Central (ConRail) line from Lexington to Girard Junction.	All points on acquired segment.....	B&LE.....	
PA-4...	New Castle, Pa., Youngstown, Ohio.....	Baltimore & Ohio (Chessie System) to abandon its line from New Castle to Youngstown and acquire trackage rights over Pittsburgh & Lake Erie between those points; or, P&LE to abandon and acquire trackage rights over B&O.	No industries on abandoned line.....		
PA-5...	Connellsville, Pa., Cumberland, Md.....	Western Maryland (Chessie System) to abandon its line from Connellsville to Cumberland and acquire trackage rights over Baltimore & Ohio (Chessie System) between those points.	None on the segment to be abandoned.....		
PA-6...	Mt. Jewett, Pa., Parker's Landing, Pa.	Baltimore & Ohio (Chessie System) to abandon its line from Mt. Jewett to Parker's Landing, with Lake Erie, Franklin & Clarion to acquire the line from Knox to Marienville and other intersecting railroads to acquire the B&O track and traffic at or near the points shown under "Service Continued."	[Kane, Pa.]..... Shipperville, Pa.....	PC..... PC.....	28
PA-7...	Point Creek, Pa., South Fork, Pa., Windber, Pa.	Baltimore & Ohio (Chessie System) to acquire portions of Penn Central's (ConRail) South Fork Branch, allowing PC to abandon the remainder.	All points on acquired segment.....	B&O.....	
PA-8...	Erie, Pa.....	Norfolk & Western to abandon its line through Erie and either acquire trackage rights on Penn Central (ConRail) or build its own "Erie bypass" track on the PC right of way.	None on the segment to be abandoned.....		
PA-9...	Chambersburg, Pa., Hagerstown, Md., Harrisburg, Pa., Shippensburg, Pa.	Western Maryland (Chessie System) to abandon its line from Hagerstown to Chambersburg and acquire trackage rights over, or outright, the Penn Central (ConRail) line from Hagerstown to Shippensburg (Lurgan).	None on the segment to be abandoned.....		
PA-10...	New Castle, Pa., Walford, Pa.....	Pittsburgh & Lake Erie to acquire the Penn Central (ConRail) track and traffic at or near Walford, allowing PC to abandon New Castle to Walford.	None on the segment to be abandoned.....		
PA-11...	Allenport, Pa., Brownsville, Pa., Mon Junction, Pa.	Pittsburgh & Lake Erie to acquire the Penn Central (ConRail) line from Allenport to Brownsville, allowing PC to abandon its line from Mon Junction to Allenport.	None on the segment to be abandoned.....		

See notes at end of table.

## Appendix D-1 (Coordination and Minor Market Extensions)—Continued

Coordinations and minor market extensions that will not materially impair the profitability, either singly or cumulatively, of any railroad in the Region or ConRail—Continued

Project ID	Location	Description of project	Service continued		Note
			Location	By	
PA-12...	New Castle, Pa., Sharon, Pa.	Pittsburgh & Lake Erie to abandon its trackage rights over Erie Lackawanna from New Castle to Sharon, with EL to acquire the P&LE track and traffic at Sharon.	Sharon, Pa.	EL	
PA-13...	McKeesport, Pa.	Union Railroad to acquire bridge on Penn Central (ConRail) McKeesport Branch over which it now has trackage rights, then grant Penn Central trackage rights.	All points on acquired segment	URR	
PA-AO...	Various	For other coordinations and minor market extensions that involve the State of Pennsylvania, see project NY-3.	Not applicable	N/A	
VA-1...	Norfolk, Va.	Chesapeake & Ohio (Chessie System) and Penn Central (ConRail) or other PC successor to jointly purchase (with financial aid from Port Authority) and operate a new car ferry, serving both the Cape Charles-Norfolk and Newport News-Norfolk car float operations of the participants.	All points	C&O PC	25
VA-AO...	Various	For other coordinations and minor market extensions that involve the State of Virginia, see project WV-1.	Not applicable	N/A	
WV-1...	Martinsburg, W. Va., Millville, W. Va., Stephenson, W. Va., Winchester, Va.	Baltimore & Ohio (Chessie System) to abandon its line from Millville to Stephenson and acquire trackage rights over the Penn Central (ConRail) line from Martinsburg to Winchester. Intersecting railroads would acquire the B&O track and traffic at or near the points shown under "Service Continued."	Charles Town, W. Va.	N&W	26
WV-AO...	Various	For other coordinations and minor market extensions that involve the State of West Virginia, see project MD-1.	Not applicable	N/A	

## FOOTNOTES

1. Hammond, Illinois, would be abandoned by Baltimore & Ohio under project IL-11 and may or may not receive continued service by B&O dependent on implementation of that project under the final system plan.

2. Cities and towns shown in brackets that are to have service continued by Penn Central (ConRail) are located on lines undergoing light-density analysis and may or may not be included in ConRail dependent on the outcome of that analysis and such subsequent subsidy decisions as may be made.

3. See projects IL-3, IL-8 and IL-10 which present conflicting alternative proposals concerning this line segment. Resolution of this conflict will appear in the final system plan.

4. Chrisman, Illinois, would be abandoned by Baltimore & Ohio under project IL-11 and may or may not receive continued service by B&O dependent on implementation of that project under the final system plan. Westville, Illinois, is involved in project IL-6, but would continue to be served under that project by a different railroad.

5. Chrisman, Illinois, would be abandoned by Penn Central (ConRail) under project IL-7 and Hammond, Illinois, would be abandoned by Norfolk & Western under project IL-1. These points may or may not receive continued service from those railroads dependent on implementation of those projects under the final system plan. With Baltimore & Ohio's agreement, Illinois Central Gulf would acquire and serve Newman to Ficklin in lieu of trackage rights for B&O to serve it.

6. See project IL-12, which also impacts the Baltimore & Ohio line from Taylorville to Springfield.

7. Interrelates with IL-12. If Baltimore & Ohio plans operation between Taylorville and Springfield under that project (in lieu of direct trackage rights from Decatur to Springfield), the abandonment under this project would be Flora to Taylorville only.

8. Connersville, Indiana, would be abandoned by Baltimore & Ohio under project IN-3, and may or may not receive continued service from B&O dependent on implementation of that project under the final system plan. Note 2 also applies to Connersville, but Connersville is recognized as a relatively important traffic point and will receive continued rail service.

9. Connersville, Indiana, and Rushville, Indiana, would be abandoned by Norfolk & Western under projects IN-2 and IN-10 respectively and may or may not receive continued rail service from N&W dependent on implementation of those projects under the final system plan. Note 2 also applies to both Connersville and Rushville. Connersville is recognized as a relatively important traffic point and will receive continued rail service.

10. See project OH-8, which also involves the Bluffton area.

11. Should Erie-Lackawanna be brought into ConRail, the continuation of service between Griffith and State Line will be dependent on the ConRail operating plan.

12. Rushville, Indiana, would be abandoned by Baltimore & Ohio under project IN-3 and may or may not receive continued service by B&O dependent on implementation of that project under the final system plan. Note 2 also applies to Rushville.

13. Traffic now interchanged between Boston & Maine and Penn Central (ConRail) at Lowell would be interchanged at Springfield or some similar point that is mutually acceptable to both railroads.

14. See project IN-7 for abandonment of Norfolk & Western's current route. Since N&W can reroute its trains over other of its own lines to accomplish IN-7, the two projects are not dependent on one another.

15. The Ann Arbor segment involved in this project is under study as a light-density line and, should it not be recommended for inclusion in ConRail, an outright acquisition of the line by Chesapeake & Ohio would replace the acquisition of trackage rights in this project.

16. Grand Trunk Western and Penn Central are in the process of implementing coordinated operations within Bay City proper in cooperation with city redevelopment plans.

17. The Ann Arbor line through Ashley, Mich., is undergoing light-density analysis and may or may not receive continued service dependent on the outcome of that analysis and such subsequent subsidy decisions as may be made.

18. The Penn Central segment involved in this project is under study as a light-density line and should it not be recommended for inclusion in ConRail, an outright acquisition of the line by Detroit & Mackinac would replace the acquisition of traffic rights in this project.

19. Implementation of this project will be dependent on the role of Lehigh Valley under the final system plan. Under certain structures, such a connection may be unnecessary.

20. See IN-6 for Erie-Lackawanna access to Bluffton. Norfolk & Western would continue its services at Continental, Ohio, and Kokomo, Ind., from other of its lines.

21. In the alternative, Baltimore & Ohio would abandon the entire line and Norfolk & Western would acquire B&O's Sandusky track and traffic.

22. Monroeville, Ohio, would be abandoned by Baltimore & Ohio under project OH-10, but Norfolk & Western would still be present to provide service. The entire Penn Central (ConRail) line from Millbury to Elyria is under study as a light-density line.

23. While the control of the Canadian Transport Commission over this project is recognized, the impact on the profitability of domestic railroads has been evaluated and the project approved in principle.

24. While the two projects are not dependent on one another, the implementation of PA-1 would change the routing shown in this project to "... McKees Rocks, over Pittsburgh & Lake Erie from McKees Rocks to McKeesport, and over Baltimore & Ohio (Chessie System) from McKeesport to Conneville." In addition, other routes are being explored to get Norfolk & Western trains from their own line over to the Pittsburgh & Lake Erie, but the one shown appears most promising.

25. The Penn Central segment involved in this project is under study as a light-density line, with implementation contingent on its recommended inclusion in ConRail or acquisition by another railroad.

26. The Penn Central segment involved in this project is under study as a light-density line and should it not be recommended for inclusion in ConRail, an outright acquisition of the line from Winchester, Va., to Hagerstown, Md., by Baltimore & Ohio would replace the acquisition of trackage rights in this project.

27. In the alternative, Penn Central (ConRail) would acquire the Baltimore & Ohio (Chessie System) line from Le Roy to Rochester, inclusive.

28. This project is interrelated to NY-1 in that the abandonment here would be Ashford to Kellogg if NY-1 is not implemented.







## Major Market Extensions

Appendix D-3 is divided into two parts. Part I lists those proposed extensions which the Association has been unable to determine *would* either singly or cumulatively materially impair the profitability of any railroad including ConRail in the Region. Part II lists those extensions which the Association has determined *would not* either singly or cumulatively materially impair the profitability of any railroad including ConRail in the Region.

### Major Market Extensions Which USRA Has Been Unable to Determine Would Materially Impair Profitability

This part of Appendix D-3 is comprised of proposed line extensions by railroads which if implemented would be tantamount to a major restructuring in the Region and in some instances, the Nation. USRA is unable to determine that any or all of these proposals would not materially impair the profitability of ConRail or other railroads within the Region. Many of the proposed extensions might in fact also impair the profitability of peripheral carriers, which must necessarily depend on the preservation of existing traffic flows for their economic survival.

Chicago and St. Louis are major gateways for traffic interchanged between Chessie, Norfolk & Western and PC on one hand and the Western carriers, such as Santa Fe and Burlington Northern, on the other. If, for example, Santa Fe were to be allowed to extend its lines to prime traffic generating areas such as Pittsburgh and Detroit, the consequent massive changes in traffic flows could undoubtedly impair the profitability of major regional and peripheral carriers which would be competing with Santa Fe. For example, cars which origi-

nate in Pittsburgh and are destined to Los Angeles and now routed Chessie to Chicago thence Santa Fe, would probably be routed over the Santa Fe for the entire distance if it were allowed entry into the Pittsburgh market. Other cars, which are now routed Chessie-Chicago-BN might also be lost to a Santa Fe direct haul at the expense of BN and Chessie.

The Cincinnati gateway serves as a major interchange point between the railroads of the South and the Northeast. For example, if the Southern Railway were to be allowed to acquire the DT&I it would have direct entry into the Detroit market. Thus, it is reasonable to assume that some of the traffic which is now moving from Detroit via Penn Central or Chessie to Cincinnati and thence Southern Railway would be diverted to the Southern for the entire distance. Other traffic which is now routed DT&I-PC-L&N would probably be lost to the Southern Railway direct route.

Some of the proposals by the railroads would extend their scope of operations and gain access to markets not presently served. For example, P&LE wishes to acquire the PC line from Warren, Ohio to Cleveland. Such an extension if implemented would simply provide an additional competitive carrier in the Pittsburgh-Cleveland market and would allow P&LE to gain additional traffic at the expense of ConRail and other railroads. Proposals such as these in essence represent the transfer of gross and net income from one railroad to another and do not enhance regional rail viability.

For the reasons cited above, USRA is unable to determine that the Proposals on Part I of the Appendix D-3 would not materially impair both singly and cumulatively the profitability of ConRail and other carriers within the Region.

## Appendix D-3 (Major Market Extension Proposals Reviewed Under Section 206(d)(3))

## PART I

Major market extension proposals that cannot now be found not to materially impair the profitability, either singly or cumulatively, of any railroad in the Region or ConRail

Project ID	Location	Description of project
ATSF-1	Chicago River and Indiana RR	Atchison, Topeka & Santa Fe to acquire entire railroad.
ATSF-2	Indiana Harbor Belt RR	Atchison, Topeka & Santa Fe to acquire entire railroad.
ATSF-3	Michigan Central RR	Atchison, Topeka & Santa Fe to acquire entire railroad.
ATSF-4	Kankakee Belt Line	Atchison, Topeka & Santa Fe to acquire entire railroad.
ATSF-5	Lake Shore and Michigan Southern Railway	Atchison, Topeka & Santa Fe to acquire entire railroad.
ATSF-6	Pittsburgh, Fort Wayne, and Chicago Ry	Atchison, Topeka & Santa Fe to acquire entire railroad.
ATSF-7	Pittsburgh, Cincinnati, Chicago & St. Louis RR	Atchison, Topeka & Santa Fe to acquire entire railroad.
ATSF-8	Cleveland, Cincinnati, Chicago & St. Louis Railway	Atchison, Topeka & Santa Fe to acquire yards, terminals and belt lines.
ATSF-9	Chicago, Ill.—Northern Ind.	Atchison, Topeka & Santa Fe to acquire yards, terminals and belt lines of Penn Central.
ATSF-10	Detroit, Mich.	Atchison, Topeka & Santa Fe to acquire yards, terminals and belt lines of Penn Central.
ATSF-11	Cleveland, Ohio	Atchison, Topeka & Santa Fe to acquire yards, terminals and belt lines of Penn Central.
ATSF-12	Cincinnati, Ohio	Atchison, Topeka & Santa Fe to acquire yards, terminals and belt lines of Penn Central.
ATSF-13	Toledo, Ohio	Atchison, Topeka & Santa Fe to acquire yards, terminals and belt lines of Penn Central.
ATSF-14	Columbus, Ohio	Atchison, Topeka & Santa Fe to acquire yards, terminals and belt lines of Penn Central.
ATSF-15	Indianapolis, Ind.	Atchison, Topeka & Santa Fe to acquire yards, terminals and belt lines of Penn Central.
ATSF-16	East St. Louis, Ill.	Atchison, Topeka & Santa Fe to acquire yards, terminals and belt lines of Penn Central.
ATSF-17	Pittsburgh, Pa. and Vicinity	Atchison, Topeka & Santa Fe to acquire yards, terminals and belt lines of Penn Central.
ATSF-18	Buffalo, N.Y.	Atchison, Topeka & Santa Fe to acquire yards, terminals and belt lines of Penn Central.
B&LE-1	Shenango, Pa., Sharon, Pa., Youngstown, Ohio	Bessemer & Lake Erie to acquire trackage rights or ownership interest in Penn Central or Erie-Lackawanna Lines to serve market directly.
B&M-2	Rotterdam Jct., N.Y., Buffalo, N.Y.	Boston & Maine to acquire trackage rights over Penn Central.
BN-1	Zearing, Ill., Hennepin, Ill.	Burlington Northern to acquire trackage rights over Chicago & Northwestern south of Ladd and purchase Penn Central beyond to Hennepin for access to steel plant.
BN-2	Eola, Ill., Brisbane, Ill., Steele, Ill., Hobart, Ind., Griffith, Ind., Porter, Ind., Elkhart, Ind.	Burlington Northern to acquire trackage rights over Elgin, Joliet and Eastern between Eola and vicinity of Brisbane and build new connection to Penn Central at Steele. Then acquire Penn Central trackage between Steele and Hobart or between Steele and Griffith and obtain trackage rights to Porter and bridge rights to Elkhart.
BN-3	Porter, Ind., Burns Harbor, Ind., Gary, Ind., Indiana Harbor, Ind., E. Chicago, Ind.	Assuming Burlington Northern can reach Porter it would obtain trackage rights via Penn Central as listed.
BN-5	Streator, Ill., Hennepin, Ill.	Burlington Northern to acquire portion of Penn Central "Kankakee Belt" Line between BN connection at Streator and Hennepin Steel Mills.
BN-6	Peoria & Eastern Railway	Burlington Northern to acquire Peoria & Eastern including trackage rights over Peoria & Pekin Union between Peoria and Pekin, Ill., with use of necessary PC facilities presently used by P&E traffic at Indianapolis, Ind.
CS-1	Pittsburgh & Lake Erie RR	Chessie System (Baltimore & Ohio) to acquire all rail properties of P&LE including its 1/3 interest in Monongahela Railway Co.
CS-3	Detroit, Toledo & Ironton RR	Chessie System to acquire all rail properties.
CS-17	Buffalo, N.Y., E. Salamanca, N.Y.	Chessie System (Chesapeake & Ohio) to acquire trackage rights over Erie-Lackawanna between Buffalo, East Salamanca, Binghamton and possibly East of Binghamton.
D&H-1	Wilkes-Barre, Pa., to Alexandria, Va.	Delaware & Hudson to acquire trackage rights over Penn Central.
DT&I-2	Toledo, Ohio, Owosso, Mich., Bay City, Mich., Midland, Mich.	Detroit, Toledo & Ironton to acquire Ann Arbor trackage between Toledo and Owosso and Penn Central trackage between Owosso and Bay City and Midland, or Detroit, Toledo & Ironton to acquire Ann Arbor trackage between Toledo and Durand and acquire trackage rights over Grand Trunk Western between Durand and Bay City and acquire Penn Central between Bay City and Midland.
DT&I-3	Springfield, Ohio, Glen Echo, Ohio	Detroit, Toledo & Ironton to acquire portion of Penn Central Bellefontaine Branch.
DT&I-4	Trenton, Mich., Gibraltar, Mich., Rockwood, Mich., Newport, Mich., Monroe, Mich.	Detroit, Toledo & Ironton to acquire Penn Central Toledo Branch.
DT&I-5	Middletown, Ohio, Hageman, Ohio	Detroit, Toledo-Ironton to acquire Penn Central Middletown secondary track between Middletown (ARMCO Lead) and Middletown Jet.
DT&I-6	Owosso, Mich., Lansing, Mich.	Detroit, Toledo & Ironton to acquire Penn Central Saginaw Branch.
DT&I-7	River Rouge, Mich., Ecorse, Mich., Penford, Mich.	Detroit, Toledo & Ironton to acquire Penn Central between Penford (DT&I crossing) and Carleton (C&O connection).
DT&I-8	Brownstown, Mich., Carleton, Mich.	Detroit, Toledo & Ironton to acquire Penn Central Marsh track between Marion Avenue and Tecumseh Yard.
DT&I-9	Saginaw, Mich., Clare, Mich., Cadillac, Mich., Yuma, Mich., Harlan, Mich.	Detroit, Toledo & Ironton to acquire trackage rights over Chesapeake & Ohio between Saginaw and Clare and over Ann Arbor between Clare and Harlan thence to Frankfort if car ferry is subsidized.
DT&I-10	Lima, Ohio, Chicago, Ill.	Detroit, Toledo & Ironton to acquire Erie-Lackawanna line from Lima to Chicago.
DT&I-11	Maitland, Ohio, Glen Echo, Ohio	Detroit, Toledo & Ironton to acquire Erie-Lackawanna line from Maitland, Ohio to Glen Echo, Ohio.
DT&I-12	Maitland, Ohio, Dayton, Ohio	Detroit, Toledo & Ironton to acquire Erie-Lackawanna line from Maitland, Ohio to Dayton, Ohio.
EJ&E-2	Indiana Harbor, Ind., East Chicago, Ind.	Elgin, Joliet & Eastern to acquire certain facilities of Indiana Harbor Belt.
GT-1	Helena, N.Y., Roosevelttown, N.Y.	Grand Trunk to acquire Penn Central trackage.
GTW-1	Detroit, Mich., Detroit River Tunnel, Canada Southern Railway	Canadian National or Grand Trunk Western to acquire certain Penn Central property in the Detroit area, Detroit River Tunnel, and all or portions of the Canada Southern Railway.
GTW-2	Vicksburg, Mich., Fort Wayne, Ind., Richmond, Ind., Hamilton, Ohio, Norwood, Ohio, Cincinnati, Ohio.	Grand Trunk Western to acquire approx. 244 miles of Penn Central line from Vicksburg to Cincinnati. Route to include bridge trackage rights over Penn Central through Fort Wayne and Richmond.
GTW-3	South Bend, Ind., Kankakee, Ill., Streator, Ill.	Grand Trunk Western to acquire approximately 162 miles of Penn Central line between South Bend and Streator.
GTW-4	Detroit, Mich., Jackson, Mich., Battle Creek, Mich.	Grand Trunk Western to acquire approximately 119 miles of Penn Central track from Detroit to Battle Creek. GTW to acquire Penn Central terminal responsibilities, including Detroit-Windsor tunnel.

## Appendix D-3 (Major Market Extension Proposals Reviewed Under Section 206(d)(3))—Continued

## PART I—Continued

Major market extension proposals that cannot now be found not to materially impair the profitability, either singly or cumulatively, of any railroad in the Region or ConRail—Continued

Project ID	Location	Description of project
GTW-8.....	Detroit, Mich., Warren, Mich., Utica, Mich., Rochester, Mich.	Grand Trunk Western to acquire and operate 28 miles of Penn Central trackage between Detroit and Rochester including terminal facilities at Detroit and Sterling, Mich.
GTW-10.....	Battle Creek, Mich.....	Grand Trunk Western to acquire all Penn Central trackage in Battle Creek terminal. Modify rail facility in cooperation with City Redevelopment Plans.
GTW-13.....	Detroit, Toledo and Ironton RR.....	Grand Trunk Western to acquire entire Detroit, Toledo and Ironton RR.
ICG-1.....	Kankakee, Ill., Indianapolis, Ind.....	Illinois Central Gulf to acquire Penn Central route via Lebanon, former Pennsylvania RR to Hunt, and Big Four RR to Indianapolis including terminal facilities at Indianapolis, or in the event Southern Railway acquires Big Four from Indianapolis to Cincinnati, Illinois Central Gulf to acquire Kankakee-Indianapolis via Lebanon, Hunt, former Pennsylvania RR or via Lebanon, Davis former Pennsylvania RR with trackage rights over Penn Central or Indianapolis Union Terminal for direct connection with Southern Railway.
ICG-2.....	Chicago, Ill., Buffalo, N.Y.....	Illinois Central Gulf to acquire former New York Central RR lines via Elkhart, Toledo and Cleveland.
ICG-3.....	Kensington, Ill., Porter, Ind.....	Illinois Central Gulf to acquire former Michigan Central RR.
ICG-4.....	Matteson, Ill., East Gary, Ind.....	Illinois Central Gulf to acquire Matteson to connection with former Michigan Central between Kensington and Porter.
ICG-5.....	Elkhart, Ind., Buffalo, N.Y.....	Illinois Central Gulf to acquire former New York Central-Michigan Central Lines via Three Rivers, Kalamazoo, Detroit, Windsor, St. Thomas, and Welland, Ontario.
ICG-6.....	Three Rivers, Mich., Wasepi, Mich., Jackson, Mich.....	Illinois Central Gulf to acquire Penn Central Line.
ICG-7.....	Welland, Ontario, Buffalo, N.Y., Niagara Falls, N.Y., Suspension Bridge, N.Y.....	Illinois Central Gulf to acquire Penn Central Line.
ICG-8.....	Lostant, Ill., South Bend, Ind.....	Illinois Central Gulf to acquire former New York Central RR Kankakee Belt Line.
ICG-9.....	East St. Louis, Ill., Terre Haute, Ind., Indianapolis, Ind., Muncie, Ind., Bellefontaine, Ohio, Gallon, Ohio, Berea, Ohio, Cleveland, Ohio.....	Illinois Central Gulf to acquire former Pennsylvania RR to Terre Haute and Big Four RR beyond.
ICG-10.....	Indianapolis, Ind., Dayton, Ohio, London, Ohio, Columbus, Ohio, Mingo Jct., Ohio, Pittsburgh, Pa.....	Illinois Central Gulf to acquire former Pennsylvania RR to Dayton, New York Central RR to London, and Pennsylvania RR beyond.
ICG-11.....	Mingo Jct., Ohio, Conway, Pa.....	Illinois Central Gulf to acquire Penn Central Line.
ICG-12.....	Cleveland, Ohio, Alliance, Ohio, Conway, Pa., Pittsburgh, Pa.....	Illinois Central Gulf to acquire Penn Central Line.
ICG-13.....	Hudson, Ohio, Akron, Ohio.....	Illinois Central Gulf to acquire Penn Central Line.
ICG-14.....	Cincinnati, Ohio, Middletown, Ohio, Dayton, Ohio, Bellefontaine, Ohio, Ridgeway, Ohio, Findlay, Ohio, Toledo, Ohio, Monroe, Mich., Wyandotte, Mich., Detroit, Mich.....	Illinois Central Gulf to acquire Cincinnati to Ridgeway via former Big Four RR, Ridgeway to Toledo via former Ohio Central RR and Toledo to Detroit via former New York Central RR.
L&N-1.....	Cincinnati, Ohio, Detroit, Mich.....	Louisville & Nashville to acquire Penn Central trackage via Middletown, Dayton, Springfield, Urbana, Bellefontaine, Ridgeway, Kenton, Findlay, Bowling Green, Toledo, Monroe, Wyandotte, and River Rouge.
L&N-2.....	Cincinnati, Ohio, Indianapolis, Ind.....	Louisville & Nashville to acquire Penn Central trackage via Riverside Yard, Lawrenceburg Jct., Greensburg, Shelbyville, and Beech Grove.
L&N-3.....	Louisville, Ky., Speed, Ind.....	Louisville & Nashville to acquire Penn Central trackage south of Ohio River in Louisville and to Speed and Charlestown, Ind.
L&N-6.....	Michigan City, Ind., Hammond, Ind.....	Louisville & Nashville to acquire trackage rights via Penn Central in order to serve Burns Harbor.
N&W-3.....	Orrville Ohio, Chicago, Ill.....	Norfolk & Western to acquire trackage rights via Penn Central between Orrville and Chicago.
N&W-4.....	Detroit Toledo & Ironton RR.....	Norfolk & Western to acquire Detroit, Toledo & Ironton between Detroit and S. Charleston and between Bondclay and Ironton, Ohio.
N&W-5.....	Cincinnati, Ohio, S. Charleston, Ohio.....	Norfolk & Western to acquire Penn Central between S. Charleston and Cincinnati (Clare) via Xenia.
N&W-6.....	Detroit, Mich., Buffalo, N.Y.....	Norfolk & Western to acquire Penn Central trackage via International Bridge and some associated interests in terminal properties.
N&W-7.....	Detroit, Mich., Chicago (Kensington), Ill.....	Norfolk & Western to acquire Penn Central trackage via Toledo (Airline) and some associated interests in terminal properties.
N&W-8.....	Detroit, Mich., Midland, Mich.....	Norfolk & Western to acquire Penn Central trackage via Warren, Mich. and some associated interests in terminal properties.
N&W-9.....	Jackson, Mich., Lansing, Mich.....	Norfolk & Western to acquire Penn Central trackage and some associated interests in terminal properties.
N&W-10.....	E. Gary, Ind., Joliet, Ill.....	Norfolk & Western to acquire Penn Central trackage and some associated interests in terminal properties.
N&W-12.....	Cincinnati, Ohio, Chicago, Ill.....	Norfolk & Western to acquire ownership of or trackage rights over Penn Central Lines.
P&LE-1.....	Meadville, Pa., Creston, Ohio.....	Pittsburgh & Lake Erie to acquire Erie Lackawanna trackage for 140 miles via Sharon, Pa., Youngs town, Warren, and Akron, Ohio.
P&LE-2.....	Warren, Ohio, Cleveland, Ohio.....	Pittsburgh & Lake Erie to acquire Erie-Lackawanna trackage for 52 miles from Warren to Cleveland.
P&LE-3.....	Transfer, Pa., Leavittsburg, Ohio.....	Pittsburgh & Lake Erie to acquire Erie-Lackawanna trackage for 29.7 miles.
P&LE-6.....	Homestead, Pa.....	Penn Central to abandon branches from 30th Street Yard to USS Homestead works and J&L Pittsburgh works. Pittsburgh & Lake Erie to perform switching for Penn Central giving cars to them at McKees Rocks.
P&LE-7.....	Doughton Jct., Ohio, Shenango, Pa.....	Pittsburgh & Lake Erie to acquire Erie Lackawanna line between Doughton, Jct. and Shenango.
P&LE-8.....	Cleveland, Ohio, Bellaire, Ohio, Yellow Creek, Ohio, Alliance, Ohio, Rochester, Pa.....	Pittsburgh & Lake Erie to acquire Erie Lackawanna line between Cleveland and Rochester, Pa., via Bellaire, Yellow Creek and Alliance.
P&LE-9.....	Bellaire, Ohio, Omal, Ohio.....	Pittsburgh & Lake Erie to acquire Erie Lackawanna line via Wierton including Captina Branch.
RF&P-1.....	Alexandria, Va., Baltimore, Md., Harrisburg, Pa., Wilmington, Del., Philadelphia, Pa., Newark, N.J., Jersey City, N.J., New York, N.Y.....	Richmond, Fredericksburg, & Potomac to operate over acquired lines of Penn Central, Chessie, Reading, Central New Jersey to reach end and intermediate points and connections, with open routings at all points.
SCL-1.....	Norfolk, Va., Dover, Del., Wilmington, Del., New York, N.Y.....	Seaboard Coast Line to acquire Penn Central lines on Delmarva Peninsula to and including Wilmington Del., with trackage rights beyond to New York and access to all intermediate markets.

Appendix D-3 (Major Market Extension Proposals Reviewed Under Section 206(d)(3))—Continued

PART I—Continued

Major market extension proposals that cannot now be found not to materially impair the profitability, either singly or cumulatively, of any railroad in the Region or ConRail—Continued

Project ID	Location	Description of project
SLSF-1	St. Louis, Mo., Terre Haute, Ind.	St. Louis-San Francisco to acquire Penn Central trackage via Vandalla.
SLSF-2	Terre Haute, Ind., Indianapolis, Ind.	St. Louis-San Francisco to acquire former Big Four route trackage.
SLSF-3	Indianapolis, Ind., Cleveland, Ohio	St. Louis-San Francisco to acquire Penn Central trackage via Anderson, Muncie, Ridgeway and Gallon.
SLSF-4	Cleveland, Ohio, Buffalo, N.Y.	St. Louis-San Francisco to acquire Penn Central trackage.
SLSF-5	Ridgeway, Ohio, Detroit, Mich.	St. Louis-San Francisco to acquire Penn Central trackage via Toledo.
SLSF-6	Indianapolis, Ind., Pittsburgh, Pa.	St. Louis-San Francisco to acquire Penn Central trackage via Dunreith, Richmond, Dayton, Xenia and Columbus.
SOU-1	Cincinnati, Ohio, Indianapolis, Ind.	Southern Railway to acquire Penn Central line beginning with Southern connection near Oklahoma Avenue via Riverside, Valley Jct., and Greensburg, including Riverside Yard at Cincinnati and Hill Yard at Indianapolis. Also Penn Central lines beyond Hill Yard to provide connection with Indianapolis, Union RR (Belt) and ownership or trackage rights to connect with Penn Central line to Kanakee. Also Penn Central Dearborn Branch.
SOU-2	Detroit, Toledo & Ironton RR.	Southern to acquire entire Detroit, Toledo & Ironton with either ownership or trackage rights to provide access from Detroit, Toledo & Ironton, main line to Gest Street Yard at Cincinnati.
SOU-3	Springfield, Ohio, S. Charleston, Ohio, Cincinnati, Ohio.	Southern acquire direct connection between Detroit, Toledo & Ironton main line and Cincinnati, via 1 of 3 routes: Penn Central from S. Charleston via Xenia, Morrow, Middletown Jct., Loveland, thence Baltimore & Ohio trackage to Gest St. Yard, or Penn Central from S. Charleston via Xenia, Morrow, Middletown Jct., Loveland, Clare, Undercliff Yard, Vine St., to Gest St. Yard, or Penn Central line or trackage rights from Springfield via Dayton, Sharonville, Ivorydale, thence Baltimore & Ohio trackage to Gest St. Yard.
STLSW-1	St. Louis, Mo., Chicago, Ill.	St. Louis Southwestern to acquire and/or operate Penn Central route via Paris, Ill.
STLSW-2	Cairo, Ill., Chicago, Ill.	St. Louis Southwestern to acquire and/or operate Penn Central route.
STLSW-3	Chicago River and Indiana Railroad.	St. Louis Southwestern to acquire and/or operate entire railroad.
STLSW-4	Indiana Harbor Belt Railroad.	St. Louis Southwestern to acquire and/or operate Penn Central portion.
STLSW-5	Chicago, Ill., Detroit, Mich.	St. Louis Southwestern to acquire and/or operate Penn Central route via Southbend, Ind. and Toledo, Ohio.
STLSW-6	St. Louis, Mo., Indianapolis, Ind.	St. Louis Southwestern to acquire and/or operate Penn Central route via Terre Haute, Ind.
STLSW-7	Indianapolis, Ind., Buffalo, N.Y.	St. Louis Southwestern to acquire and/or operate Penn Central route via Union City, Ridgeway, Cleveland and Suspension Bridge.
STLSW-8	Ridgeway, Ohio, Detroit, Mich.	St. Louis Southwestern to acquire and/or operate Penn Central route via Toledo.
STLSW-9	Indianapolis, Ind., Bellefontaine, Ohio.	St. Louis Southwestern to acquire and/or operate Penn Central route via Cincinnati and Dayton.
STLSW-10	Indianapolis, Ind., Columbus, Ohio.	St. Louis Southwestern to acquire and/or operate Penn Central route via Dayton.
STLSW-11	Union City, Ind., Pittsburgh, Pa.	St. Louis Southwestern to acquire and/or operate Penn Central route via Columbus.
STLSW-12	Marion, Ohio to Jamestown, N.Y., to Buffalo, N.Y., to Suspension Bridge, N.Y.	St. Louis Southwestern to acquire and/or operate Erie Lackawanna route.
TP&W-2	Effner, Ind., Columbus, Ohio.	Toledo, Peoria & Western to acquire trackage rights over Penn Central between Effner and Columbus.
TP&W-4	Crandall, Ill., Indianapolis, Ind.	Toledo, Peoria & Western to acquire trackage rights over Norfolk & Western between Crandall and Bloomington and over Peoria & Eastern between Bloomington and Indianapolis.

**Major Market Extensions Not Materially Impairing Profitability**

This part of Appendix D-3 is comprised of major

market extensions which USRA finds, with appropriate modification in certain instances, will not, either singly or cumulatively, materially impair the profitability of any railroad including ConRail in the Region.

Appendix D-3 (Major Market Extension Proposals Reviewed Under Section 206(d)(3))

PART II

Major market extension proposals that will not materially impair the profitability, either singly or cumulatively, of any railroad in the Region or ConRail

Project ID	Location	Description of project
B&M-1	Springfield, Mass., New York, N.Y.	Boston & Maine to acquire trackage rights or Central Vermont lease and B&M provide service.
CS-2	Nicholas, Fayette & Greenbrier R.R.	Chesapeake System (Chesapeake & Ohio) to acquire all rail properties.
CS-4	Canada Southern Ry., Detroit River Tunnel.	Chesapeake System (Chesapeake & Ohio) to acquire all rail properties.
CS-5	Shippensburg (Lurgan), Pa., Philadelphia, Pa., Wilmington, Del., Allentown, Pa., Bethlehem, Pa.	Chesapeake System (Baltimore & Ohio) to acquire trackage or trackage rights from Lurgan via Harrisburg to the Allentown/Bethlehem and Greater Philadelphia areas with or without access to on-line industry in and between those points.
CS-6	Monongahela Ry.	Baltimore & Ohio to sell 1/4 interest to Penn Central and/or Pittsburgh & Lake Erie as an alternative to acquiring the Pittsburgh & Lake Erie and its 1/4 interest in Monongahela.
CS-7	Midland, Mich.	Chesapeake System (Chesapeake & Ohio) to acquire Penn Central trackage needed to continue service to shippers on those tracks.
CS-8	Bay City, Mich., Saginaw, Mich.	Chesapeake System (Chesapeake & Ohio) to acquire Penn Central trackage needed to continue service to shippers on those tracks.
CS-9	Lansing, Mich.	Chesapeake System (Chesapeake & Ohio) to acquire Penn Central trackage needed to continue service to shippers on those tracks.



## Appendix D-3 (Major Market Extension Proposals Reviewed Under Section 206(d)(3))—Continued

## PART II—Continued

Major market extension proposals that will not materially impair the profitability, either singly or cumulatively, of any railroad in the Region or ConRail—Continued

Project ID	Location	Description of project
CS-10.....	Grand Rapids, Mich.....	Chessie System (Chesapeake & Ohio) to acquire Penn Central trackage needed to continue service to shippers on those tracks.
CS-11.....	Louisville, Ky.....	Chessie System (Baltimore & Ohio) to acquire Penn Central trackage needed to continue service to shippers on those tracks.
CS-12.....	Nitro-Charleston, Swiss, W. Va.....	Chessie System (Chesapeake & Ohio) to acquire Penn Central trackage needed to continue service to shippers on those tracks.
CS-13.....	Winchester, Va.....	Chessie System (Baltimore & Ohio) to acquire Penn Central trackage needed to continue service to shippers on those tracks.
CS-14.....	Dayton, Ohio, Warren, Ohio.....	Chessie System (Baltimore & Ohio) to acquire Erie Lackawanna trackage between Dayton and Warren.
CS-15.....	Warren, Ohio, Greenville, Pa., Sharon, Pa., Newcastle, Pa.....	Chessie System (Baltimore & Ohio) to acquire Erie Lackawanna trackage between Warren and Greenville including the Sharon-Newcastle Branch.
CS-16.....	Greenville, Pa., East Salamanca, N.Y.....	Chessie System (Baltimore & Ohio) to acquire Erie Lackawanna trackage between Greenville and East Salamanca including Oil City Branch.
CS-18.....	Buffalo Creek RR.....	Chessie System (Baltimore & Ohio) to acquire rail properties or leasehold interest now owned by Erie-Lackawanna and Lehigh Valley. Alternatively Chessie acquire trackage rights over Buffalo Creek Railroad.
DT&I-1.....	Cincinnati, Ohio, South Charleston, Ohio.....	DT&I acquire ownership or trackage rights over Penn Central between Cincinnati and South Charleston via "Little Miami" route, or DT&I acquire ownership or trackage rights over Penn Central between Springfield and Ivorydale via Dayton thence over B&O to L&N and Southern connections at Cincinnati. Also acquire ownership or trackage rights over Penn Central to L&N and Southern via Undercliff.
EJ&E-1.....	Hegewisch, Ill.....	Elgin, Joliet & Eastern to acquire Penn Central line between Hegewisch and South Chicago.
GTW-5.....	Lansing, Mich.....	Grand Trunk Western to acquire all Penn Central terminal trackage at Lansing.
GTW-6.....	Saginaw, Mich., Bay City, Mich.....	Grand Trunk Western to acquire Penn Central trackage within Saginaw and Bay City.
GTW-7.....	Midland, Mich., Bay City, Mich.....	Grand Trunk Western to acquire and operate the Penn Central track from Bay City to Midland, 19 miles, including the terminal facilities at Midland.
GTW-9.....	Rochester, Mich., Oxford, Mich., Lapeer, Mich., Vassar, Mich.....	Grand Trunk Western to acquire Penn Central facilities at Oxford, Rochester, Lapeer and Saginaw. Chesapeake & Ohio to acquire Penn Central terminal facilities at Vassar.
GTW-11.....	Grand Rapids, Mich., Muskegon, Mich.....	Grand Trunk Western to acquire and operate 28 miles of Penn Central trackage between Grand Rapids (Walker) and Muskegon.
GTW-12.....	Vicksburg, Mich., Kalamazoo, Mich., Grand Rapids, Mich.....	Grand Trunk Western to acquire and operate approximately 61 miles of Penn Central line between Vicksburg and Grand Rapids and Branch Line between Plainwell and Otsego, also Penn Central terminal facilities in Grand Rapids assuming Penn Central discontinues operations north of Grand Rapids.
ITRR-1.....	Peoria, Ill., Decatur, Ill.....	Illinois Terminal to acquire Penn Central trackage over which Illinois Terminal now has trackage rights.
ITRR-2.....	Peoria and Eastern RR.....	Illinois Terminal acquire P&E between Peoria and Indianapolis.
ITRR-3.....	Decatur, Ill., Terre Haute, Ind.....	Illinois Terminal to acquire Penn Central trackage between Decatur and Terre Haute.
N&W-2.....	Wilkes-Barre, Pa., Harrisburg, Pa., Hagerstown, Md.....	Norfolk & Western and/or Delaware & Hudson to acquire ownership or trackage rights between Wilkes-Barre and Hagerstown via Harrisburg.
N&W-11.....	Melvindale, Mich.....	Norfolk & Western to acquire 28.86 acres of land and associated trackage and operating agreements from Penn Central.
N&W-13.....	Deepwater, W. Va., Swiss, W. Va., Landisburg, W. Va., Peters Creek, W. Va., Nitro, W. Va., Deepwater Bridge, W. Va.....	Norfolk & Western to acquire Penn Central lines and Penn Central interest in Nicholas, Fayette & Greenbrier Railroad.
N&W-14.....	Cleveland, Ohio, Youngstown, Ohio.....	Norfolk & Western to acquire Erie Lackawanna trackage between Youngstown and Cleveland, possibly limited to trackage rights between Leavittsburg and Warren.
N&W-15.....	Buffalo, N.Y., Binghamton, N.Y., Northern New Jersey.....	Norfolk & Western to acquire trackage of or trackage rights over Erie-Lackawanna from Buffalo to Northern New Jersey and access to some additional traffic base in that area. Also trackage of or trackage rights over EL from Central Ohio to Hornell, N.Y., if required for service or operating reasons.
N&W-16.....	Buffalo, N.Y., Waverly, N.Y., Northern New Jersey, Binghamton, N.Y.....	Same as N&W-15 but with track of or trackage rights over EL from Buffalo to Waverly then of or over Lehigh Valley to Northern New Jersey. Also a connection to Delaware & Hudson at Binghamton.
P&LE-4.....	Youngstown, Ohio, Ashtabula, Ohio.....	P&LE acquire trackage rights or ownership of Penn Central trackage.
P&LE-5.....	Aliquippa, Pa., Conway, Pa.....	Penn Central close Conway Rail Barge coal transload facility and enter agreement for joint use of P&LE Colona facility at Aliquippa.
P&LE-10.....	Kabuta, Pa., Weirton, Wheeling, W. Va.....	Pittsburgh & Lake Erie to acquire Penn Central lines between Kabuta and Weirton.
RF&P-21.....	Wilmington, Del., Norfolk, Va.....	RF&P operate over or acquire Penn Central lines to reach end and intermediate points and connections with open routing at all connection points.
SOU-41.....	Wilmington, Del., Norfolk, Va.....	Southern to acquire Edgemoor Yard at Wilmington and all lines east and south of the corridor main line including Shellpot secondary tracks, line from Bridge to Ragan and from Porter to Newark. All lines from Edgemoor Yard to Cape Charles including carfloat operation between Norfolk and Cape Charles and all Penn Central tracks in and around Norfolk Virginia. Southern would propose to acquire the branch lines on the Peninsula Line with the following exceptions: Line from Cape Junction to Kiptopeke (probably already retired). Crisfield Branch from Kings Creek to Crisfield. Willard Branch from Ballsbury to Parsonsburg. Vienna Branch from Hurlock to Vienna. The Oxford Branch from Easton to McDaniel. (probably already retired). The Denton Branch from Denton to Queenstown. The Chestertown Branch from Massey to Chestertown. The Centerville Branch from Townsend via Massey to Centerville unless the present shipper subsidy arrangement or a similar appropriate arrangement is continued. Also trackage rights as needed to provide direct connection to B&O and RDG at Wilmington.

See footnotes at end of table.

Appendix D-3 (Major Market Extension Proposals Reviewed Under Section 206(d)(3))—Continued

PART II—Continued

Major market extension proposals that will not materially impair the profitability, either singly or cumulatively, of any railroad in the Region or ConRail—Continued

Project ID	Location	Description of project
TP&W-1	Efner, Ind., Logansport, Ind.	Toledo, Peoria & Western to acquire trackage rights over Penn Central between Efner and Logansport.
TP&W-3	Sheldon, Ill., Indianapolis, Ind.	TP&W acquire trackage rights over Penn Central between Sheldon and Indianapolis.
USRA-1	E-L System	Chessie System to acquire entire Erie Lackawanna Railway Company.
USRA-2	E-L System	Norfolk & Western Railway Company to acquire entire Erie Lackawanna Railway Company.
USRA-3	Buffalo, N.Y., Binghamton, N.Y., Northern New Jersey	Chessie System to acquire trackage of or trackage rights over Erie Lackawanna from Buffalo to Northern New Jersey and access to some additional traffic base in that area. Also trackage of or trackage rights over EL from Central Ohio to Hornell, N.Y., if required for service or operating reasons.
USRA-4	Harrisburg, Pa., Allentown, Pa., Bethlehem, Pa., Philadelphia, Pa., Wilmington, Del., Central Ohio	Norfolk & Western to acquire trackage or trackage rights from Central Ohio via Harrisburg to the Allentown/Bethlehem, Greater Philadelphia, and Wilmington areas, with or without access to on-line industry in and between those points.
USRA-5	Buffalo Creek Ry.	Norfolk & Western to acquire rail properties or leasehold interest now owned by Erie Lackawanna or Lehigh Valley or acquire trackage rights.

<sup>1</sup> While not specifically adding conditions at this time, this finding of no material impairment of profitability assumes that equitable rate divisions acceptable to ConRail can be negotiated and that ConRail would be relieved of all expenses which

may be involved in the establishment of an interchange yard at Wilmington and the construction of other facilities (i.e., bridges, etc.) necessary to move traffic over this route without interference to the Northeast Corridor passenger lines.

Other Coordinations and Market Extensions

Appendix D-4 lists proposed coordination projects which involve acquisitions of portions of solvent railroads by the ConRail system to be established under

the Act. These acquisitions do not require a finding by the Association under the provisions of Section 206(d)(3), but are listed here for the purpose of eliciting public response.

Appendix D-4 (Proposed Coordinations and Market Extensions Not Subject to Section 206(d)(3))

Determinations regarding profitability impairment not required

Project ID	Location	Description of project	Service continued		Note
			Location	By	
DE-0	Various	The only project not subject to Section 206(d)(3) that involves the State of Delaware is MD-2.	Not applicable	N/A	
IN-15	Jeffersonville, Ind., Louisville, Ky., N. Vernon, Ind.	Penn Central (ConRail) to acquire the Baltimore & Ohio (Chessie System) line from Jeffersonville to Louisville inclusive, with B&O to abandon its line from North Vernon to Jeffersonville.	All points on acquired segment. None on the segment to be abandoned.	PC	1
IN-16	Indianapolis, Ind.	Penn Central (ConRail) to acquire 1 mile of Norfolk & Western track in the Indianapolis terminal area now being used only by PC.	All points on acquired segment	PC	
IN-0		There are no other projects not subject to Section 206(d)(3) that involve the State of Indiana.	Not applicable	N/A	
MA-7	Boston, Mass., Rotterdam Junction, N.Y.	Penn Central (ConRail) to acquire trackage rights over Boston & Maine from Boston to Rotterdam Junction.	No service to be abandoned	N/A	
MA-8	Canal Jct., Mass., Creamery, Mass., Forest Lake, Mass., Wheelwright, Mass.	Penn Central (ConRail) to acquire the Boston & Maine line from Creamery to Wheelwright, with B&M to abandon its line from Canal Junction to Forest Lake and its trackage rights over PC from Forest Lake to Creamery and over Central Vermont from Amherst to Canal Junction.	All points on acquired segment. None on the segment to be abandoned.	PC	2
MA-0		There are no other projects not subject to Section 206(d)(3) that involve the State of Massachusetts.	Not applicable	N/A	
MD-2	Baltimore, Md., Philadelphia, Pa., Washington, D.C., Wilmington, Del.	Penn Central (ConRail) to acquire trackage rights over, or outright, all or parts of the Baltimore & Ohio (Chessie System) line from Washington, D.C., to Philadelphia, Pa.	No service to be abandoned	N/A	3
MD-0		There are no other projects not subject to Section 206(d)(3) that involve the State of Maryland.	Not applicable	N/A	
MI-12	Delta, Ohio., Detroit, Mich.	Penn Central (ConRail) to acquire trackage rights over Detroit, Toledo & Ironton from Detroit to Delta, including the operation of DT&I's Flat Rock Yard as a joint facility.	No service to be abandoned	N/A	

See footnotes at end of table.

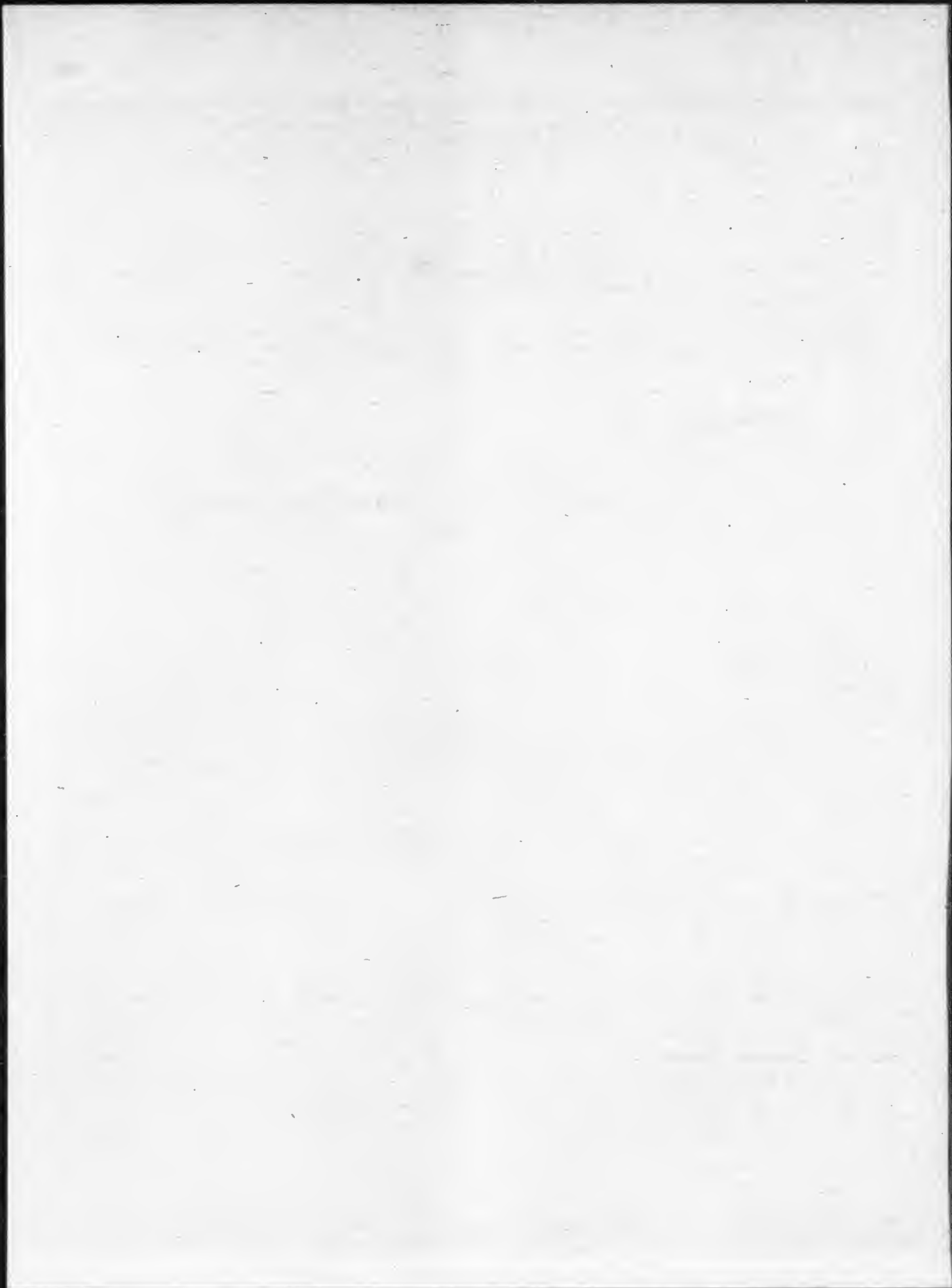
Appendix D-4 (*Proposed Coordination and Market Extensions Not Subject to Section 206(d)(3)*)—Continued  
 Determinations regarding profitability impairment not required—Continued

Project ID	Location	Description of project	Service continued		Note
			Location	By	
MI-0.....		There are no other projects not subject to Section 206(d)(3) that involve the State of Michigan.	Not applicable.....	N/A.....	
OH-0.....	Various.....	The only project not subject to Section 206(d)(3) that involves the State of Ohio is MI-12.	Not applicable.....	N/A.....	
PA-0.....	Various.....	The only project not subject to Section 206(d)(3) that involves the State of Pennsylvania is MD-2.	Not applicable.....	N/A.....	

1. A further alternative to project IN-1 in appendix D-1.

2. The Penn Central line with which the segment to be acquired connects is under study as a light-density line and may or may not be recommended for inclusion in Con Rail.

3. See Chapter 13, Passenger Service, for a discussion of rerouting freight trains around the Northeast Corridor. In the event of an outright acquisition of this line by Penn Central (Con Rail), Baltimore & Ohio would retain trackage rights and some or all on-line industry as negotiated.





## APPENDIX E

### Operations Planning Studies

The Association's operations planning efforts and findings are discussed in Chapter 5. The planning process, which was carried out in two phases, is described in greater detail in this appendix.

The first phase, overview studies, focused on identification of the critical factors involved in satisfying the requirements of the Act. A goal of this phase was to identify the steps necessary to assure that ConRail would be financially self-sustaining.

The second phase consisted of detailed or simulation studies of alternative operating strategies. In contrast to the overview studies, which dealt with orders of magnitude, the detailed studies analyzed in specific terms the various alternatives under consideration.

#### OVERVIEW STUDIES

The overview studies included economic overviews performed under contracts with outside consultants, onsite surveys of physical resources by USRA staff and projections of changes in the operating results of the bankrupt railroads, account-by-account, as they are merged and rehabilitated. (EL was not included in these studies.)

#### Economic Overview Studies

The first of two economic overview contracts was awarded to Strong, Wishart & Associates (SWA) of San Francisco, Calif. The objective of the study was to

appraise the potential viability of two ConRail options and to identify the principal leverage points in making ConRail financially self-sustaining.

Carrying out the study objectives, parallel work was carried out in two areas. SWA made financial projections on the basis of assumed investment requirements and operating performance improvements. In this area, SWA used Southern Pacific's Corporate Planning Model to test the economic viability of ConRail under these varying assumptions.

In the second area, in cooperation with the Association of American Railroads, SWA formed an Operations Evaluation Team composed of senior railway officers who conducted an intensive 30-day survey to identify problems and assess potential improvements. The team included five railroad vice presidents, experienced in Operations, each of whom was assigned a portion of the bankrupt railroads. The team personally inspected 60 percent of the trackage of the bankrupts and interviewed key line officers. Although the effort concentrated on the operating departments of these railroads, it also included a brief review of their marketing and support activities.

The financial projections generated by the Corporate Planning Model were the first estimates of ConRail's potential prospectus under varying assumptions. It should be noted that SWA was assigned to "work backward" from viability to determine the practical steps

necessary to achieve viability. Two network configurations were included in this evaluation:

- Two-system ConRail with the Penn Central and Ann Arbor in one system and the other four bankrupt properties in a system similar to the Mid-Atlantic Railroad Concept.
- One ConRail encompassing the (six) bankrupt properties.

In the course of this evaluation, SWA found that:

- Splitting CRC would add materially to the capital requirements and significantly reduce the potential financial performance. For either system to be viable:
  - Car ownership must be reduced by one-third and cars on line would have to be cut by nearly half.
  - The size of the system must be reduced by one-third.
  - Even with these reductions, rehabilitating the plant was estimated to cost between \$1.5 and \$2.0 billion.

Through their inspections of the facilities and discussions with key operating officers, the team of railroad vice presidents identified 8,400 miles or 38 percent of the lines of the bankrupts to be considered for abandonment. SWA also found that:

- Rehabilitation of the track is the first priority.
- Planning, organization and control of the bankrupts must be strengthened.
- Much more management attention must be focused on equipment utilization.

The second economic overview project, performed concurrently with that of Strong, Wishart & Associates, was conducted by Reebie Associates of Greenwich, Connecticut. This study concentrated, through cost analysis, on identifying where the bankrupts are presently losing money. It also included a series of recommendations for revision of ConRail's marketing and planning functions. Specific observations from the Reebie Study included:

- The railroads need to identify their economic "place in the sun" so that resources and management attention can be allocated effectively.
- The physical condition of the bankrupts has deteriorated to such an extent that normal debt service on the rehabilitation program may be greater than the direct savings resulting from rehabilitation. (The rehabilitation, nevertheless, is necessary to continue operations).
- The principal means of improving the profit performance of the bankrupts are:
  - Full recovery of costs of passenger services, including the cost of capital.

- Improved train operations to minimize intermediate handling in yards.
- Improved car management systems to minimize empty backhauls.
- Increasing the revenue yield to at least a break-even level on traffic now handled below variable costs.
- Establishing equitable division of revenues between Southern/Eastern and Western/Eastern railroads.
- Regaining lost traffic through upgrading and modernization of plant.
- Recovering full costs, including the cost of capital, for branch line operations.

In addition, Reebie Associates stressed the need for a reorganization of management to provide profit orientation and incentive in the field to achieve balanced traffic flows. Reebie also recommended minimization of organizational layers between top management and field profit centers and a marketing goal of selective rather than "across the board" rate increases.

### Engineering Overview Study

In conjunction with related studies for the Federal Railroad Administration and the Association of American Railroads, Thomas K. Dyer, Inc., Consulting Engineers, made a computer analysis of the installation of ties, rails and other track materials for the last 40 years by the bankrupt railroads and their predecessors. The maintenance data were related through computer programs containing empirical data on material lives with statistics on gross ton miles and track miles operated. This was done to project future track material requirements. To provide perspective and to project the overall industry demand for materials, similar data were obtained from ICC reports of other railroads in the Region and other Regions to estimate future material requirements.

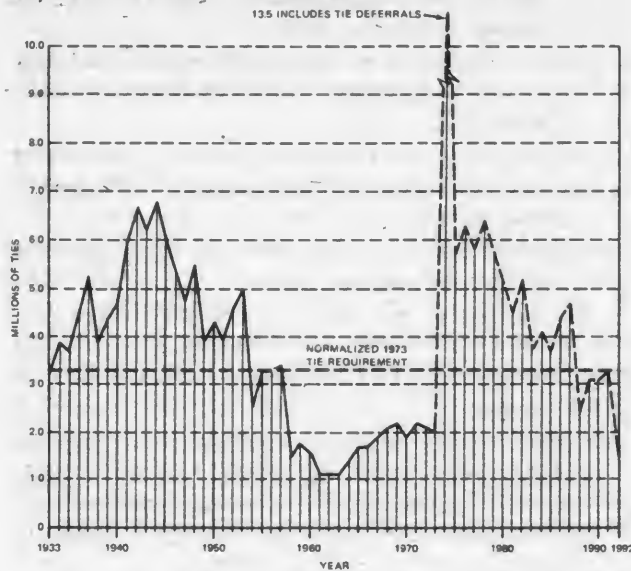
These analyses indicated that:

- As shown in Figure 1, the number of ties due for replacement each year will grow through 1991, due to the unusually high level of tie installations during the World War II period. This occurs because the bulge of installations of materials in the Forties is now recycling.
- The material cycle of the bankrupts is duplicated on many other railroads, including some but not all of the solvents. Therefore, the overall demand for materials will grow rapidly while the supply is limited, causing track material costs to be under growing inflationary pressures.

### USRA Staff Studies

An initial data-gathering effort by USRA's Operations Planning Staff included field visits and the com-

FIGURE 1  
CONRAIL TIE INSTALLATIONS  
AND TIE REQUIREMENTS  
1933-1982



SOURCE: THOMAS K. DYER, INC. LEXINGTON, MASS.  
SEPT. 1974.

pletion of 35-page checklists on the operations of more than 60 of the bankrupt's classification and industrial switching yards, as well as inspections of many of the main and secondary lines. The information gathered during these evaluations, which tended to confirm the findings of the overview studies, indicated that:

- Physical plant conditions range from adequate to virtually inoperable.
- Management generally is crisis-oriented and has little time to plan.
- Labor, car and locomotive resources are inadequately controlled.
- To compensate for bad physical plant, attention to meeting major customers' service requirements has in some instances reached uneconomic levels.
- No one seems to know where and why money is being lost, but each assumes it is beyond his control.
- Management lines of communication and budgetary control are inadequate.

### Conclusions of Overview Phase

After the overview studies, the requirements for detailed studies were initiated or redirected. In addition, the overview studies provided planning parameters and assumptions for the detailed studies, and gave the USRA management and Board of Directors perspective as to the magnitude and nature of the railroad reorganization situation. Although the detailed studies sometimes revealed differences in the exact magnitude of the problems, the priority areas of emphasis delineated in the overview phase were generally

confirmed by the detailed studies. The overview studies thus focused USRA's planning efforts on the critical areas for improvement.

### DETAILED STUDIES

On the basis of the overview studies and the experience of the USRA staff, a series of detailed studies of key areas were carried out in preparation of the Preliminary System Plan. Many of these studies are continuing for use in preparation of the Final System Plan.

#### Data Base Development

In preparation for its detailed planning effort, and concurrently with the overview studies, USRA developed an origin/destination traffic-flow data base for the bankrupt railroads.

The basic input to the USRA operations planning process was a definition of the present demand for railroad freight service by the bankrupt carriers or others in the Region. USRA's objectives in developing the Railroad traffic and revenue data base were to:

- Assure a high level of completeness and accuracy.
- Provide data quickly so as to not delay the planning process.
- Provide the traffic and revenue data necessary to facilitate analysis of potential system configurations.
- Support the planning efforts of RSPO, state and regional planners and solvent rail carriers in the Region.

The development of a railroad traffic and revenue data base of the quality necessary to achieve the above objectives was complicated by the following conditions:

- Present railroad accounting procedures do not provide a single document containing all the data elements necessary to define the customer, geographic, commodity and carrier revenue characteristics of each carload shipment.
- For many of the data elements contained on railroad documents there is no industry-wide standard coding structure. Conformity with such standards as exist varies greatly among carriers.
- The volume of data is so large that existing machine-readable (computerized) data files must be used for the larger railroads to avoid the high cost and intolerable delays associated with key-punching source documents.
- The level of sophistication in the computerized information system varies widely among the Northeastern railroads. As a result, certain critical data elements are not captured by some carriers.

Two potential sources of data exist which can be utilized to fulfill the above objectives. They are the Revenue

Waybill and the Interline Abstract. There are several problems in using the waybill as the basic source of USRA's integrated data base:

- Many of the bankrupt railroads do not have waybill information in their computer files (especially on overhead traffic).
- Some railroads do not normally retain a paper copy of waybills on overhead traffic.
- Although the waybill contains a wealth of information about each shipment, the "data discipline" of this information is often poor.
- Although waybills (except memo bills) do show the total freight revenue, they do not show the proportion accruing to each carrier participating in the route of movement.
- Billing station rather than actual station is often shown in the waybill files.
- The expense and time requiring to code, keypunch and edit waybill data would be inordinate.

The abstract was selected as the principal data source because:

- The abstract contains the revenue proportion of each carrier participating in the route of movement.
- The level of discipline of the individual data elements is higher than that on the waybill.
- The mandatory railroad accounting rules require the abstract to show the actual stations between which the traffic moves, rather than billing stations, although some discrepancies still exist, especially in urban terminals.
- The carrier delivering the shipment to the destination always prepares the abstract and mails a copy to each carrier participating in the movement. Thus it is possible, when the carrier's computer files do not contain the necessary data elements, to obtain a complete picture of traffic and revenues by key-punching the abstract. This is not possible with waybills.
- Since many cars (waybills) may appear on each abstract, the time and cost of the data-collection effort is reduced.
- Since each railroad participating in the movement of a car (or cars) appearing on an abstract will take the data for its portion of the movement from the same document in the same accounting month, it is possible to integrate several railroads' data into a non-duplicative data base. This permits analysis of traffic flows on a merged basis without double counting.

However, the abstract has the following shortcomings:

- Shipper/consignee data elements do not appear on the abstract. The absence of this information minimizes disclosure problems, however.

- The data of actual movement for each shipment over each carrier do not appear on the abstract.
- Car initial and number, while present on the abstract, are not in the computerized abstract data files of all railroads, which precludes identifying the car type except by inference from the commodity code.

Nevertheless, it was concluded that the advantages of the abstract outweighed the alternatives, and therefore the abstract was selected as the basic data source. Abstract data for interline shipments and waybill data for local (single carrier) shipments on the AA, CNJ, LHR, LV, PC, RDG, and EL have been converted to a uniform computerized record. The following are typical of the uses being made of this and other USRA traffic and revenue data:

- Traffic data for the planning months of October and March of 1973, sorted by major ConRail gathering points, is being used for blocking and train-requirement studies by Stanford Research Institute under contract to USRA.
- Annual traffic data was supplied for the light-density line study and served as input to the CONSAD analysis.
- Origin/destination traffic flows were used to analyze several proposed ConRail options.
- Regional traffic flows were provided as inputs to the Temple, Barker & Sloane Traffic Projection forecasts.
- Various formats of data were submitted to the Rail Services Planning Office, regional agencies, the states and local governments and to the Department of Transportation.
- Traffic data (car float) at Cape Charles, Va., New York Harbor and across Lake Michigan were supplied to A. T. Kearney & Co., for analysis of marine operations.
- Traffic data were analyzed by the Public Interest Economic Center in its economic and environmental study.

### Location Coding

The seven bankrupt railroads move more than 42,000 cars per day among more than 7,200 stations and 800 interchange locations. To analyze a network of this complexity, it was necessary to design a geographic location code structure based on railroad operational logic. Codes sequenced on operational logic permit the planner to aggregate and disaggregate traffic flows in the same manner that the railroad operates or could realistically operate.

None of the seven railroads used such a code structure when the planning process started. The railroads' freight station accounting code numbers (FSAC), upon



which the traffic-flow records are based, were not operationally logical. The Penn Central's ten-digit operation code network also was not operationally logical, principally because it was designed to serve administrative and accounting purposes as well as transportation uses. The geopolitical location designations utilized by the Interstate Commerce Commission, the Census Bureau and many studies conducted by the Department of Transportation were unusable for this purpose because they, too, are not operationally logical and therefore would be misleading as to the operational feasibility of proposed aggregations and disaggregations of the traffic.

The USRA Car Movement Code was designed to allow analysis of traffic flow based on the way in which cars are distributed to the ultimate structure. All of the "gathering points" in the network were identified through extensive analysis of local operations and discussion with railroad operating officials. "Gathering points" are defined as the yard or siding which is either the final location where a car is switched prior to delivery to a customer or to interchange or else the initial location where a car is handled upon receipt from a customer or interchange. This includes any point where a local or industrial switch engine drops cars for switching or picks up cars after switching for movement by a road train. In addition, major interchanges were designated as "gathering points."

The USRA Car Movement Code for the 7-railroad system (including EL) includes 517 gathering points. These range in size and complexity from a single interchange point served by a run-through train to a local yard serving more than 100 stations on several different branch lines. In many cases, local stations on a line between gathering points are served by more than one gathering point, depending on the origin or destination of a car. To handle these situations, the USRA Car Movement Code Structure includes "Multiple Gathering Points." A subprogram was designed to assign individual cars destined to a station served by a multiple gathering point to the gathering point at either end of the line segment, depending on the direction of movement of the car.

To handle a system of this size, a 10-digit code was used. Two digits have been reserved for future expansion of the system, if required. In addition to providing a coding system for car movement, codes were included to allow assignment of stations and line segments to the various networks being considered during the USRA planning process and to allow classification of a line segment's future status under the criteria for possible branch line abandonments.

With each gathering point serving as a base, an operationally logical and unique code number, appropriately related to the serving gathering point, was assigned to each of the more than 8,000 freight station accounting codes (FSAC) and interchange locations included

within the ConRail network. The code has been designed to allow changes to be made in the code structure. The gathering points are based on present operational patterns, but as changes and consolidations are made in the gathering services, the code structure should be modified to reflect these changes.

It is extremely difficult to plan rapidly and efficiently a network with more than 500 traffic nodes. To expedite the planning process, the 517 gathering points were aggregated into 147 "super nodes." Gathering points which originated sufficient traffic to preblock traffic for other gathering points, and those which received sufficient traffic so that other gathering points might do preblocking for them, were retained as super nodes in the consolidated network shown as Figure 2.

Each gathering point which did not originate or terminate enough traffic to generate inbound or outbound preblocking opportunities was consolidated (along with its traffic) into a super node. All consolidation was done in such a way as to maintain the integrity of the traffic flowing to and from each of the original gathering points so that the system can be disaggregated at any time.

The 147 Super-Node system was used by Stanford Research Institute (SRI) in developing a traffic movement blocking plan. SRI is expanding its program to allow the use of the 517 traffic nodes.

### Future Traffic Flow

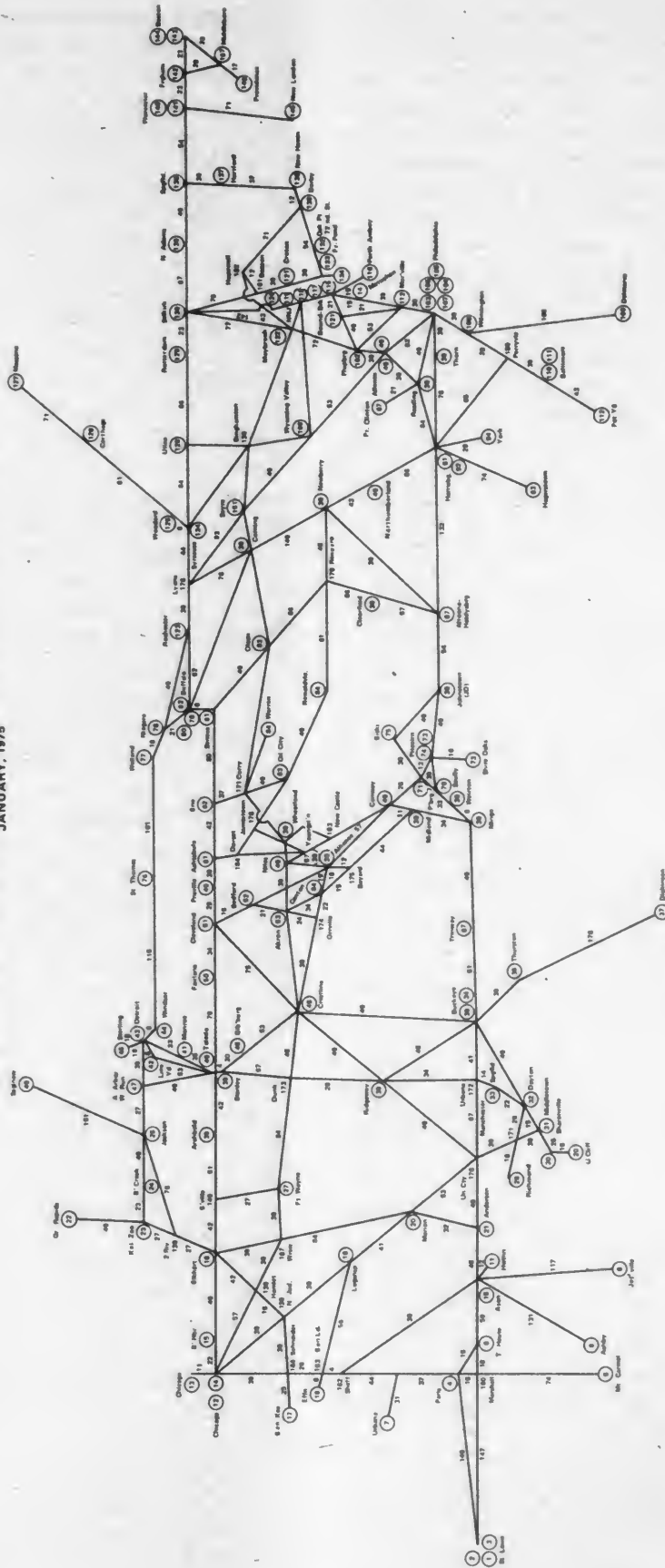
The USRA operations planning horizon extends through 1985. To plan operations for 1985, it was necessary to forecast traffic flows for that year. Temple, Barker & Sloane (TB&S) prepared a tonnage expansion factor for each of 12 commodities for 1980 and 1985 for ConRail. Conversion tables were provided to translate these tonnage forecasts into carloads.

Much of the traffic of the bankrupts originates outside the Eastern part of the United States. TB&S used different growth factors for traffic that flowed into the ConRail network from Western and Southern portions of the United States, because the West and South are expected to grow economically at a different rate than the Eastern part of the United States.

The future demand forecasts also recognized that traffic on the bankrupt railroads is expected to grow significantly slower than traffic on the major solvent railroads in the Eastern part of the United States, primarily because the other major roads in the East move proportionately more coal than the bankrupts. Of all commodities hauled by these railroads, coal traffic is expected to increase most rapidly by 1985.

The TB&S demand forecast assumed that the bankrupt carriers' position vis-a-vis other railroads in the Northeast and Midwest and vis-a-vis other modes would remain approximately the same as it is today. TB&S

Figure 2 CONRAIL BASIC 147 SUPER NODE NETWORK USED IN SRI BLOCKING SIMULATIONS  
JANUARY, 1975



also prepared an estimate of the change in demand, by commodity, that can be expected in 1985 if:

- The bankrupt's physical plant continues to deteriorate relative to other modes and other railroads in the Northeast or,
- ConRail is able to improve its position relative to other modes and other railroads due to rehabilitation, modernization, merger and improved management and marketing techniques.

Operating plans have been developed, using the optimistic demand forecasts for 1980 and 1985. In addition, operating plans have been developed for alternate volume projections and for downward revisions of TB&S's forecast to reflect the current business recession.

### Train Blocking

To facilitate adaptation of the numerous aspects of car and train movement to computer analysis, the flows contained in the data base were merged into 147 origin and destination super nodes. A network that represented main lines connecting these locations was established. The resulting model was applied to three separate computer programs which were used in series in a five-step process.

*The analytic process.*—The first step in the process was manual and required a decision as to what blocks would be made for outbound cars from each origin yard (including those cars being switched at that location as an intermediate yard) and what ultimate flow destinations would be included in each block. The resulting blocking strategy was then input to the first program which contained the 147 x 147 matrix of traffic flows in core. This program moved the flows from origin to destination in accordance with the input strategy. As the flows moved from yard to yard, they were added to the appropriate block at each yard.

The output of this second step was the sizes and destinations of blocks on hand to move at each yard as well as printout formats that permitted tracing various flows over the network, volumes handled in each yard and the input strategy that allowed modification or correction.

The third step in the procedure is manual, the decisionmaking process of placing blocks on trains, routing trains over the network and designating enroute work for each train picking up or setting out blocks at intermediate points. These trains are input to the second program which assures that all blocks reach their ultimate destination and all trains are on proper routes to accomplish assigned work.

As output, printout records are produced, showing block movements on trains as well as a record of all trains operated including loads, empties, tons, route and work enroute.

The final program, which receives output directly

from the second, computes network and train statistics. These include train miles and hours, car miles and hours, gross ton miles and numbers of cars, tons, and trains by direction on each segment of the network.

TOFC traffic was not included in that portion of the data base being used in the Blocking Studies. Such traffic was considered in the intermodal study (see Appendix F). TOFC trains that were developed in the intermodal study were input into the record of trains operated.

Unit train traffic was identified to the extent that railroad records were available to coincide with the data base period. Such traffic was excluded in aspects of the program that would not be applicable to unit traffic such as the count of cars being humped or otherwise classified in a switching yard. However, all unit trains as well as TOFC movements were included in summarizing the trains and gross tons operated over each line segment.

*Comparison of blocking plans.*—Using the 147 super-node network, thirty options or variations of options were simulated in preparing the Preliminary System Plan. As shown in Table 1, the sensitivity of the projected ConRail operation was tested under different conditions. Additional scenarios are being processed to test the sensitivity of the ConRail system to changes in train size, work rules, extent of plant rehabilitation, exclusion of various leased lines and further changes in demand forecasts and network configuration. Also,

TABLE 1  
EVALUATION OF PROPOSED CONRAIL OPERATING PLANS

SCENARIO	DATE BASE		GEOGRAPHIC NETWORK	RAILROADS INCLUDED	DEMAND FORECAST
	LOADS	EMPTIES			
I A B C D E F	10/73 CRC	4/74 PC	CRC I (1) EAST/WEST NORTH/SOUTH NEUTRAL TERM. CRC 1/2 EXISTING	BRR (2)	ACTUAL
II A B C	10/80 CRC	4/80 PC	CRC I EAST/WEST NORTH/SOUTH		TBS I (3)
III A B C D	10/85 CRC	4/85 PC	CRC I EAST/WEST NORTH/SOUTH CRC 1/2		USRA (4)
IV A B C	10/80 CRC	4/85 PC	CRC I EAST/WEST NORTH/SOUTH		
V A B C D	10/85 CRC	4/85 PC	CRC I EAST/WEST NORTH/SOUTH CRC 1/2		
VI A B C D E	10/73 CRC	4/74 PC 10/73 EL	CRC II A (5) CRC II B (6) MARC/EL (7) PG/AA (8) CRC 1/2	BRR (9)	ACTUAL
VII A B C D E	10/85 CRC	4/85 PC 10/85 EL	CRC II A CRC II B MARC/EL PG/AA CRC 1/2		USRA

#### NOTES:

- (1) SINGLE SYSTEM CONRAIL
- (2) PC, LV, RDG, CNJ, AA, LHR
- (3) "PRE-RECESSION" DEMAND FORECAST BY TEMPLE, BARKER & SLOANE
- (4) "RECESSION" FORECAST BY USRA STAFF
- (5) EL (EAST) TO SOLVENT; PHILADELPHIA (RDG) AND ALLENTOWN/BETHLEHEM (RDG) TO C&O; REMAINDER TO CONRAIL.
- (6) CNJ/LV TO SOLVENT; PHILADELPHIA (RDG) AND ALLENTOWN/BETHLEHEM (RDG) TO C&O; REMAINDER TO CONRAIL.
- (7) LV/CNJ/RDG/EL
- (8) PC/AA/LHR
- (9) PC/CNJ/LV/RDG/AA/LHR/EL

to prepare the Final System Operating Plan, the network planning process is being expanded in scope to analyze and plan the blocking and train operating plans to handle the traffic planning among the 517 gathering points on the ConRail system. The depth of the effort is also being expanded to develop the capability to simulate classification yard operations in detail.

From the blocking strategy, the total numbers of cars handled at one, two or three intermediate yards was indicated in summation. Every effort was made in all options to handle significant flows directly from origin to destination and all major flows were generally limited to a single intermediate handling. An effort was also made to block so that traffic flows would be handled on the shortest feasible route.

Whenever a significant volume was developed to an ultimate destination (20 to 40 cars depending upon distance and other circumstances) a block was made to that destination. For all locations, including 13 major system yards, the number of cars being switched and classified was considered as well as the number of classifications and the size of the block formed by each classification. Blocks that were too small were discontinued and the components re-sorted to appropriate blocks.

Summaries of the operating statistics and yard loadings from some of the scenarios processed are shown in Table 2. The major comparison produced was the total number of cars being switched, with specific comparisons being drawn off for the 13 major system yards. Although not shown here, comparisons were also made of loadings on 17 system yards of lesser volume. Compared to the existing operation, it was possible through planning to reduce system switching requirements under all options and, as a general rule, the total number

of cars being handled at system yards was less than are being handled today.

Although the number of classifications required of each yard was frequently more than they are preparing today, railroad officials concurred that in most cases the projected requirements did not exceed the capability of most locations. There were areas, however, where the capability was open to some question. These locations were identified for all versions and adjustments made. To handle questions concerning either the total number of cars being switched or the number of classifications to be made at a given yard, a separate program has been developed that provides the detail necessary to carry out a detailed simulation of such yards.

The outputs of the train operation and system statistics program produced several totals for comparison between the options, as shown in Table 2. Running times were assigned for present operations as well as for the postrehabilitated operation for each segment. Train hours and car hours were produced and compared under both conditions. Train miles and car miles were also developed and compared. The data base for current traffic flows was run through a special program and short-route car miles were determined. Circuitry percentages were then determined for each version.

Gross ton miles generated and gross tonnages for each line segment were also compared for each plan. Trains were rerouted in many cases to test the resultant load in terms of number of trains and gross tons on selected line segments. In addition, the effect that major reroutes would have on car hours and miles and train hours and miles was determined. Similarly, to test the potential for line reductions, specific traffic flows were removed entirely from selected routes. Through cars in trains that were doing work enroute were indicated

TABLE 2.—147 "Supernode" network planning scenario outputs

Scenario, network and date/volume	I-F, Existing 1973	I-A, ConRail 1973	I-B, East/West 1973	I-C, North/South 1973	IV-A, ConRail I 1980 USRA	V-A, ConRail I 1985 USRA	I-E, CRC 1/4 1973	VI-A, CRC IIA 1973	VII-A, CRC IIA 1985 USRA	VI-C, MARC/EL 1973	VII-C, MARC/EL 1985 USRA	VI-D, PC/AA 1973	VII-D, PC/AA 1985 USRA
GTM (thousands).....	658,562	643,086	650,831	645,014	708,270	752,351	576,830	665,694	796,231	124,003	153,512	602,395	707,955
Train miles.....	122,233	120,976	126,315	128,150	129,691	131,764	109,062	126,953	131,793	22,625	23,798	110,825	126,171
Train hours.....	5,684	5,418	5,719	5,941	5,957	6,034	4,818	5,626	5,813	940	1,007	5,330	5,756
Car miles (thousands).....	11,176	10,912	11,048	10,936	11,293	11,582	9,765	11,197	12,658	1,970	2,293	10,280	11,221
Car hours (thousands).....	504	468	482	486	492	504	419	479	534	78	90	450	491
Network miles in use.....	9,445	9,023	8,998	9,910	9,179	9,028	5,842	9,891	9,573	2,708	2,708	8,607	9,199
CM ratio to short route miles.....	1.058	1.032	1.045	1.035	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total system switchings.....	94,769	83,605	86,261	85,387	86,869	87,587	76,757	88,434	97,430	19,089	20,674	76,300	84,569
System yard loadings:													
Avon.....	3,452	3,161	3,289	3,131	3,060	3,099	2,312	2,971	3,115	0	0	2,884	3,110
Blue Island.....	2,998	2,638	2,601	4,067	2,835	2,991	2,405	2,034	3,552	654	830	2,568	2,972
Elkhart.....	3,250	3,152	3,354	1,928	3,330	3,447	3,471	3,524	3,981	0	0	3,084	3,364
Cincinnati.....	2,542	2,341	2,391	2,419	2,529	2,658	2,823	2,333	2,752	94	112	2,274	2,684
Buckeye.....	2,579	2,418	2,468	2,023	2,442	2,507	2,084	2,220	2,450	0	0	2,329	2,566
Stanley.....	2,288	1,874	1,930	2,440	1,911	1,945	2,321	1,792	1,974	0	0	1,749	1,960
Detroit.....	1,916	2,062	2,193	1,859	2,141	2,202	1,456	2,002	2,270	0	0	2,003	2,231
Cleveland.....	1,203	1,088	852	893	1,103	1,135	802	1,470	1,554	456	446	1,043	1,150
Conway.....	5,975	4,160	4,128	2,388	3,769	3,801	3,259	4,302	4,737	0	0	4,200	4,584
Buffalo.....	3,017	2,556	3,140	3,202	2,495	2,509	3,077	2,638	2,732	1,725	1,810	2,011	2,089
Harrisburg.....	5,258	3,751	5,590	5,736	3,743	3,798	4,767	2,876	2,989	577	624	3,021	3,311
Allentown.....	1,598	1,608	1,905	1,737	1,572	1,625	1,564	1,892	2,014	1,327	1,393	0	0
Selkirk.....	3,188	2,735	2,283	2,959	2,917	2,956	2,617	2,630	2,767	0	0	2,816	3,018



as well as the cars in blocks that were passed enroute between trains.

The number of trains operating on various segments of the network was compared within several of the versions. If major or lengthy segments were out of balance, modifications were made in blocks being carried to permit consolidations of trains or splitting up of larger trains to avoid a situation that called for excessive crew and perhaps power and caboose deadheads. Since the effect on the system statistics was minimal, the balancing effort was not carried out on all variations.

A traffic flow by commodity was produced prior to commencing work on any of the versions so that commodity content of traffic flows and blocks on trains could be determined by ready reference.

Data used in block and train formation was rounded and represents an average day in a 25-day month. Specific output figures represent a design day (a fairly heavy day) rather than an average day. When conversion was made to monthly or annual statistics, the appropriate multiplier was used to portray an accurate comparison, factoring out the 25-day average.

### Capacity of Facilities

It is generally assumed that railroads have significant amounts of unused capacity. This may be accurate but such generalizations are inadequate for development of the Preliminary System Plan. In fact, experience confirmed by recent FRA computer simulation studies of railway line capacity indicates that, as physical capacity is approached, small changes in volume have significantly greater impact on delays and therefore on capacity.

The same study (discussed below) found that delays tend to grow approximately as the inverse square of change in train speed. For example, if slow orders require cutting average train speeds in half, delays would grow four times. Given the present physical condition of the bankrupt carriers, the volume of traffic to be handled and the number of potentially redundant facilities (yards, multiple tracks, parallel lines, etc.), USRA determined that adequate capacity could not be assumed. Therefore, capacity has been explicitly analyzed for both mainlines and yards where significant changes in the operation are contemplated.

### Main Line Capacity Analysis

USRA, FRA and RSPO (ICC) jointly contracted for analysis of principal lines with a Train Performance Calculator. FRA contracted to develop, test and use a Dispatching Simulation Model for developing parameters for evaluating line capacity and delays given train density, track configuration and speed.

*Train performance calculator.*—Detailed operating information for each line was provided to T. K. Dyer,

Inc., to be utilized in its Train Performance Calculator (TPC). The information includes the following:

- Line Geometry—curvature, gradient and speed restrictions.
- Definition of operating segments and mileages.
- Definition of test trains of various sizes with HP/Ton ratio for each type of train.

Using the Train Performance Calculator, transit times over a given line are determined for each of the following types of trains: passenger train, merchandise train, TOFC train, loaded unit train, and empty unit train. T. K. Dyer has simulated train runs of these types in both directions over approximately 9,700 road miles of potential ConRail mainline for RSPO and FRA, as well as USRA.

In addition to providing running times, which are used as an input to the Dispatching Simulation Model, the output of the Train Performance Calculator has been useful to USRA because it provides practical transit time and fuel consumption information over each mainline segment, making it possible to evaluate more closely the incremental circuitry costs and fuel efficiency associated with changing or upgrading routes. This information was used to define the mainlines required for ConRail, since it enabled USRA to make trade-off decisions between incurring incremental operating costs associated with additional route miles rather than acquiring and subsequently rehabilitating additional mainline segments. The Train Performance Calculator is programmed to define the difference in running times resulting from rehabilitation of the track or changes in locomotive characteristics, such as results from electrification. The additional cost of overpowering trains to increase speed can also be evaluated.

*Dispatching Simulation Model.*—The Dispatching Simulation Model was used to test track capacity and estimate train delays. Inputs to the Dispatching Simulation Model include the following information for each line segment under study:

*Track Arrangement.*—Number of tracks, location of sidings or crossovers, length of sidings, location of stations, yards and junctions.

*Signal System.*—Direction of movement and block spacing.

*Run Times.*—For various hp/ton ratios from Train Performance Calculator.

*Schedules.*—Of all trains. A schedule consists of starting time, origin and destination points, and work required en route.

*Trains.*—Assigned to five priority groups:

- Passenger
- TOFC and Preferred Merchandise
- General Merchandise
- Loaded Unit Trains and Empty Unit Trains
- Local and Transfer Movements

To verify the accuracy of input and to calibrate the model to allow comparisons with later runs, each line was first simulated with the existing track configuration and existing traffic. Once the program was validated for a segment, variations were made in input to test different operating strategies. The model was set up to measure on a quick-response basis the impact of such changes as the following:

- Proposed schedules can be run to simulate rerouting of present traffic or entirely new traffic flows.
- Tracks can be taken out of service for short periods to simulate maintenance-of-way work.
- Tracks or sidings can be added or removed and signal systems can be modified to allow bidirectional running.
- Running times can be varied to reflect slow orders and the removal of slow orders following rehabilitation.

The Dispatching Simulation Model provides a tabular simulation printout and a "stringline" diagram for each line segment and each operating scenario simulated. The tabular printout presents the detail of all delays incurred by each train, including programmed delay, such as work enroute or simulated mechanical breakdowns, and dispatching delay caused by interference from other trains or limitation of the physical plant. Delays for each simulation are totaled and averaged for each priority group of trains.

The stringline diagram provides a visual display of the results of the simulation. It is useful for quickly spotting problem areas and the probable cause of any delays to trains. Figure 3 illustrates a computer-generated stringline diagram for the multitrack line from Harrisburg to Conway with existing trains.

The Dispatching Simulation Model can be used to test the "breakdown capacity" (the point at which additional trains cannot be handled and traffic begins to back up) of a line under varying operating conditions. It is also useful for determining the amount of delay incurred and, by associating costs with delay, a judgment can be made as to the value of reducing delays.

If a line reaches the breakdown point, or if an unacceptable amount of delay is incurred, the line can be resimulated with a variation in the configuration or condition of the physical plant or the schedule of trains operated. If a simulation indicates that there is no problem with line capacity using a particular operating strategy or schedule, a further test can be made to see if reductions can be made in the physical plant without interfering with the traffic.

FRA has utilized the Dispatching Simulation Model in its Parametric Track Capacity Analysis Project to simulate present traffic and track configuration on 7,030 road miles of line, including 12,162 miles of main track of the 7 bankrupt carriers. Although a computer simulation is not the same as actual dispatching, the Dis-

patching Simulation Model is useful for pointing up possible problem areas.

*Simulation of proposed reroutings.*—Several proposals for major rerouting of traffic were tested on the Model to determine if they are practical and, if not, where the problems are. A few examples follow:

- The reroute simulation of all Conway–Chicago traffic via Cleveland and Toledo and via Bucyrus and Toledo indicated that this was not a viable plan, and for this reason the Ft. Wayne line will have to be retained, at least through the rehabilitation period.
- The reroute of all Indianapolis–St. Louis traffic on the South Line indicated that additional double track would be necessary to use this as the only route, and the North route will be needed until the improvements are made.
- The reroute of Buffalo/Niagara–Detroit traffic via Cleveland and Toledo indicated adequate capacity if the Ft. Wayne traffic is not also run via Cleveland. Therefore service considerations, not capacity, govern use of the Canada Southern route.

Origin-destination traffic flows are being analyzed by Stanford Research Institute to determine the most efficient way of handling the traffic. An output of this analysis will be pro forma freight train schedules over each line segment. The Dispatching Simulation Model will be used to test the practicality of these schedules prior to preparation of the Final System Plan.

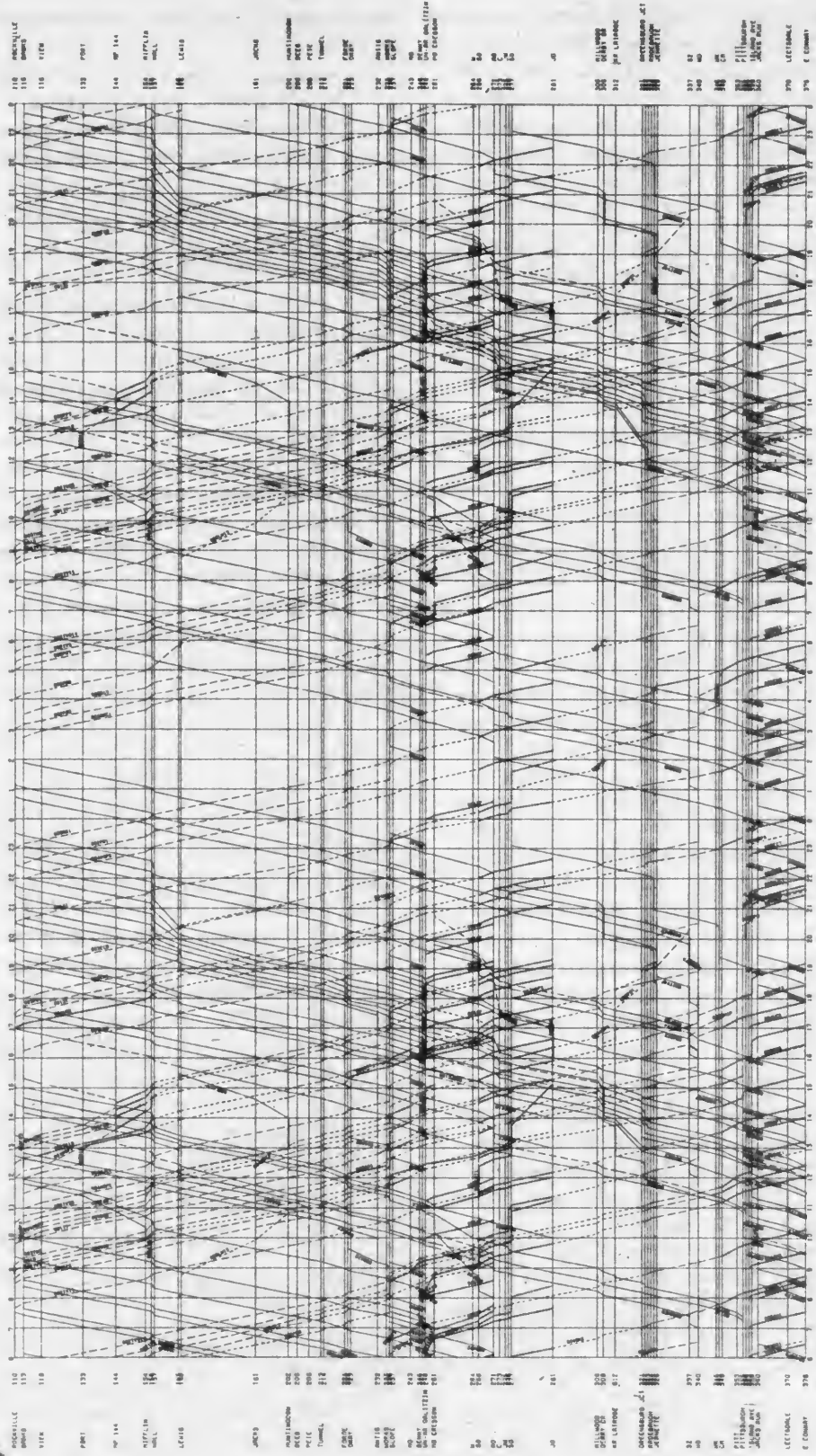
*Parametric Findings.*—Parametric analysis of line capacity under varying conditions produced track-capacity related conclusions including:

- Double track with reverse-running signaling has about five times the capacity of a typical single track CTC line.
- Installing a Centralized Traffic Control System (CTC) on a double-track line segment is helpful during maintenance and expedites the flow of high priority trains, but it does not materially improve overall capacity, as the delays to low priority trains offset the gain to high priority trains.
- Removing varying train priorities and establishing a uniform speed for all trains over a line increases its capacity by about 40 percent.

### **Yard Capacities**

Yard capacity is recognized as a major operating constraint. To significantly improve the movement of loads and empties through the system, it is necessary to make the classifications necessary to permit trains to bypass intermediate yards. Providing the additional classifications desired to minimize rehandling of cars could require significant changes in the actual work done in individual yards. One of the basic functions of the Blocking study was to determine the best overall

FIGURE 3  
TRAIN DISPATCHING MODEL FROM HARRISBURG TO CONWAY





system classification plan through successive iterations with the computer simulation model.

Having developed a potential system classification plan, it was necessary to review the resulting workloads on each yard. Where the system classification plan would overload a yard, consideration was given to expanding capacity or else changing the classification plan. A series of Yard Studies was conducted to provide the data necessary to identify capacity constraints and to weigh the alternative solutions to capacity problems. In addition, the various yard studies gave an indication of the potential improvements in operating efficiencies available in each yard.

#### Classification Yard Studies

In addition to the class yard information gathered by the Economic Overview consultants and by USRA's Regional Managers and Operations Planning staff, the consulting firm of R. L. Hines Associates, Inc., was retained to furnish the following additional information and analyses on 23 of the most significant bankrupt classification yards:

- *Identification of existing constraints* including physical, equipment and manpower constraints (e.g., for physical constraints, number, length and capacity of class tracks, switching leads, running tracks, rip tracks, points of interference, etc.)
- *Definition of incremental expense changes associated with varying a yard's work requirements* (e.g., cost to add an additional crew, savings resulting from reducing yard switcher requirements by one unit, etc.)
- *Definition of capital investment requirements associated with adjusting the capacity of a yard* (e.g., addition of another classification group, lead or connection.)
- *Definition of Work Now Being Accomplished in a Yard* including:
  - Outbound and inbound movements (trains, transfers, interchange runs, locals and industrial drags including approximate timing and volume of each of these movements). Legible copies of a normal week's inbound and outbound consists were obtained as part of this task.
  - Activities of each yard crew and local (summarized using a Gantt chart for each crew).
  - Description of volume variations by day of week, month of year and hour of day for each yard; and selection of a "normal" period for further analysis.
- *Identification of Time Required to Perform Various Yard Work Elements* (assuming existing productivity and work rules) including the average time required to:
  - couple a track (fixed + variable/car)

- double one track to another (fixed + variable/car)
- set-over a track from the bowl to the departure yard (fixed + variable/car)
- hump a cut (fixed + variable/car including pull-back and average re-hump if required)
- inspect an inbound train (fixed + variable/car)
- move between various parts of a terminal and to make significant moves within a yard
- perform other significant yard activities

In addition to the above types of information, the field teams also prepared qualitative reports of the existing constraints facing each yard and the relative effectiveness with which each yard was being operated. The group also submitted recommendations for changes in each yard.

The information was gathered from each terminal through interviews with railroad personnel, analysis of available data and observations of key activities. The Hines team spent an average of 10 man-days of data gathering and observation in each of the terminals reviewed. Each team consisted of an operating consultant (with prior experience as a General Manager, or General Superintendent of a major railroad), an engineering consultant (with Railroad experience as a Chief Engineer) and an experienced railroad cost analyst.

The information gathered by the Hines group, combined with the data collected and observations made by USRA's Regional Managers and Manager of Yard Operations as well as Penn Central's Director of Yards and Terminals (assigned to work with USRA on a full time basis), was sufficient to evaluate whether the individual terminals could perform the work assigned under each operating plan and to estimate the cost and problems associated with expanding the capacity of a terminal if the work load assigned under an operating plan exceeded the terminal's present capacity.

*Terminal effectiveness studies.*—USRA's Regional Managers (supported by a full-time liaison representative from each Penn Central Region) have been analyzing local and industrial switching operations at 14 locations. The purpose of these studies has been to review the costs and revenues associated with the pickup and delivery (industrial and local) switching functions to estimate the profit contribution or loss for the traffic involved. Based on the findings in each case, several possible actions might be taken to improve the profit contribution:

- Improve efficiency of switching operations,
- Substitute truck pickup and delivery,
- Change rates, or rate structure,
- Ensure all legitimate charges are collected.

Yards selected for study represented a cross-section of the bankrupts' system in terms of location, size, na-



ture of business and switching complexity. The yards selected were:

<i>Name of Yard</i>	<i>Location</i>
Abrams .....	Norristown, Pa.
Burns Harbor.....	Porter, Ind.
Canton .....	Canton, Ohio
Edgemoor .....	Wilmington, Del.
Indianapolis Terminal.....	Indianapolis, Ind.
Kenmore .....	Buffalo, N.Y.
Midvale .....	Midvale, Pa.
Mingo Junction.....	Steubenville, Ohio
Motor .....	Bedford, Ohio
Oil City.....	Oil City, Pa.
Rochester .....	Rochester, N.Y.
Springfield .....	Springfield, N.Y.
Weirton .....	Weirton, W. Va.
West Albany.....	Albany, N.Y.

To determine the revenue generated by customers served from the yards listed above, Sales Department Records were reviewed, containing summaries of cars originating and terminating at each customer location and including the O/D routing which each of these cars followed. Demurrage records, accessorial charges, and summaries of other miscellaneous revenue records related to each customer were also reviewed.

To define the total cost of operating the yards in question, yard-specific operating costs were reviewed and general overhead allocated on a per-car basis to each of the yards in question. Per diem charges associated with each of the yards was obtained through Car Distribution Records. The costs of operating switching locomotives were obtained from the mechanical department. Man-counts of supervisors, clerical forces, T&E crews, maintenance of equipment and maintenance of way forces assigned to each yard were obtained from supervision at each terminal.

Terminal supervision as well as yardmasters provided a detailed explanation of the duties of each switch crew including the customers served and the approximate time needed to serve each of them. They also were able to breakout the approximate yard sorting time that should be allocated to each of the industrial customers, system switching requirements, interchange operations, etc. Terminal supervision was also able to provide a description of the number of locomotive units assigned to the yard and how each unit was used each day.

Division budget offices supplied the remaining information on payroll costs and arbitrations and any other relevant costs. Line-haul cost attributable to each of the industrial cars being studied was derived and allocated to these cars on the basis of line-haul cost formulas developed by USRA.

With the data described above for these sample yards, the general contribution to net railway operating income generated by each of the yards studied is being estimated and, within each of these yards, by each of their major customers. These findings will be correlated to determine whether any relationships can be de-

veloped to describe business that generally was unprofitable for the railroad. For the Final System Plan, findings from these preliminary studies will be extrapolated to estimate their system impacts and recommendations will be developed to correct deficiencies or weaknesses uncovered by these studies.

### Equipment Utilization

As indicated in earlier portions of this plan, to survive as a private industry, railroads must significantly improve equipment utilization. USRA carried out two studies related to this objective.

Car utilization improvement and car ownership are the two major areas of freight car planning. Car utilization, defined as the number of car days on line per load originated, is determined by the carriers' traffic patterns, operating methods and car distribution strategy. Car ownership refers to the characteristics of the carrier's fleet (number of cars by type, grade, size and special appliances) and is determined by the new car acquisitions, car maintenance and shopping programs as well as retirements.

The importance of freight car planning is indicated by the size of the fleet, which included over 175,000 cars owned and leased at the beginning of 1974, and the high cost of new cars. At an average cost of \$22,000 per car in 1973, replacement of the bankrupts' car fleet would cost \$3.8 billion. In 1973, the bankrupts' total equipment costs were over \$300 million consisting of net car hire, car leases, shopping, depreciation and interest expense.

The first objective for the freight car planning study, which was conducted by Strong, Wishart & Associates, was to develop an approach to freight car control that would enable ConRail to improve car utilization substantially. To accomplish this, Penn Central, representing 90 percent of the bankrupt operations, was analyzed as follows:

- For each of eight car types (plain box, equipped box, gondolas, open top hoppers, covered hoppers, TOFC flats, multi-level flats, other flats, and all other cars), the utilization statistics were developed from car accounting and traffic records to show the empty and loaded car days on line per load originated.
- The policies of PC in the important areas of fleet sizing (maintaining the number of empties on line at the minimum level required to protect current loading rates) and car distribution (allocation of each car to a particular loading point or movement off line) were compared to practices on other railroads.
- The ability of the PC's computer system to control the movement of cars effectively was evaluated in relation to the capabilities of systems on other railroads.

- The effect of deteriorated plant on the time that cars spend in trains was evaluated.

For each of the above areas, an improvement potential was developed in car days per load. Recommendations were developed also for basic car distribution procedures, the organizational structure necessary to implement these procedures, and the necessary elements of computer-processing support.

To develop a freight car acquisition program and forecast freight car expense, a computer model called CONCAR was developed. This model used the following inputs:

- Temple, Baker & Sloane forecast of originated tonnages for 1976–85, by general commodity classifications.
- A matrix developed from PC traffic records to convert TBS forecast of originated tonnages to originated carloads by car type.
- A projected 1976 fleet developed from the 1973 fleets of the bankrupt railroads, adjusted by the acquisitions, retirements, bad order fall-outs and shopping programs between 1973 and 1976.
- Historical per diem rates by car type for system and foreign cars.
- A shopping program designed to restore to the serviceable car fleet the maximum number of repairable cars which are now bad ordered.
- A retirement program designed to achieve an average fleet age of 18 years.
- Historical measures of car utilization performance modified by estimated improvements in car utilization. On the basis of these inputs, the model calculated the following statistics for each year from 1976 to 1985:
  - Beginning serviceable and unserviceable car count by car type.
  - Loading capacity of system serviceable cars by car type, based on historical system turn time adjusted by estimated utilization improvements.
  - On line foreign car capacity to load by car type, based on the historical percentage of originated loads in foreign cars.
  - If total loading capacity (system and foreign) exceeds the forecasted demand, the use of foreign cars is reduced to the minimum level required to cover the demand.
  - If the total demand is greater than the system and foreign capacity to load, the model increases the system car fleet by acquiring enough new cars to cover the excess demand.

The model's outputs include an equipment acquisition program, total car costs, fleet composition and utilization statistics. Many runs of the model have been made to evaluate the fleet requirements and financial results of the options, different shopping programs, various lev-

els and timings of utilization improvement factors, the inclusion of EL in the ConRail system and the effects of such external factors as car service rules and incentive per diem.

### Locomotive Utilization

Utilization of locomotives was studied to determine the required locomotive fleet, by types and quantities of locomotives, for each of the several alternate ConRail system configurations. Too few, or an improper mix of locomotives, would provide an unacceptable level of service. Too many locomotives, or locomotives of the wrong type, would unnecessarily increase investment base, carrying charges and maintenance expenses. Because the service life of a locomotive unit is relatively long and the unit investment is large, locomotive fleet structuring must be predicated on the traffic levels and mixes anticipated over a period of years and on a careful analysis of utilization.

Ninety percent of the locomotive fleet of the bankrupt railroads (excluding EL) is operated by Penn Central. On most Penn Central routes, eastbound tonnage usually exceeds westbound tonnage, which results in a motive power imbalance, and the deadheading of power from eastern terminals to western terminals. Locomotives are presently distributed in six regional pools as well as a system pool, the latter being controlled by Penn Central's "Blue Room" in Philadelphia.

A major problem encountered in this analysis has been locating accurate data. The problem was further complicated by the fact that ConRail locomotive requirements will be appreciably affected by plant rehabilitation and improvements in operating and maintenance procedures. These include upgrading of road and yard track, improving maintenance, elimination of certain branch lines and a new computerized operating data system allowing more centralized control of motive power. Identifying and measuring the quantity and timing of these modifications and improvements, and their translation into locomotive requirements, is crucial in determining future fleet size year by year.

The availability of cabooses has also been a major problem on Penn Central; therefore, throughout the analyses, cooos utilization was considered along with locomotives.

Several approaches were used in the determination of locomotive and cooos fleet requirements. One approach started with the existing operation and fleet and, based on a thorough analysis of anticipated changes in traffic levels and improved operating and maintenance procedures, estimated future changes in fleet requirements. To this end, visits were made to the "Blue Room," and to selected yards and locomotive facilities across the system.

The purposes of these visits were to study the methods of assigning and utilizing motive power, to esti-

mate the utilization of locomotive units based on visual inspection and sampling of records of locomotive activities and to elicit alternative approaches from experienced personnel. This effort culminated in the development of estimated changes to the present fleet for each factor affecting the fleet structure.

A second approach used was to compare the locomotive performance of each of the bankrupt lines with each other and with a number of other railroads to isolate and quantify areas of improvement. A computer model was constructed using the "factor analysis" technique. Ten factors, each having a bearing on a railroad's locomotive fleet size and composition, were considered (e.g., gross-ton-miles in slow order territories). Numerical coefficients were determined for each railroad for each of these factors; the coefficients were fed into the computer model and the relative importance of each factor was computed. Once these factor values were obtained, an anticipated decrease in slow orders, for example, could be immediately translated into a reduction in locomotive unit and caboose requirements. This model was run and the results compared with the "on the ground" approach discussed above, allowing a fine tuning of fleet requirements.

A third, longer range approach to the problem is the development of a computerized simulation of ConRail locomotive requirements. A simulation model is being developed which accepts train origins, destinations, times of origin and destination, and power requirements, as well as yard power requirements. The reassignment of power is considered as it is made available, in the manner in which it is presently handled.

Maintenance and servicing requirements also are handled in the model. After calibration to closely reflect the present operation, procedural and system changes are being reflected and the results of these changes obtained. Train Performance Calculator and Train Dispatching Model outputs are used as inputs to this process. Fleet requirement data from this modeling approach will be incorporated into the Final System Plan.

The number of locomotive units required each year were calculated using the several factors described above. Results of this analysis are shown in Chapter 6.

### Administrative Studies

In addition to the studies directly related to operations—such as blocking, line capacity and yard studies—USRA conducted a number of studies of administrative procedures, including clerical forces, data processing, management information and other general and administrative functions. These findings were utilized in preparing financial projections.

*Yard offices and agencies.*—The 7 bankrupt railroads' labor force includes 6,700 yard office and agency clerks representing 8 percent of the total employment. To forecast the clerical force requirements of ConRail,

and to estimate labor protection payments, it was necessary to review present and future yard and agency procedures and to define the size of the present work force by job at each location. Combining this information with the forecasted workload by yard and agency location and the systems and procedures which will be implemented at each location, a forecast was prepared of ConRail's clerical force requirements.

The status of yard and agency information systems on the principal ConRail roads is as follows:

The *Penn Central* is currently implementing an information system called *TABS*, an acronym for Transportation and Billing System. The major objective of this system is to provide a common data base for car accounting, transportation, billing, revenue accounting, freight sales control, tracing, car distribution and statistics.

Home routes and record rights are to be implemented into the system in early 1975. This addition should be an aid to car utilization and per diem control. Repetitive waybill codes (RWC) are provided, and waybill profiles are stored in the computer files. RWC waybills report full waybill information with the exception of car initial and number, waybill date and number and rate and weight of commodity.

The movement of empty pool cars is monitored by *TABS*. Patrons will have access to information on the movement of their own pool cars and will have the capability of changing pool assignments. *TABS* will also ensure that waybill information has been reported for every loaded car moving on the railroad through a cross check between car movement and the waybill information file.

The final *TABS* installation date is scheduled for April 1975, for a total of 264 reporting locations. Of these locations, 80 percent are now operational.

The agency system on the *Penn Central* is called *FACT* (Freight Agency Coordination Terminal). The *Penn Central* has 12 open stations, located in East St. Louis, Chicago, Indianapolis, Detroit, Columbus, Cleveland, Buffalo, Pittsburgh, Boston, New York, Philadelphia and Baltimore. All other stations on the railroad are considered nonagency stations. Each *FACT* location is surrounded by supporting field terminal locations. The locations of these field terminals are based primarily on the originating and terminating locations of local freights.

Most field terminals operate on an 8-hour day, 5 days per week. At the close of business in field terminals, all calls received in that terminal are automatically transferred to the *FACT* Terminal, which is manned 7 days a week, 24 hours a day. This was one of the selling points used by the *Penn Central* before the state commissions in justifying the closing of stations.

*FACT* Terminals are being converted from unit record equipment to IBM 360/20 through which all



data will be transmitted to the central computer in Philadelphia for processing.

The *Erie Lackawanna* recently opened four regional billing offices located at Buffalo, Scranton, Youngstown and Hoboken. These four locations will do all of the billing and collection for their respective territories, under the responsibility of the accounting department. The agency or station, of which the EL has 144 manned locations, reports to the division superintendent. Each of these locations prepares waybilling and handles its own demurrage and switching accounts. The waybills are forwarded to the regional center for freight billing and collection. Demurrage and switching bills are prepared by the local agents.

The *Lehigh Valley* has a central freight agency in Bethlehem, Pa., which does the billing for all credit patrons. The agencies on the LV are in 2 divisions, the Eastern Division and the Buffalo Division, with 17 agencies in the East and 16 agencies in the Buffalo Division.

Most of the LV is set up with dualized agencies where each agent may control up to as many as five other stations, with a major freight agency in Newark which covers Bayonne, Newark, Jersey City and New York Terminal as well as handling the revenue billing for TOFC at Oak Island. The Stations Department is made up of 6 appointed agents, 24 union agents and 25 "group 1" clerks. Also under the Station Department are 31 block operators.

The *Reading* Stations Department covers both stations and train dispatchers. In the Philadelphia area, there is a central billing bureau which handles all outbound billing. All stations on the system, other than in Philadelphia, keep their own accounts and do their own billing.

*Central of New Jersey* has four freight service centers in Elizabethport, Bridgeton, Lakehurst and Wharton, N.J. There are 112 people in the Stations Department, including 73 agents and clerks. Each of the agencies is responsible for its own ancillary charges. The service centers collect all the revenue.

All outbound waybilling is memo, with a copy being sent to the freight service center where the revenue billing is prepared. The freight service center also matches all memo bills with revenue bills on inbound shipments.

The use of "stand-alone" yard and terminal minicomputer systems is being evaluated to determine when and where the installation of these minicomputer systems and major terminals would improve the financial performance of ConRail. This evaluation will consider both the cost reduction and operational improvement aspects of these systems, as well as intangible benefits, such as better customer service and a reduction in misrouting.

PC's Freight Agency Coordination Terminal

(FACT) will be evaluated as a candidate system for extension to all of ConRail. Some of the potential areas of improvement are: computerized FACT terminal procedures, improvement of messenger routes, decreased train delays, restructured organization to reduce excessive management personnel and relocation of billing clerks to reduce the number of cars moving on memo bills.

Yard office procedures are being studied to determine if the present methods or work rules are inefficient, leading to an excess of clerical personnel. Information gathered from yards will be used as a basis for this study.

### Management Information System Planning

The management information systems of the bankrupt roads have been reviewed to establish which information areas are critical to management decisionmaking, to uncover deficiencies in those areas and to analyze the deficiencies to determine the improvements required if the systems are to meet future management needs.

Experience in constructing USRA's Traffic Data Base indicated serious data and information problems on the bankrupt roads. Although the situation may not be atypical of the railroad industry, significant, reliable information is, in many instances lacking on the bankrupts. Typically, data are plagued with errors, and considerable time and money was expended by USRA for data validation and error correction.

The information systems of some solvent carriers have been reviewed, but even the best-managed data systems emphasize current operations and fail to address information needs for long-term planning and decisionmaking. Critical management information is often collected, not with decisionmaking in mind, but only because of requirements of the ICC or other authority. Even the best railroad data systems still fail to integrate accounting data with car movement data in a way that provides a basis for determining real profit performance.

A factor which severely complicates the integration and upgrading of ConRail systems is the lack of compatibility between systems. The bankrupt roads have developed different data processing systems that perform essentially the same functions. Differences among systems can be attributed to dissimilarities in carrier size, data processing budget, management priorities, sophistication and competitive posture. Disparity does not necessarily diminish the value of any individual road's system, but in the case of ConRail, the wide variance between constituent systems implies formidable integration difficulties.

In summary, the ConRail road systems are not providing management with the information essential for effective decisionmaking. Furthermore, the systems suffer from lack of standardization. ConRail's information



system development must overcome both of these deficiencies. On the basis of the Penn Central merger experience, this will require advanced planning and coordination to minimize cut-over problems.

A task force has been established to review management information systems proposals. The task force includes expert representatives from USRA, FRA and AAR.

### **Administrative Organization**

The administrative and management structure will serve as the framework within which ConRail's decisions must be carried out. Penn Central alone has approximately 6,300 nonagreement employees, most of whom hold some administrative responsibility. Thus, establishment of ConRail may offer important opportunities for improvements in administrative cost as well as efficiency through a merger of the administrative organization.

The top management organization is being analyzed for the Final System Plan in a separate study by McKinsey & Co. In its broadest sense, the administrative study conducted by USRA staff deals with the present utilization of manpower by the seven bankrupt carriers compared to the ultimate requirements for and utilization of manpower under ConRail. Therefore, the total labor force, both agreement and nonagreement positions, was reviewed. Projected manpower requirements developed for the organization structure were based initially upon the single ConRail option. As the selection process continued, the administrative aspects of other options which seemed promising were considered.

The objective of the study was to develop an organization structure through which ConRail can be managed effectively and efficiently. A second and more immediate objective was to estimate for the Preliminary System Plan the total manpower requirements for the ConRail system through the year 1985, and on the basis of these data, to project general and administrative costs for these years.

The first phase of the study was collection of information about the organization structure and departmental

functions of the bankrupt carriers. The specific information acquired included corporate and departmental organization charts, employee salaries, summaries of the numbers of agreement positions and their locations and, where appropriate, statistics concerning the volumes of work being handled by the various functions. Where possible, volumes were related to appropriate workload indices to be used in determining the size of effort anticipated for ConRail.

The bulk of the information-gathering effort was handled through direct contact with officers supervising the respective departments. These interviews supplemented the statistical data obtained, providing explanations of departmental functions and the ideas of those interviewed as to the potential impact of consolidation upon each department.

The intention was to develop as complete knowledge as possible of the activities in all departments to facilitate a logical integration of the functions of the six carriers. An effort was made to identify areas offering potential for reduced costs through such measures as consolidation of activities, elimination of duplication, improved methods and realization of economies of scale.

At the same time, the processes through which management decisions are reached were examined. Since effectiveness of the management process in translating corporate goals into results will be critical to ConRail's future, it was necessary to emphasize those processes which serve the ultimate goals while replacing or supplementing those which are inadequate.

As individual departments in each bankrupt company were being reviewed, special emphasis was placed upon those functions whose performance would have the most direct impact upon ConRail's performance. It should be noted that, although minimization of cost is one goal of the administrative study, it may not always be compatible with sound decisionmaking processes. In such cases, improvement of the processes may require the addition or upgrading of personnel, with correspondingly higher costs.

The Administrative Study supplied basic information for Manpower Planning, Operations Planning, Marketing and Financial Planning.



## APPENDIX F

### Intermodal Services

Intermodal services play an important and expanding role for the railroads in the Region and provide a means by which these companies can meet the high competitive service levels provided by motor carriers. Some fundamental changes in marketing and operating strategies will be essential, however, if these services are to contribute to the long-term viability of ConRail.

The objectives of USRA intermodal planning studies include:

- Development of long-term intermodal strategies,
- Identification of future potential markets,
- Development of an intermodal operations plan, including assets to be acquired by ConRail, routes to be used and service schedules,
- Preparation of a long-term capital budget and
- Development of guidelines for organizational structure and management-control systems.

This section summarizes the principal findings and conclusions of these studies, with emphasis on merchandise (e.g., piggyback) intermodal services and recommendations for the Preliminary System Plan.

Intermodal services of the bankrupt railroads include piggyback service (Trailer-on-Flat-Car and Container-on-Flat-Car, or TOFC/COFC) for merchandise freight, including express traffic, as well as coordinated rail-truck distribution services for bulk commodities, construction materials and automobiles.

Railroad intermodal services evolved slowly, as an outgrowth of earlier programs developed to restructure

unprofitable, less-than-carload (LCL) freight services. Containerized LCL services first were offered by a few railroads in the 1920's, but were extremely limited in their application. Coordinated rail-highway piggyback services were established in the East in the 1930's by the former New Haven Railroad, which handled motor carrier trailers between Boston and New York.

Piggyback traffic grew rapidly after 1953, when the Interstate Commerce Commission (ICC) officially sanctioned such programs in the "New Haven" case, in which it decided that railroads could haul motor carrier trailers without holding a motor carrier certificate for the line-haul movement between rail terminals.

Volume grew from 891,000 carloads in 1964 to over 1.5 million carloads in 1973, an annual rate of approximately 6 percent per year. The service expanded from its original LCL role to include a variety of plans for shippers, motor carriers and freight forwarders.

The railroads recognized the need for this broader role during the later 1950's to meet increased motor carrier competition resulting from the construction of new toll roads and interstate highways. The Reading Company and the former New Haven, Pennsylvania and New York Central railroads used their subsidiary motor carriers (operating rights which had generally been obtained prior to the passage of the Motor Carrier Act of 1935 and held under the historical "grandfather" clause) to develop coordinated rail-truck programs for LCL freight and branch line substituted service, as well

as the other broader TOFC plans. The Erie Lackawanna, Lehigh Valley and Central of New Jersey obtained motor carrier substitute service authority, but used contract truckers for pickup and delivery services.

Spearheaded by the Pennsylvania Railroad, the Trailer Train Company was organized in 1955 to form a national pool of TOFC flat cars. Trailer Train, today the nation's largest private car owner, is owned by 32 railroads and one freight forwarder (among the owners are the Penn Central, Reading and Erie Lackawanna). This national pool provided a fleet of standardized cars that provided the impetus for the rapid growth of TOFC.

The advent of containerized shipping in the late 1960's resulted in the development of rail-water intermodal services (Container-on-Flat-Car, or COFC), further broadening the potential market for the Region's railroads.

### Nature of Present Services

In 1973, five potential ConRail railroads offering piggyback service<sup>1</sup> accounted for 35 percent of total U.S. TOFC/COFC carloads and 63 percent of the TOFC/COFC tonnage originated and terminated in the Region. The 5 roads operate a total of 77 TOFC/COFC terminals, linking all the major market areas in the Region. Traffic to and from the South and West is interchanged with other carriers at key gateway cities, including Chicago, St. Louis, Cincinnati and Alexandria, Va.

There are also approximately 65 bulk commodity and automobile distribution terminals served by the 5 roads in the Region, in addition to many other privately owned and operated intermodal distribution facilities.

Traffic flows are concentrated between major "end point" markets or gateway interchanges. Nine cities (each originating or terminating more than 100 loaded trailers/containers per day) account for over 70 percent of total potential ConRail traffic. Most of the remaining traffic consists of smaller (often imbalanced) flows to and from low-volume terminals.

The preponderance of ConRail piggyback traffic is handled by more than 50 dedicated trains operating over 5,800 route miles. The remaining traffic, moving in smaller blocks that do not justify dedicated trains, moves in conventional freight trains which require switching and handling in classification yards and incur added delays in transit.

A significant portion of total ConRail TOFC/COFC traffic (about 80 percent) consists of "wholesale" terminal-to-terminal traffic (Plan I, II½ and III piggyback) in which the customer or an agent is responsible for the "retail" collection and delivery service. Since late 1972 much of this traffic has been handled under

so-called "trainload" or multiple trailer discount rates, in which various "third parties" aggregate the required minimum volumes, purchase line-haul transportation from the railroads and then "retail" single-trailer services. Rail door-to-door service (Plan II piggyback), consequently has declined in relative importance.

The development of the "land bridge" and "mini-bridge" concepts, under which containership operators substitute rail line-haul for a portion of the ocean movement for import-export traffic, is responsible in part for evolution of the trainload and multiple-trailer discount rate structure. Entire trainloads of containers are moved by Penn Central, the Lehigh Valley and Erie Lackawanna to and from East Coast ports.

Approximately 10 percent of intermodal traffic consists of U.S. Mail, handled in dedicated mail trains primarily by Penn Central under contract to the Postal Service. Of the planned nationwide network of 21 bulk mail centers, 9 will be located within the Region and will offer a significantly increased potential market for ConRail.

### Issues and Problems

Rapid growth of TOFC/COFC service has resulted in a number of problems and basic policy issues which must be addressed by ConRail if the intermodal concept is to lead to profitable growth.

*Over-expansion.*—In an attempt to increase market share significantly while facing declining profitability, considerable intermodal over-capacity has resulted in substantial intramodal competition among the Eastern railroads for a limited traffic base. The economics of efficient intermodal service are such that rail service must be limited to moving large blocks of traffic between major "load centers" while a highway gathering service is used to aggregate these blocks into trainload volumes at modern and efficient intermodal transfer terminals.

A strategy by individual railroads to blanket the Region with duplicating terminals and line-haul services to enlarge each railroad's revenue base has resulted in significant overcapacity, and low market share.

*High operating costs.*—The development of many smaller terminals, unable to take advantage of potential scale economies (often served by mixed freight trains), has resulted in high operating costs. This strategy has resulted in a fragmentation of intercity flows, with much imbalance and empty equipment mileage, as well as considerable unproductive time while equipment is held at terminals for prospective loading. The need to provide high customer service levels for these smaller flows has required the operation of many shorter TOFC/COFC trains, with their attendant higher costs.

*Inadequate revenues.*—The trend to terminal-to-terminal service and volume discount rates had a serious impact on TOFC/COFC profitability in 1973. The combined effect of "third parties," who perform services

<sup>1</sup> Penn Central, Erie Lackawanna, Reading, Lehigh Valley and Central of New Jersey.



traditionally performed by the railroads, and discount rates has eroded profit margins to the extent that revenues barely cover variable expense and fall short of full economic costs which provide a "survival" return on investment and allow for replacement of capital assets.

Service has deteriorated due to unreliable freight train performance (caused by the poor condition of the physical plant) as well as terminal congestion and delay (caused by inefficient, outmoded terminal facilities). This low service level has had the effect of imposing an artificially low ceiling on rates, above which customers divert their freight to trucks. In fact, it appears that much time-sensitive freight already has been diverted by shippers.<sup>2</sup>

*Inadequate profit margins.*—The resulting margin between revenues and expenses has not generated a cash flow sufficient to permit modernizing and replacing the rolling stock and terminal facilities essential to an expanded intermodal function. Penn Central, for example, has estimated that TOFC/COFC services generated a contribution above variable costs in 1973 of approximately \$4.5 million on gross revenues of \$170.4 million. However, an estimate of fully allocated Penn Central costs, on an ICC accounting basis, indicates that a deficit of \$30 million was incurred. If current replacement costs and a realistic return on investment are included in the calculation, the loss could be twice that amount.

*Management systems and controls.*—Strategies which have emphasized volume growth without the proper systems for monitoring profits have contributed to current profitability problems. With a higher proportion of TOFC/COFC costs being variable with volume (compared to conventional carload service), it is essential that a real-time management control and profit monitoring system be in place to guide day-to-day decisionmaking.

Lack of profitability reports by terminal, traffic lane and market segment and the absence of timely operating data and statistics lead to uncoordinated and ineffective decisionmaking. Detailed operating budgets, combined with responsibility for revenues at the terminal level, are a key ingredient to effective operating management.

This is particularly acute in the equipment area. Unless local managers are held accountable for all direct costs, including imbalanced and empty equipment moves, operating costs can get out of hand. The quality of management information and controls of the Penn Central is better than that found on most railroads. The Penn Central Intermodal Department has its own operating information system which reports flows by

<sup>2</sup> The Penn Central experimented with several short-haul TOFC/COFC services in key corridors, including New York-Boston, New York-Buffalo and Chicago-Detroit. However, due to the need for consistently high service levels and the higher costs of short-haul service, Penn Central discontinued these services in 1973, due to continuing operating deficits.

traffic lane and develops limited statistics on loaded and empty moves. Much remains to be done, however, to improve both the timeliness of data, and its use at the decisionmaking level.

*Service coordination.*—Attainment of the full potential of intermodal services is dependent on increased coordination and cooperation with connecting railroads serving other Regions, and with the local highway gathering services.

One third of the potential intermodal market consists of traffic flows to and from points outside the Region. Artificial barriers at major gateway cities, resulting from tariff practices as well as operational considerations, have discouraged interregional trains and services. An interregional intermodal network can be developed to foster such services bypassing congested rail terminal areas and eliminating costly "street" interchanges.

Such a network would provide the railroads with an effective means for competing for the interregional traffic with long-haul motor carriers not constrained by historical railroad gateways. The National Intermodal Network Study being conducted for the Federal Railroad Administration has concluded that effective interregional services would be instrumental in improving the rail intermodal market share.

An effective highway "retail" organization is essential to provide a true wide-area ConRail intermodal capability. It is undoubtedly important to develop, through improved services, increased profits from existing and potential "retail" markets (forwarders, shipper associations, the Postal Service, express companies, motor carriers, etc.). At the same time, however, the rail motor carrier subsidiary should play a broader role in providing ConRail customers with an alternative retail capability, as well as continuing to provide the traditional substituted-service to points from which rail service is reduced or withdrawn.

The future role of the motor-carrier subsidiaries of the ConRail railroads has not been clearly defined. Pennsylvania Truck Lines, for example, functions primarily as an intermodal terminal contractor and equipment leasing organization and performs highway pick-up and delivery and substituted service for the parent company. A small amount of revenue (approximately 12 percent of PTL 1973 revenues) is generated by non-rail operations. Reading Transportation Company performs some TOFC pick-up and delivery work and operates a few Reading TOFC terminals, but 90 percent of RTC revenues are generated from truck-billed freight.

### Opportunities for Future Services

*New markets.*—The ConRail railroads serve all major freight generating centers in the Region today. Future growth will occur through increased share of existing

markets, rather than geographic expansion into new markets. However, new terminal facilities, located near concentrations of demand, will improve access to intermodal services for these existing markets.

For example, the movement of industry to suburban locations such as Long Island, Middle New Jersey and the western suburbs of Chicago, has created high trucking costs for those shippers who have located in areas away from existing intermodal terminals. New terminals in these and other growth areas will facilitate the generation of new traffic.

The basic ConRail intermodal route structure and related services may be compared to those of regular route, general commodity motor carriers who operate scheduled services between fixed terminals at published rates. There will be a number of opportunities for additional specialized services for volume shipments to and from shipper terminals or other facilities such as marine terminals or postal facilities. These movements would be essentially contract services, handled apart from the regularly scheduled network service and priced to reflect their unique service characteristics.

The development of less-than-truckload (LTL) and partial truckload (PTL) services, using subsidiary motor carriers and other retailers to provide an areawide gathering service, will create a major new market for ConRail. Increased small-shipment traffic and the new traffic resulting from the Postal Service's new Bulk Mail System will complement the traditional directional imbalances characteristic of present day rail traffic.

Containerized export-import freight traffic can be expected to increase in the Region, since ConRail serves all major North Atlantic ports. Rail services substituted for coastal or intercoastal water movement, however, are subject to a lower rate ceiling than truck competitive services. Therefore, only traffic that moves in large blocks or train loads with minimal terminal handling that can be handled profitably should be solicited by ConRail.

*Existing markets.*—A detailed study of intermodal traffic flows and profit contribution for the ConRail railroads (not including Erie Lackawanna) indicated that approximately 32 percent of total loads (representing 17 percent of revenues) did not generate "survival" profits in 1973. The combination of high costs and inadequate revenues does not generate sufficient cash flow to replace capital assets or to increase capacity at today's high replacement costs and interest rates.

Some of this traffic can be handled more economically by truck. In smaller markets that do not generate sufficient volumes of TOFC/COFC freight to support more than one carrier efficiently, traffic should be concentrated on one carrier. The remaining unprofitable traffic could be made profitable by a combination of cost reductions, selective rate increases and improved interline divisions. It is estimated that revenues would have

to be increased by approximately 15 percent over present levels to attain "survival" levels of profitability if all present traffic were to be retained.

Selective rate increases on unprofitable flows would have the effect of diverting some of this traffic to other carriers. The alternative to a profit improvement program of this type would be a drastic cutback in services to a profitable core volume. Regardless of the strategy adopted by ConRail management, projections of future market potential must allow for the possible loss of much of the present marginal traffic.

Projection of 1980 and 1985 intermodal traffic levels were made under two alternative assumptions. A base level projection (that used in the ConRail pro forma income projections) assumes continuation of present market shares with growth related to the regional economy.<sup>3</sup>

The base level forecast indicated an increase in ConRail intermodal traffic of 30 percent between 1973 and 1980 (allowing for the elimination of approximately 15 percent of current traffic, due to its unprofitable nature), and a further increase of 36 percent between 1980 and 1985.

A high level projection of the ConRail intermodal market potential was developed for USRA<sup>4</sup> based on preliminary findings of a nationwide intermodal marketing study being completed for the Federal Railroad Administration (FRA). These projections, allowing for pruning of marginal traffic and selective marketing, indicate that ConRail intermodal traffic could increase by approximately 18 percent between 1973 and 1980 (a compound rate of growth of 2.5 percent) with a further increase of 145 percent between 1980 and 1985 (a compound rate of growth of 19 percent per year), as shown below:

*Projected ConRail intermodal traffic*

Year	Average daily loads	Average increase over 1973 (percent)
1973.....	2,580	-----
1980.....	3,048	18.1
1985.....	7,471	189.6

Depending on ConRail's intermodal policies and marketing strategies, intermodal service has two widely-varying levels of potential. Under the base level projection, 1985 revenues would amount to approximately \$365 million. Using the high level forecast, revenues would be approximately \$510 million.

A significantly increased intermodal market share is dependent on a number of interrelated factors, which clearly will involve a long lead time to implement. An efficient, upgraded physical plant is required to provide

<sup>3</sup> Temple, Barker & Sloane, *op. cit.*

<sup>4</sup> Reebie Associates, *ConRail Bi-Modal and Inter-Modal Operations*, Greenwich, Connecticut; USRA Contract No. 50034.

truck competitive line-haul service; interregional coordinated services must be established with other railroads; an expanded highway "retail" division is essential to entry into new markets; equipment fleets and terminal facilities must be modernized and expanded.

The preliminary results of the Federal Railroad Administration's Intermodal Network Study indicate that ConRail, due to the heavily industrialized Region which it serves, would be a key element of a nationwide intermodal network. The opportunities for an increased rail share of the "containerizable" freight market are substantial. The TOFC share of the "containerizable" market was 3.7 percent in 1971; this could increase to 11.5 percent by 1980.

Table 1 displays the projected nationwide "containerizable" freight market for 1980 and shows the portion of the total rail and highway potential that is economically suited for an intermodal network and the traffic which can be scheduled in economic, dedicated trains.

Of the total daily "schedulable" volume of 23,663 40-ft. equivalent units, almost two-thirds of the total consists of traffic diverted from existing rail services; the balance consists of traffic diverted from for-hire and private motor carriers. Approximately half the network potential (11,998 units) is freight now handled in conventional rail carload service. This traffic represents approximately 12 percent of "containerizable" rail freight, but only about 4 percent of *all* rail freight traffic.

It is noteworthy that projections of the potential, scheduled TOFC market for 1980 exclude approximately half of the TOFC traffic the railroads would otherwise be expected to handle. Much of this traffic would be diverted to highways, or to rail boxcar service, because of factors such as balance, operating costs or service requirements. Thus, a broadly expanded intermodal traffic base must consider the relative role of piggyback vs. carload service and the development of a marketing strategy consistent with ConRail's carload marketing strategy.

TABLE 1.—Average daily U.S. container market, 1980

Potential diversion from	Total containerizable units	"Economic" TOFC potential	"Schedulable" TOFC	Percent of total "schedulable"
				<i>Percent</i>
Common carrier highway.....	67,611	12,377	5,722	24.2
Private highway.....	33,348	6,105	2,481	10.5
Highway subtotal.....	100,959	18,482	8,203	34.7
TOFC.....	7,120	5,986	3,462	14.6
Carload.....	97,477	43,506	11,998	50.7
Rail subtotal.....	104,597	49,492	15,460	65.3
Total.....	205,556	67,975	23,663	100.0

<sup>1</sup> NOTE: Includes only traffic with length of haul over 200 miles, 2 or more loads per day, per traffic lane, "prime" and "suitable" containerizable traffic, 280 workdays per year.

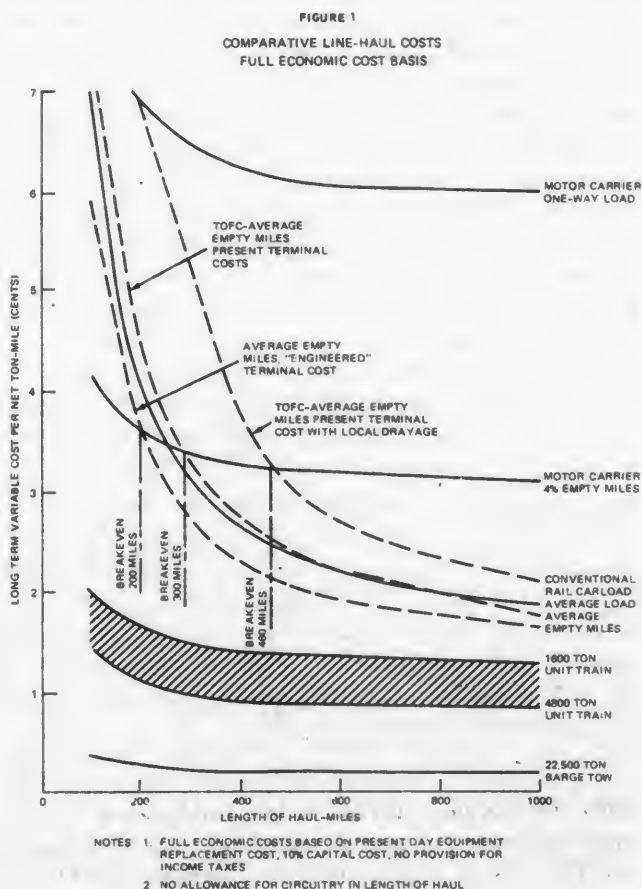
Source: Reeble Associates, *op. cit.*

## The Economics of Intermodal Competition

The greatly expanded market share for intermodal services includes the diversion of approximately 4 percent of present carload freight traffic to intermodal service, but only in situations where empty mileage is held to 5 percent of the total or less. The balance of this growth is attributed to capturing much of the projected increase in intercity highway freight.

Figure 1 compares the relative economics of TOFC and rail carload service, highway carriers, rail unit trains and barge transportation. These costs represent "engineered" full economic cost, rather than historical average costs. The figure portrays the comparative line-haul unit costs of various specific service configurations for truck and rail carriers.

The long term variable cost per ton mile is charted against the length of haul for barge operations, highway carriers under various load assumptions, and three forms of rail service: conventional carload service; trailers on rail flatcars (TOFC or piggyback); and rail unit trains. The costs presented represent full economic costs, incorporating estimates of costs based on current replacement costs and interest rates. They are estimates of true long-run costs, appropriate for investment planning.





The extremes are very low-cost barge service<sup>5</sup> and very expensive trucking where loads are assumed to be in one direction only. Comparing the various rail costs, rail unit trains have lower costs than conventional rail service, when the required volumes are available to realize these lower costs. Conventional carload service is in the mid range of the rail costs examined, except that unit costs rise sharply for short haul shipments.

Piggyback is generally higher in cost than carload service, under conditions of average empty return ratios and incorporating present piggyback terminal and drayage costs. Piggyback service can be cost competitive with boxcars when the rail terminal switching cost is high or when rail line-haul service is high in cost because of low volumes or short distances, such as on rural or urban branch lines.

Piggyback service can be cost competitive with trucks on a point-to-point basis for hauls of 300 miles or more, assuming average ratios of loaded to empty returns. However, if the local drayage cost to and from the motor carrier terminal or shipper dock is added to piggyback service to develop total door-to-door costs, piggyback competitiveness is lessened and the break-even length of haul between truck and piggyback is considerably larger. For example, if local drayage expense is \$60 per loaded trailer, the break-even between motor carrier (with 4 percent empty mileage, representative of efficient intercity carriers) and piggyback service (with present ConRail terminal costs and utilization levels) is extended to 460 miles.

If highway costs predicated on the use of nonunion owner-operators (who generally price their services on a marginal cost basis) is used, the breakeven point between highway and piggyback is extended even further. The impact of high line-haul and terminal costs for piggyback is to exclude the railroads as viable competitors in the intermediate distance markets, where most of the shipments comprising the potential intermodal markets are found.

The average length of haul for Class I intercity motor common carriers in the Central Region was 281 miles in 1972<sup>6</sup> and the average length of haul for LTL freight alone is somewhat longer. The Regular Common Carrier Conference of the American Trucking Association (ATA) estimates that shipments under 1,000 lbs. in weight move an average of 574 miles.<sup>7</sup> If ConRail is to increase market share, provide truck-competitive intermodal services and achieve the projected increase in volume, it is clear that an efficient, lower-cost operating system is essential to serve profitably the intermediate-distance markets.

<sup>5</sup> See Appendix B for a discussion of waterway costs not borne by barge carriers.

<sup>6</sup> American Trucking Association, *American Trucking Trends*, 1974, Washington, D.C.

<sup>7</sup> Regular Common Carrier Conference, *1969 Costs and Revenues and Small Shipments*, Washington, D.C., December 1971.

A key set of cost factors is the legal limitations on truck sizes and weights. Size and weight limitations constrain truck operations and tend to impose unit operating costs which might otherwise be lower.

Truck weight limits were recently increased somewhat (from 73,280 pounds to 80,000 pounds Gross Combination Weight on Interstate Highways). If use of double-bottom (or even triple-bottom) units were to become legal in those states within the Region that presently do not allow, or restrict, such units, trucking costs would be reduced somewhat, and perhaps even be lower than rail.

### An Intermodal Operating Plan

An operating plan was developed for ConRail I (Penn Central, Reading, Lehigh Valley and Central of New Jersey), using 1973 as the base year. A major planning study was performed under contract to USRA<sup>8</sup> to assist in the evaluation of present operations and to furnish planning guidelines and strategies for the Preliminary System Plan.

This study included field inspection of all major terminal facilities, a shipper attitude survey, collection and evaluation of financial and statistical data furnished by the respective railroads, modification and application of forecast data developed by the FRA intermodal network study and the coordination of the resulting intermodal traffic flows with those of conventional rail traffic prepared by USRA.

Traffic flows between terminals and regions, developed from special study data furnished by the carriers, was analyzed, and traffic blocks moving between points suitable for handling by dedicated TOFC/COFC trains were identified. These blocks of traffic then were aggregated into trains and routed over major traffic corridors.

Schedules for these trains were developed in accordance with present as well as projected operating conditions, consistent with market demands. Thus, late evening departures and early morning arrivals were prescribed for all key markets. In general, the nature of the competitive market in the Region requires consistent second-morning delivery.

Trains must be faster than average tonnage trains, but they do not require high operating speeds. A block-to-block average speed of 45 m.p.h. is generally sufficient between key ConRail markets. Reliability of delivery must be at least 85 percent, in order to compete for highway freight traffic.

The resulting train and consist data then were furnished to Stanford Research Institute for input to a USRA routing and line-loading computer model. This resulted in the generation of relevant operating statistics for inclusion in system pro forma income statements and facilitated evaluation of line capacity.

<sup>8</sup> Reebie, et al., *op. cit.*



*Terminal evaluation.*—Terminal volumes resulting from the traffic simulations subsequently were related to existing facilities and their capacities to determine the number of facilities required (and any required modification or expansion) for an efficient level of operation, consistent with the need to maintain accessibility to customers.

Productivity standards then were used to project the number of terminal personnel and transfer equipment required. Modifications or expansion of facilities required to handle projected traffic levels were identified, and estimates of required capital investment prepared.

*Profitability analysis.*—Profitability of traffic was analyzed on a "traffic-lane" (origin-destination) basis using computerized standard costs and average point-to-point revenues. Marginal or unprofitable flows or terminals were identified, and were deleted from the revenue base and the revised system profitability was determined.

A total of 32 percent of system revenue loads (representing 18 percent of revenues) was found to incur variable costs exceeding revenue by approximately \$72 per trailer (or 25 percent more than the system average revenue per load). These unprofitable flows represented approximately 23 percent of the possible city-pair combinations; each flow averaged about 3.2 trailers per day.

Such relatively small flows are insufficient to realize the true economies of intermodal transportation. Combining or consolidating terminals and trucking traffic to the remaining terminals to consolidate flows and generate large blocks is one means of continuing service to shippers of this traffic. As stated earlier, certain traffic flows are inherently imbalanced and incur high operating costs. Unless rates are adjusted to reflect true costs to these shippers, the result is a cross-subsidization by shippers of profitable freight.

In all circumstances in which terminals would be closed, alternative service from other railroads or other ConRail terminals is generally available within a few miles of the former facility.

*Results of the analysis.*—Concentrating flows over major intercity routes, consolidating terminal facilities and coordinating train operations of the ConRail railroads results in a significant reduction in operating costs, with a probable improvement in customer service levels.

- Route miles served by dedicated trains are reduced to approximately 3,300 or a reduction of 29 percent,
- Train miles are reduced by approximately 30 percent from Penn Central 1973 levels and train size is increased somewhat,
- Locomotive unit miles are reduced approximately 35 percent from Penn Central 1973 levels, and

\* Car miles are not reduced in proportion to train miles, since it is assumed that much of the inter-line traffic now originated or terminated by the Lehigh Valley, Central of New Jersey and Reading will be routed via ConRail for the long-haul.

- Car miles are reduced approximately 10 percent from Penn Central 1973 levels.<sup>9</sup>

A core system serving approximately 22 market areas will result in a viable ConRail intermodal system. A total of 30 intermodal terminal facilities have been identified for closing or consolidation. A number of other facilities are possible candidates for further consolidation. Some of these facilities were closed or consolidated by Penn Central during 1974, and the related train services reduced. These changes are consistent with the plan developed by USRA.

Opportunities for increased direct rail interchange with other carriers that would reduce the workload on key gateway terminals, such as Cincinnati, Chicago and St. Louis, are being explored by Penn Central. Possible joint terminal operations or coordinated interline services (to points not served directly by ConRail), which have not been explored in detail, would result in further operating costs and the generation of new revenues.

Improved use of equipment, especially trailers, will result from streamlined and coordinated intermodal operations. It is estimated that the 1973 trailer fleet of 13,200 units<sup>10</sup> could be reduced by 25 to 30 percent; several hundred surplus Flexi-Van flatcars would also be retired.

*Terminal improvements.*—Terminal facilities remaining in the ConRail system will have to be upgraded and expanded to accommodate traffic resulting from terminal consolidations as well as projected growth.

It has been estimated that ConRail will have to invest more than \$100 million in intermodal terminal facilities in order to accommodate projected demand by 1985. Many facilities were constructed without the benefit of a long-range plan and are inefficient and costly to operate. Excessive congestion and delays to shipper trailers caused by inadequate facilities are not only costly; often they discourage shippers from using intermodal services.

A major new block-transfer terminal is proposed for Crestline, Ohio, at the point where the former New York Central line to St. Louis crosses the former Pennsylvania Railroad mainline from Pittsburgh to Chicago. Located at the center of the ConRail system, where major east-west traffic flows cross and converge, this facility will simplify the handling of smaller traffic flows that cannot justify direct train service but still represent profitable business for ConRail.

Trains from Boston and New York-Philadelphia to Chicago and St. Louis will exchange blocks at this point, reducing delays presently incurred by enroute switching. The proposed location has considerable low-cost land available for expansion and is a strategic site for support services such as trailer maintenance and

<sup>10</sup> Combined ownership and leased equipment of Penn Central, Reading, Lehigh Valley and CNJ.

repair, empty equipment pools and eventual freight consolidation and break-bulk.

Train service to points such as Detroit, Columbus and Cincinnati would be provided from Crestline. Inter-regional run-through trains would be assembled and blocked at Crestline, eliminating present costly highway interchange at gateway cities. The implementation of this major system yard is conditioned upon maintaining schedules, since trains must converge at about the same time of day to exchange blocks. Thus, upgraded and well-maintained intercity routes are essential to the plan.

No additional new facilities are required to handle projected 1980 traffic volumes, but several outmoded terminals must be modernized or replaced. To accommodate the projected 1985 traffic, however, a major expansion of intermodal terminal capacity must be anticipated. It is essential that planning for these facilities be in progress now, particularly in view of the acute shortage of strategically located land.

New concepts in rolling stock and terminal support systems should be evaluated jointly with other railroads and suppliers, to identify further operating improvements in intermodal operation. For example, the trend to higher maximum truck weights will result in increased use of 45-foot trailers. In 1972, more than 30 percent of all new highway trailers were 45 feet or more in length. Present TOFC/COFC flatcars cannot handle two 45-foot trailers on the same car.

Increased use of highway doubles (principally tandem 27-foot trailers) results in greater cube per highway unit. This is important to highway motor carriers because of the trend to lighter-density LTL freight and the opportunity to avoid excessive dock handling. New TOFC/COFC cars must be capable of carrying these shorter units if the railroads wish to attract an increased amount of motor carrier LTL freight.

Trailer Train (which owned 35,409 intermodal cars as of December 31, 1973) is actively working on the development of new concepts in rolling stock to handle a combination of trailer sizes, including 27- and 45-foot trailers.

An alternative to long piggyback cars would be the use of single-trailer flatcars or integral trains of shorter cars. Single-trailer cars would eliminate the problems associated with "marrying" trailers (i.e., placing two trailers having a common destination on one flatcar).

and also would facilitate the implementation of single-trailer rates.

Access to eastern cities with restrictive overhead clearance (such as New York City) will require either the development of low-deck flatcars or the elimination of clearance restrictions to facilitate rail access to urban traffic generators as an alternative to more costly truck service to and from TOFC/COFC terminals in congested urban areas.

Any improvements in car design that have the effect of reducing tare weight or wind resistance will reduce TOFC operating costs, and contribute to increased profitability. Low weight cars will improve the net-to-tare ratio, and be more efficient in terms of fuel consumed per net ton-mile.

### Conclusions and Recommendations

ConRail should serve all major market areas of the Region with an improved, viable intermodal network, a network serving all the principal east-west and north-south traffic flows, and one that would provide ConRail a means for effectively competing with truck transportation.

Much of the potential intermodal market is concentrated in the Region or is dependent on an efficient rail link to and from the Region. Given the necessary terminal facilities with well-maintained intercity routes and reliable line-haul services, and an effective marketing strategy and management control system, it is reasonable to project a growing and profitable role for ConRail intermodal services.

A key ingredient for realizing the true potential for intermodal service, however, must be a commitment based on the understanding of the proper role of intermodal service *vis-a-vis* other rail services, as well as other competitive modes and the development of strategies and policies which stress operational efficiency and profitability.

Identification and development of a profitable, self-supporting ConRail intermodal system, linked with other regional intermodal networks, will provide the shipping public with efficient reliable transportation, complementing conventional rail and truck transport systems, with efficient use of resources and limited capital funds. The intermodal concept can be expanded beyond its traditional role of present TOFC/COFC services, exerting a positive influence on the development of the rail system of the future, and providing a "total transportation" service to the Region.

## APPENDIX G

# Concept for Improved Passenger Service

All present or planned and proposed routes in the Region are shown in Figure 1; Table 1 and Figure 2 indicate examples of elapsed times and frequencies for the type of corridor services proposed.

The proposed improvements are designed to attract a maximum of potential ridership on each train by providing convenient frequencies within each corridor, and by linking adjacent corridors with through direct train service or convenient connections, as shown in Figure 3.

Minimum service frequency proposed is equivalent to at least two daily trains in each direction. The two trip minimum encourages use of the rail mode by offering travelers more than one return trip each day.

The proposal also assumes that both non-business and business travelers will be attracted to the services proposed. The great majority of travelers will be diverted from automobiles through provision of a reasonably fast service with fares and elapsed time competitive or better than that of the automobile. This market appears to be relatively price-sensitive, and service standards should be set to keep costs low and service available for those to whom cost of travel is important.

Except for the Northeast Corridor, train service should not attempt to compete with the higher speeds offered by commercial air services. High-density but comfortable seating of about 75 seats per car can be provided. A small lounge section on each train would

TABLE 1.—Summary of recommended service improvements

Corridor	Present service level		Recommended service level	
	Transit time <sup>1</sup>	Number of daily round trips <sup>1</sup>	Transit time	Number of daily round trips
New York to Washington.....	3'03"	30	2'30"	(2)
New York to Boston.....	4'30"	11	3'00"	(2)
Chicago to Milwaukee.....	1'30"	7	1'15"	10
New York to Buffalo.....	8'30"	3	7'20"	(2)
Chicago to St. Louis.....	5'00"	3	4'30"	4
Chicago to Detroit.....	6'50"	2	5'00"	4
Detroit to Cincinnati.....	None	0	5'30"	2
Pittsburgh to Indianapolis.....	8'20"	4	7'30"	2
Chicago to Cincinnati.....	9'00"	4	6'15"	3
Cleveland to Pittsburgh.....	None	0	3'00"	3
Cleveland to Cincinnati.....	None	0	5'30"	3
Cleveland to Buffalo.....	None	0	3'15"	2
Philadelphia to Pittsburgh.....	7'16"	4	7'00"	2
Washington to Pittsburgh.....	8'19"	(4)	6'00"	2
Washington to Norfolk.....	None	0	4'00"	2
Detroit to Buffalo.....	5'05"	1	5'00"	1
Cleveland to Chicago.....	None	0	5'45"	3
Indianapolis to St. Louis.....	4'56"	4	4'00"	2

<sup>1</sup> Based on current Amtrak timetable.

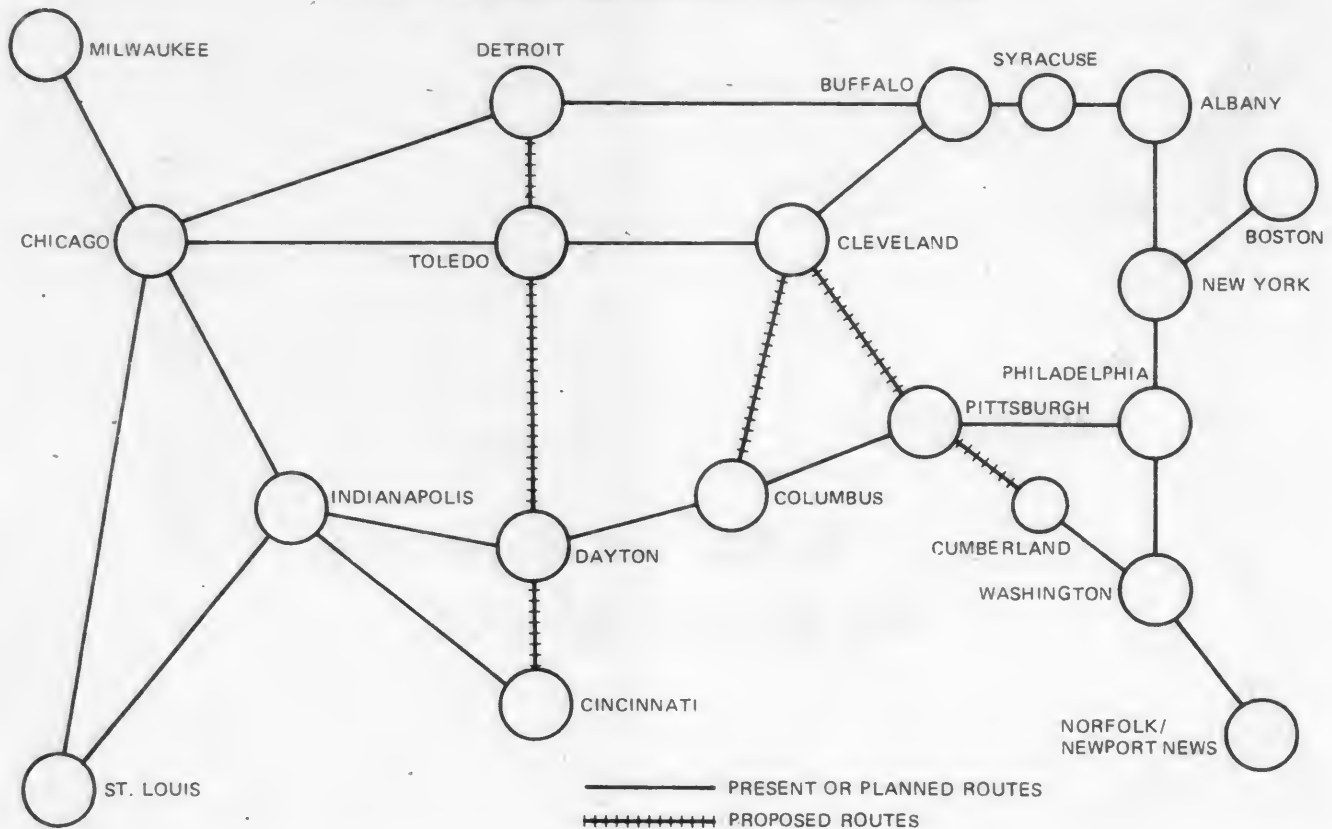
<sup>2</sup> By 1990 frequency should be ½ hourly New York to Washington, and ½ hourly New York to Boston; by 1982 frequency should be ¼-hourly New York to Washington, and hourly New York-Boston.

<sup>3</sup> 3 round trips Buffalo to Syracuse; 4 round trips Syracuse to Albany; 7 round trips Albany to New York.

<sup>4</sup> Long distance trains operating in proposed corridors.

<sup>5</sup> 1 daily round trip plus 1 additional round trip triweekly via Harrisburg. Also 1 daily round trip Washington to Cumberland.

FIGURE 1  
PRESENT, PLANNED AND PROPOSED CORRIDOR ROUTES



serve light food and liquid refreshments and could also be used as revenue seating during peak travel periods. Each seat could have a fold-down tray on its back (as on commercial airlines) to allow the traveler to enjoy food and drinks at his seat.

The proposed services also should appeal to the businessman who, because of a decided lack of attractive alternatives, presently is forced to use commercial air services on many trips of less than 300 miles. To compete for business travel purely on the basis of speed, Amtrak would have to increase its train speeds to an extent which would be economically, if not technologically infeasible. The scheme proposed here offers downtown-to-downtown elapsed times which compare favorably in many markets with those of air travel, particularly when delays associated with airport access, luggage and weather conditions, are considered.

As an additional inducement to business travelers, this service would offer "parlor cars" with low-density seating (about 30 seats per car) and other services. Because of the higher quality services offered, fares should be substantially higher. In most markets, they should approximate first class air fares. It is believed that many business travelers would forsake the speed advantage offered by commercial air services in short distance

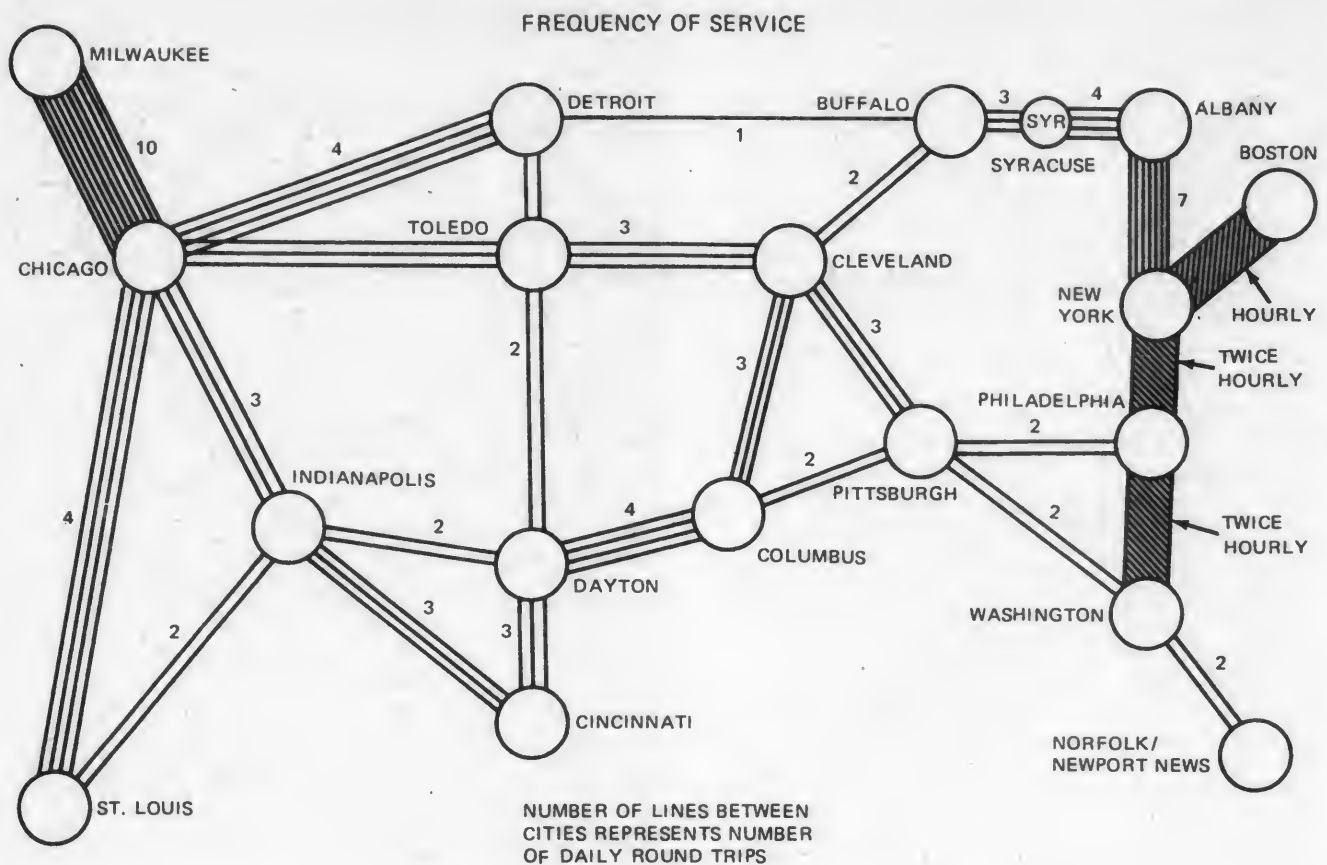
markets for effective rail service. Evidence of such business travel by train is provided by the substantial number of travellers choosing Metroliners between New York and Washington even though the 3-hour train ride is 2 hours longer than airport-to-airport flight times.

#### Service

As shown on Figure 3, each of the corridor services proposed is not considered as mutually exclusive. Each corridor is linked with each other, through the provision of inter-corridor trains or convenient "cross platform" connections. For example, there would be two daily round trips between Pittsburgh and Indianapolis. One train could not only carry passengers originating and terminating at those two cities, but also between New York, Philadelphia and Columbus. The second train could link Pittsburgh with direct train service to and from Indianapolis and St. Louis, as it could serve as one of the St. Louis-Indianapolis corridor trains. Convenient connections could also be provided to Cincinnati, Toledo, Detroit and Chicago by coinciding arrival and departure times at interchange points with those of the Cincinnati/Detroit/Cleveland/and Cincinnati/Chicago corridors respectively. The "network" of Corridor services is analogous in many respects to a



FIGURE 2



large urban transit system where a passenger can reach any destination by "long-distance subway" trips or by changing trains at crossing points.

The unbroken solid lines on Figure 3 show the major city pairs between which a passenger could make a trip without incurring an overnight journey, either via direct or connecting train service. Such trips would be possible between almost all major cities in the area west of Buffalo and Pittsburgh and east of Chicago/Milwaukee and St. Louis. In addition, the major upstate New York and Northeast Corridor cities would be linked with Cleveland, Columbus and Cincinnati as would be Pittsburgh with Richmond and Newport News.

Integrating the corridors into a network will tend to increase substantially the average number of passengers per corridor train as a result of travelers making non-corridor longer distance trips on corridor trains. The corridor schedules should also be designed to act as "feeders" to certain long-distance trains in the Region such as *The Floridian* and the new Boston/Chicago and Norfolk/Cincinnati services. This should further enhance the economics of both the corridor and the long-distance trains.

#### Equipment and Utilization

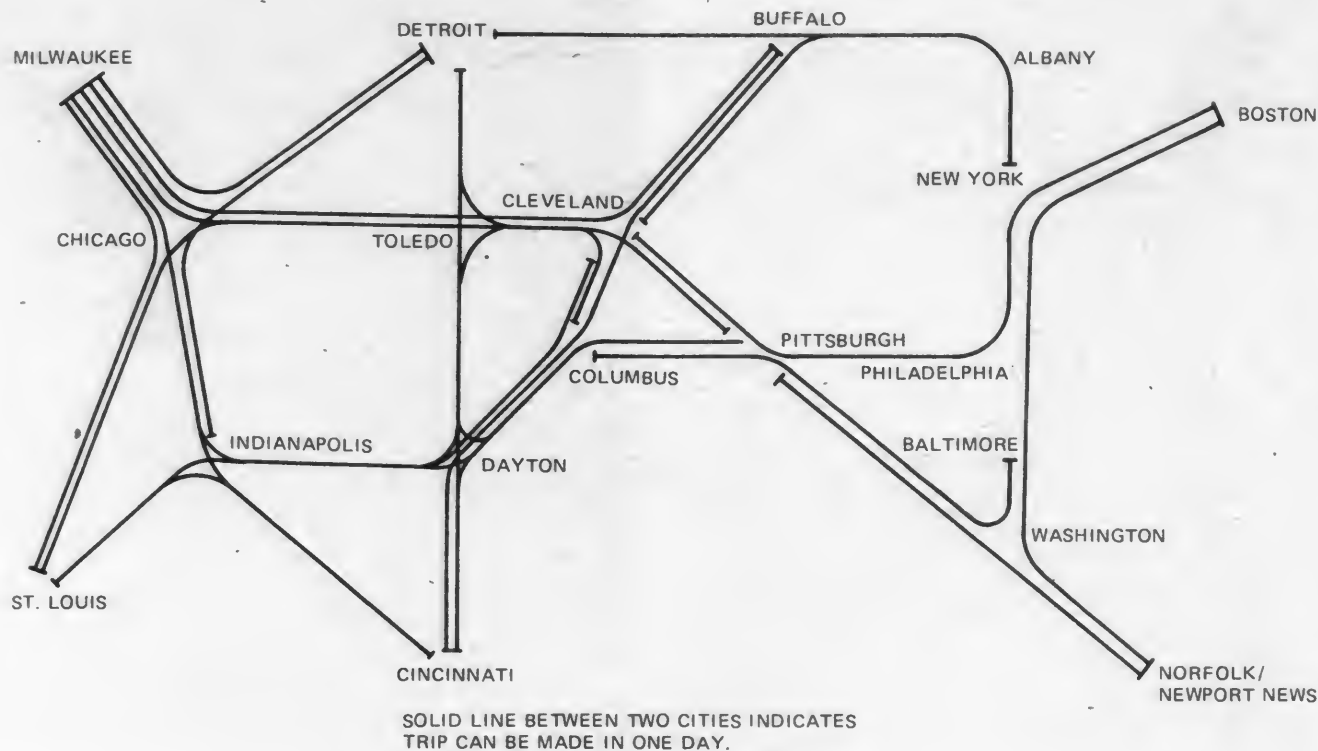
With the exception of the New York-Washington and Boston-New York services, all equipment in the proposed corridor services should be standardized to promote maximum utilization and flexibility. Existing equipment given major overhauling could be used, or new equipment specifically designed for the service should be purchased.

Turbotrain type equipment could be used but, while attractive in theory, this equipment has the disadvantage that additional cars cannot be added to existing trains to meet peak travel demands. Conventional new cars, such as the present Metroliner "shell" cars coupled with bi-directional locomotives for quick "turnarounds" might be ideally suited for this type of service. A detailed operational and marketing analysis should be conducted by Amtrak for this purpose.

USRA has not performed detailed studies which would allow it to estimate the magnitude of equipment requirements for the proposed services. However, at a minimum 3-car trains are visualized, including two coaches and perhaps a third car configured with first-class accommodations, a snack bar and lounge. Actual equipment requirements will undoubtedly vary by corridor and by train, but for purposes of this analysis,

FIGURE 3

## INTEGRATED CORRIDOR NETWORK - INTERCORRIDOR CONNECTIONS



minimal equipment requirements have been assumed.

Amtrak presently requires about 21 sets of equipment to operate its corridor services. The combination of today's relatively slow train speeds, short trip lengths, assigned equipment in each corridor, and excessive turnaround times has resulted in average utilization of only 383 miles per day, per train set. If the proposed scheme is implemented, utilization of equipment would be increased sharply, to a level of about 550 miles per day per set.

The proposal would create about 15,000 additional daily train miles.<sup>1</sup> This would require an increase of about 100 percent in the number of train sets currently operated by Amtrak in the corridors, but because of increased utilization, the public would be afforded almost 200 percent more daily train miles.

It should be pointed out clearly, however, that the Association's proposal is conceptual only. Estimates encompass present corridors of Chicago/St. Louis, Detroit/Chicago, Chicago/Milwaukee, New York/Buffalo/Detroit and Washington/Cumberland. Proposed and present estimates exclude Boston/Washing-

ton service. Present and proposed equipment requirements exclude consideration of spare sets for maintenance purposes. The increment in train miles may seem substantial, but it is roughly equivalent to the addition of only three Chicago/Los Angeles daily trains.

#### Anticipated Financial Posture

The combination of increased equipment utilization and the linking of corridors into a network should serve to reduce costs and increase patronage.

Because of its available resources and past experience with corridor services, Amtrak is more qualified to analyze this service in detail. However, a rough approximation of the anticipated operating losses may be suggested by utilizing the financial results of comparable existing corridor services and applying them to the proposed services. In 1974 the operating cost of modern Amtrak turboliners between Chicago and St. Louis was approximately \$9.00 per train mile. With a 41 percent load factor, this service developed revenues of about \$5.00 per train mile, producing a loss of \$4.00 per train mile.

Applying this deficit to the 15,000 daily train miles of new service as suggested by this concept would result in a loss for the Region for these services of \$60,000 per day or approximately \$22,000,000 annually. With an increase in the load factor to 55 percent, the revenue

<sup>1</sup> The additional train miles and consequently percentage increase is probably somewhat overstated as certain existing trains such as the *National Limited*, *James Whitcomb Riley*, *Floridian* and proposed trains such as the Boston/Chicago service could, with proper scheduling, serve as corridor trains thus reducing the additional train miles.

per train mile would increase to \$6.60 and the deficit would be lowered to \$2.40 per train mile or \$13,000,000 annually. At the load factor of nearly 65 percent now being achieved on Amtrak's Chicago-Detroit service, the revenues increase to \$7.80 per train mile. This produces a deficit per train mile of \$1.20, or \$6.5 million on an annual basis.

An annual deficit of between \$6 and \$22 million can thus be anticipated. The low end of the range is less than Amtrak's losses on some of its long-haul services. For example, the Chicago-Seattle service loses \$7 million annually and San Francisco-Chicago service loses \$9 million annually. But these services operate only 4,576 and 4,814 train miles per day respectively. Similarly, the high end of the deficit range approximates that of present New York-Florida service, but the train miles operated are only 60 percent of those to be operated under this proposal.

On a nationwide basis, Amtrak operated about 75,000 train miles per day in 1973. With the proposed corridor services, this would rise to about 90,000 train miles per day, an increase of 20 percent. At the same time, the incremental operating deficit of \$22-million is relatively small when compared with Amtrak's current total deficit which is expected to reach \$300-million for fiscal 1975. Stated more simply, Amtrak has an opportunity to increase its services substantially (as measured by train miles) at only a relatively small increase in the deficit, and in doing so it will have created an integrated network of corridor trains offering service to major population areas in the Region.

Capital costs are excluded from this approximation of deficits which might be incurred by the proposed corridor services. Although the capital costs of locomotives and cars can be easily calculated, the alternative mode costs, in the form of airports, highways and other facilities, concurrent with a lack of such train services cannot be easily estimated. Therefore, inclusion of capital costs would not add to a meaningful comparison between the option of investing in rail or nonrail passenger facilities.

#### Implementation

It must be emphasized that the frequencies and the proposed routes in Table 1 and Figures 1, 2 and 3, are shown only to illustrate the *concept* of an integrated corridor network. Responsibility for detailed planning and implementation of improved services will lie with Amtrak. Therefore, although arrival and departure times are spaced at convenient daylight and evening hours, it does not necessarily follow that those schedules would be published upon implementation of the project.

These must be determined by more intensive analysis of travel patterns and demand factors.

Point-to-point elapsed times are those which could reasonably be attained given improved track conditions. They include an extra margin on each major segment to compensate for unforeseen delays and to allow time at major interchange points for connections. In estimating these elapsed times, consideration was given to the relative differences in profile (grades and curves) in each corridor and the extent to which trains would be required to reduce speed through urban areas.

A further indication of speeds attainable was derived by checking elapsed times from older timetables when speeds were generally higher than those prevalent today.

It is certain, however, that irrespective of the arrival and departure times ultimately chosen, the point-to-point times shown here would be literally impossible to attain, if the service were to be initiated today. Even if equipment were available, the present deteriorated condition of track on these segments would preclude running times such as those suggested here.

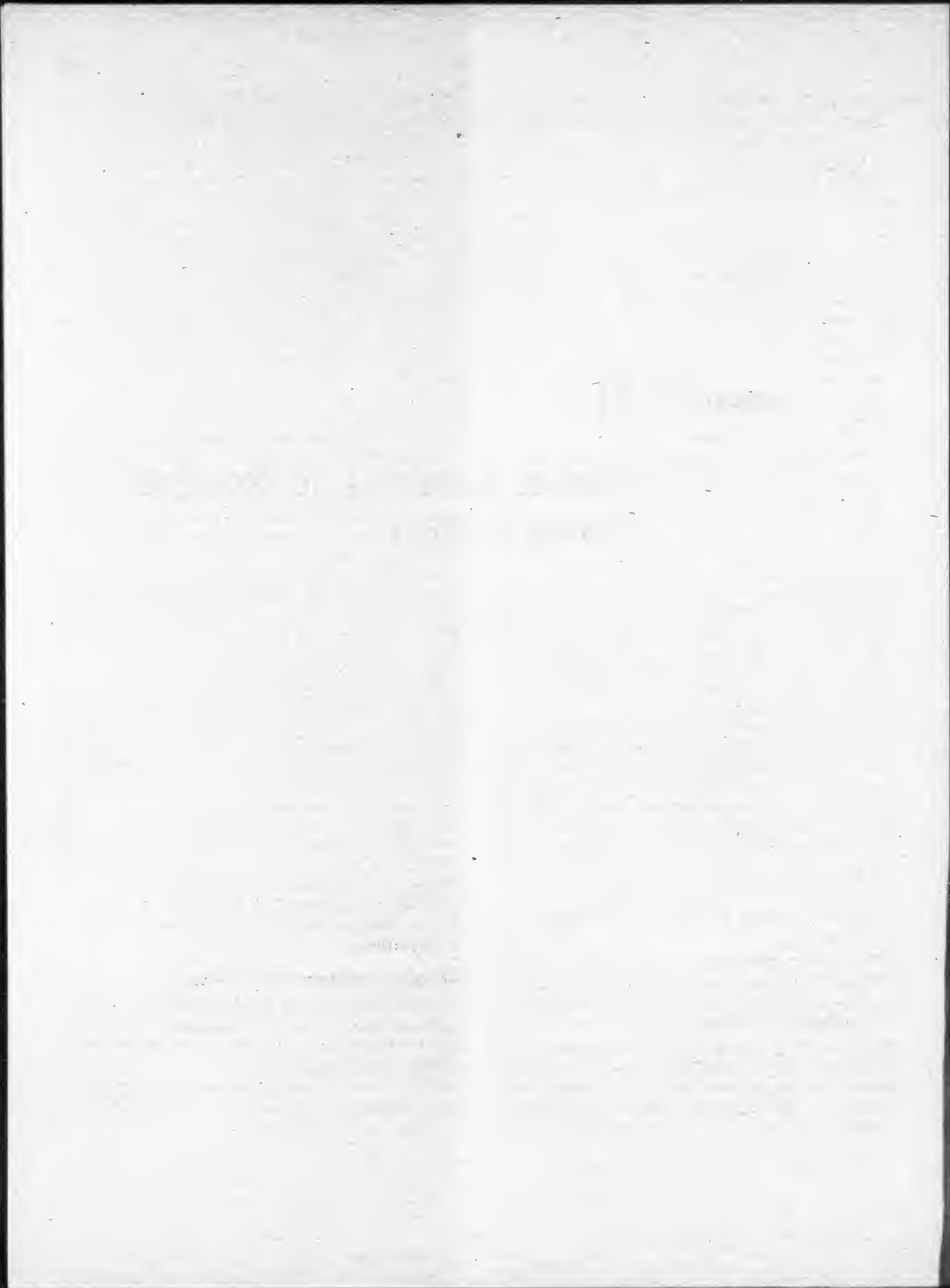
Furthermore, the upgrading of all of these segments will require at least 3 to 7 years. Equipment needs will have to be determined, designed and ordered or existing equipment given major overhauls. New stations will have to be built and existing ones modernized. One or more centralized shops for maintenance will have to be constructed. Detailed marketing and operational studies must be performed.

All this will require substantial time and effort and should be accomplished simultaneously with the track upgrading program so that when the track program is completed the service can be implemented without the serious drawbacks presently faced by Amtrak.

#### Recommended Corridor Rail Routings

Corridor	Routing
Buffalo-Cleveland .....	PC.
Chicago-Cincinnati .....	PC via Kankakee/Indianapolis.
Chicago-Milwaukee .....	Milwaukee Road.
Chicago-St. Louis .....	ICG via Springfield.
Cleveland-Chicago .....	PC via Toledo/South Bend.
Cleveland-Cincinnati .....	PC via Columbus/Dayton.
Detroit-Buffalo <sup>1</sup> .....	PC via Canada.
Detroit-Chicago .....	PC via Niles/Jackson.
Detroit-Cincinnati .....	PC-Detroit to Toledo, B&O-Toledo to Cincinnati via Dayton.
Indianapolis-St. Louis .....	PC.
New York-Boston .....	PC via Providence.
New York-Buffalo .....	PC via Albany/Syracuse.
New York-Washington .....	PC via Philadelphia/Baltimore.
Philadelphia-Pittsburgh .....	PC via Harrisburg.
Pittsburgh-Cleveland .....	P&LE, EL via Youngstown/Niles.
Pittsburgh-Indianapolis .....	PC via Columbus/Dayton.
Washington-Norfolk/Newport News .....	RF&P Washington to Richmond, C&O Richmond to Newport News. B&O.
Washington-Pittsburgh .....	

<sup>1</sup> Also connecting service via Cleveland.





## APPENDIX H

# Federal Subsidies to Non-Rail Transportation

The problems of the railroad industry and especially the bankrupt railroads in the Region stem from a host of factors ranging from changes in the industrial mix of the Nation's economy to internal management deficiencies. Within this range is a factor of public policy: uneven government assistance to various modes of transportation.

Government assistance to each mode is made up of a complex mix of tax benefits, capital grants, regulations and operating subsidies provided by all levels of government. This appendix concentrates on the magnitudes of federal assistance to the railroad mode, its competition and other forms of transportation. These aids, called subsidies in this analysis, consist of:

- Direct expenditures for right-of-way facilities which are not repaid by the user
- Direct operating subsidies to transportation carriers
- Grants for equipment
- Interest-free government loans and
- Tax advantages to the maritime industry, not available to all modes.

This appendix describes the extent of these subsidies during fiscal year 1972, the most recent year for which statistics on expenditures generally are available. Loan guarantee programs are not considered subsidies for

purposes of this study. A loan guarantee provision is not a cost to the government unless the beneficiary defaults. In that event, the loan guarantee may involve some cost to the taxpayer.

An arbitrary 10 percent estimate has been used as the cost of capital for portions of this appendix. The government makes similar investments in the form of cash grants, without considering the interest factor or other measures of opportunity cost, and as such this estimate may understate the real opportunity cost of public capital.

The discussion of public subsidy contained in this appendix may not constitute a complete analysis on the subject. While based on a compilation of available data, that data may not be entirely complete or current. It is presented here to provide a perspective on government assistance to transportation modes and to provide a basis for further analysis and discussion by all interested parties.

### National Transportation Development

Federal transportation grants began in 1823 with the first land grant to Ohio for a wagon road which was followed with land grants and financial support for improvements of rivers and harbors.

In their formative years, almost all modes of transportation have received some type of federal aid. To

TABLE 1.—Federal and private expenditures for right-of-way facilities for ground and domestic water freight transportation, 1972<sup>1</sup>

(Dollars in millions)

Mode	Operating revenues	Private expenditures, including all user charges for right-of-way facilities			Federal expenditures not covered by user charges for right-of-way facilities	
		Expenditures	Property taxes paid to State or local government	Percentage of O.R. spent for right-of-way facilities	Expenditures	Percentage of total or allocated cost of facilities
Railroads, Class I.....	\$13,400	\$2,670	\$185	21	None	Zero
Rail-competitive motorcarriers.....	27,590	\$1,600	None	6.0	\$325	35
Inland waterway operators.....	590	None	None	Zero	\$291	100
Great Lakes.....	205	None	None	Zero	45	100

<sup>1</sup> Federal expenditures are for Fiscal Year July 1971 to June 1972; private expenditures are for calendar year 1972.

<sup>2</sup> Excluding yard facilities, Class I railroads spent \$1,470 million for maintenance of road track, grade crossing protection and payroll taxes. [USRA Staff analysis] Annual carrying charge on investment in R-O-W was estimated roughly as \$1,200 million by the Association of American Railroads [Government Expenditures for Highway, Waterway and Air Facilities and Private Expenditures for Railroad Facilities (Washington: May 1974)]

<sup>3</sup> Includes state and local user charges as well as federal taxes, which were approximately \$600 million.

<sup>4</sup> Expenditures shown are cash expenditures and do not include any imputed cost of capital for the project. On the other hand, as stated in footnote 2, above, annual carrying charges are important in rail rights-of-way cost and are estimated to run about \$1.2 billion annually.

Sources: USRA staff analysis. Technical background information available.

date, total government expenditures, (federal, state and local) for domestic transportation other than rail have exceeded \$450 billion.<sup>2</sup> Virtually all this has been spent within the last half century. Of this sum, federal expenditures for rights-of-way and their improvements alone are estimated conservatively at more than \$100 billion.

Initially, railroads received federal aid for right-of-way facilities, primarily in the form of land grants.<sup>2</sup> The railroads repaid the federal government for these lands through tariff reductions,<sup>3</sup> averaging 50 percent for passenger and freight traffic and about 20 percent for mail. The reduced tariffs on civilian traffic were eliminated in 1940 and on military traffic in 1945.

### Railroads

Railroads have received limited support from the federal government in the last fifty years. The depression-era Reconstruction Finance Corporation loaned the railroads about \$938 million. Although there were some defaults, the full amount was repaid with some interest. More recently, pursuant to a loan guarantee program, the Interstate Commerce Commission has made payments on defaulted loans. In 1972 one payment totalled \$29.3 million for a Reading Railroad loan.<sup>4</sup>

<sup>1</sup> Association of American Railroads, *Government Expenditures for Highway, Waterway, and Air Facilities and Private Expenditures for Railroad Facilities* (Washington, D.C.: Association of American Railroads, May, 1974), Table 1.

<sup>2</sup> Aviation Advisory Service, *Government Support of the U.S. Railroads With Particular Effect Upon the Creation and Sustained Viability of a Key Transportation Industry*. Prepared for Pan American World Airways, Inc. (New York, June 6, 1974), pp. 8-10 and Table II. Federal and State land grants were estimated at \$429 million. Additional Federal and State rights-of-way grants were valued at \$87 million when granted to the railroads. Some sources may value the land grants higher, while others say the land was of no value until the railroad was built.

<sup>3</sup> Aviation Advisory Service, Inc., *op. cit.*, pp. 8-10 and James C. Nelson, *Railroad Transportation and Public Policy* (Washington, D.C.: Brookings Institution, 1959), p. 69, footnote 2.

<sup>4</sup> Library of Congress Congressional Research Service, *Emergency*

Railroads not only own and maintain their private rights-of-way, but pay taxes on most of these facilities as well. Railroads paid \$400 million in various local property taxes in 1972. Of this amount, the Association of American Railroads estimates that \$185 million was property taxes levied on the rights-of-way, exclusive of yards and other local taxes.<sup>5</sup> Rail's competitors, other than pipelines, use publicly owned and maintained right-of-way facilities, paying only a portion, if any, of the costs and no taxes.

Expenditures for right-of-way facilities for other forms of transportation account for over 75 percent of all transportation subsidies. Generally speaking, no charges for cost of capital were included as an element of cost. Table 1 compares the private expenditures of

TABLE 2.—Ton-mile market shares intercity freight carriers,<sup>1</sup> 1972

Mode	Net ton-miles (billions)	Percent of total	Percent of rail
Class I rail.....	785	37	100
Motor carriers.....	470	22.6	60
Inland waterway.....	230	11.1	29
Great Lakes-St. Lawrence.....	109	5.2	14
Total.....	1,600	100	-----

<sup>1</sup> Excludes Oil Pipelines and Air Cargo.

Source: *Yearbook of Railroad Facts*, 1974 edition (Washington, D.C., Association of American Railroads, 1974).

*Federal Assistance to Private Enterprise: A Selective Examination of the Federal Government*, p. 9. Aviation Advisory Service, Inc., *op. cit.*, p. 21 and Table V. The Transportation Act of 1958 authorized ICC to grant up to \$500 million in loan guarantees to the railroads for capital expenditures or maintenance of property. Loans totalling \$242.5 million were guaranteed and disbursed to 14 railroads. ICC paid \$115.3 million in principal and \$4.3 million in interest through FY 1973 for defaults by eight railroads, but recovered \$5.1 million by the end of 1973. At that time there were \$40 million of loans outstanding. The Regional Rail Reorganization Act of 1973 provides additional loan guarantees and grants for Northeast bankrupt carriers.

These loan guarantees are similar to the mortgage guarantees (insurance) available to the maritime industry. At present there are \$368.3 million of mortgages guaranteed for 43 U.S. flag tankers. Additional agreements provide \$385 million in mortgage guarantees for ships under construction.

<sup>2</sup> Association of American Railroads, *op. cit.*, Table II. Of the \$400 million, about \$60 million assessed on bankrupt carriers were unpaid and constituted claims against the bankrupt estates.

TABLE 3.—Total federal subsidies to transportation (excluding expenditures from user charges) fiscal year 1972

[Dollars in millions]

Mode	Right-of-way facilities construction, operations and maintenance	Equipment grants (SCDS) <sup>1</sup> mass transit	Operating subsidies	Interest free loans	Loans guarantees defaults	Special tax advantages	Total
Motor carriers.....	\$225						\$225
Inland waterways.....	291						291
Great Lakes-St. Lawrence Seaway.....	45.1	\$15		\$6			66.1
Ocean shipping.....	463.4		\$182			\$10	655.4
Aviation.....	488		67.3				555.3
Rail transportation.....	0		180 (Amtrak)		\$29.3 (Reading RR)	45	154.3
Mass transit.....	250	250					500
Total.....	1,862.5	265	329.3	6	29.3	55	2,547.1

<sup>1</sup> Ship construction differential subsidy.

<sup>2</sup> Costs of a 5-year amortization of rolling stock which expired January 1, 1975. Taxpayer had to choose between using this 5-year depreciation or the investment tax credit. With the reinstatement of the investment tax credit, the 5-year amortization fell into disuse.

<sup>3</sup> This amount approximates the amount of avoidable costs of public passenger

railroads in 1972 to federal expenditures in the same year for right-of-way improvements which subsidized rail's competitors. Table 2 shows the market share of the same surface transportation modes for that year.

Other subsidies range from operating subsidies to complex tax "deferral" incentives for the maritime industry. Table 3 shows all forms of federal subsidies to transportation in 1972, including aids for non-competitive modes.

### Motor Carriers

Motor carriers benefit by sharing the public highways instead of owning and maintaining private right-of-way facilities. In 1940, when there were 3.2 million miles of roads, only 1.7 million miles were hardsurfaced. From 1940 to 1972, hardsurfaced road mileage, much of it of vastly improved design, increased more than 2 million miles. During that period, motor carriers' share of the nation's ton-miles increased from 10 to 23 percent while rail's dropped from 61 to 38 percent.<sup>6</sup> In 1972, Class I and Class II regulated motor carriers spent only 5.9 percent of their revenues for "user charges" in federal and state taxes while Class I railroads spent almost 21 percent of their revenues on maintenance of right-of-way facilities.<sup>7</sup>

The major improvement has been the Interstate Highway System, of which 37,500 miles were open by the end of 1972<sup>8</sup> and about 5,000 miles are now in various stages of completion. Rail-competitive trucks accumulate almost 50 percent of their mileage on Interstates, and the federal government will pay for 90 percent of the estimated \$76 billion final cost of the System.

<sup>6</sup> American Trucking Association, *American Trucking Trends 1973* (Washington: 1974) p. 9.

<sup>7</sup> *Ibid.*, p. 24 and USRA staff analysis.

<sup>8</sup> The value to motor carriers of modern highways such as the

service not covered by revenues from passenger fares. Prior to the formation of the National Railroad Passenger Corporation, the Nation's railroads were absorbing the financial loss of providing this public service.

<sup>4</sup> In contrast, the rail industry spent \$1.47 billion on maintenance of way in 1972 plus paid \$1.2 billion for interest on debt on such facilities, a total cost of \$2.67 billion. See Table 1.

The Federal Highway Trust Fund was created in 1956 to cover the federal share of construction costs for all highways on the Federal-Aid Systems.<sup>9</sup> Motor carriers have contributed substantial amounts to the fund,<sup>10</sup> but there has been considerable debate over the adequacy of truck payments to the fund in light of the high standards of construction required to accommodate heavy trucks.

Interstate System is illustrated by their yearly growth rate in ton-miles:

Year	Billions of inter-city ton-miles by motor carriers	Percent of total
1940.....	62.0	10.0
1945.....	66.9	6.5
1950.....	172.9	16.3
1955.....	223.3	17.5
1960.....	285.5	21.7
1967.....	388.5	22.0
1972.....	470.0	22.9

In 1940, just before the beginning of World War II, motor carriers handled 10 percent of the domestic ton-miles. By 1950, the motor carriers had increased their market share to 16.3 percent, reflecting social and economic changes in the nation after the war. During the next five years the growth rate was slow. The mid and late Fifties saw the initiation of limited access super highways on a massive scale. While the Interstate System was not well under way until 1960, highways of similar quality, such as the Eastern turnpikes, were opening by 1956.

By 1967 motor carriers competing with rail claimed over 22 percent of the domestic ton-mile market. In the next five years truckers gained less than 1 percent of the growing ton-mile market. During the same 30 years the railroads' market share of ton-miles has declined from 67 percent to 38 percent.

<sup>9</sup> Since FY 1970, the Department of Transportation has been spending between \$4 and \$5 billion annually on highways.

<sup>10</sup> Motor carriers pay the following federal "user charges": 4 cents per gallon on all motor fuel; 10 percent of the manufacturer's wholesale price on the purchase of new trucks or trailers; 19 cents per pound on tires and inner tubes; 5 cents per pound on tread rubber; 8 percent of the price of parts and accessories; 6 cents per gallon for lubricating oil, and \$3.00 per thousand pounds for vehicles weighing over 26,000 pounds. In total, these taxes levied on all trucks yield about 40 percent of the Trust Fund receipts. Large rail-competitive trucks underpay, however, especially in comparison to smaller trucks.

In 1969 the Federal Highway Administration (FHWA) performed a cost allocation study to answer this question. FHWA chose the "incremental cost" method to analyze the cost responsibility of various classes of vehicles. To determine incremental cost, the FHWA study divided the many elements of highway design into increments and assigned the costs of those increments to the vehicles which required them.

For example, the higher the axle weight the pavement must withstand, the higher the number of increments of pavement structure necessary and thus the higher the construction cost. The common automobile needs only one increment while the loaded axle trucks weighing 72,000 pounds will need the full six increments.

Other examples of highway design increments affecting cost are bridges, lane widths, radius of curves and maximum allowable grade. The cost of each increment was prorated to the classes of vehicle requiring it according to the percentage of use each class represents.

The study results showed that the cost of highway travel for the heavier weight long haul trucks ranged from 2.535 cents to 3.399 cents per mile. The same vehicles paid "user charges" from 1.638 cents to 1.781 cents per mile. When the difference between cost and charges was multiplied by the anticipated mileage, the total amounted to a federal construction subsidy of more than \$250 million per year to the motor carriers,<sup>11</sup> or 42.2 percent of the federal costs allocated to rail-competitive motor carriers.

Table 4 illustrates the subsidy level for the two most rail-competitive types of motor carrier—the diesel 5-axle tractor-semitrailer and the 5-axle semi-trailer and full trailer. Since there are other classes of trucks which are rail competitive, this table illustrates only how the subsidy was computed.

By 1972 the American Trucking Association estimated that the number of rail-competitive trucks (diesel trac-

tor-trailer combination of 4 or more axles) had increased to 500,000. At the same time, average annual mileage per vehicle had increased to almost 70,000 miles per year.<sup>12</sup> Under the same method used in 1969, the subsidy now totalled \$365 million.

This figure may be higher than the actual subsidy, since more trucks were sharing the fourth through sixth increments, thus reducing the implicit subsidy per truck mile. Other factors, however, tend to work in the opposite direction, increasing the cost responsibility of rail-competitive trucks over the 1969 costs. For example, as truck mileage and percentage of vehicle traffic increased, so did the incremental cost of constructing and maintaining the sixth increment. Finally, inflation would increase the total costs. Thus, while motor carriers may be covering a greater portion of costs than in 1969, this rail-competitive transportation mode received in 1972 a subsidy estimated conservatively at \$325 million.

The 1969 allocation study made no estimate for the cost of capital. Since the federal-aid highway system is financed from payments already made to the Federal Highway Trust Fund, the federal government incurs no interest.

An estimate can be made of the "opportunity cost" of the funds invested in highways for the benefit of rail-competitive motor carriers.

The amount of federal expenditures for highways allocated to the rail-competitive truckers in 1972 was approximately \$925 million.<sup>13</sup> If this sum were invested elsewhere at 10 percent interest, it could yield a return of \$92.5 million per year. If the \$325 million of costs not covered by motor carriers were available for alternative investment, it could earn \$32.5 million per year.

Since this would be an annually recurring amount such interest earnings would amount to \$325 million over 10 years, before allowing for compounding. This latter carrying charge could be regarded as an indirect subsidy to the motor carriers. State and local governments did pay a total of \$950 million dollars for interest on debt related to federal, state and local roads in 1972.<sup>14</sup>

This aid to the motor carriers is actually a cross-subsidy from within the Federal Highway Trust Fund, rather than a direct grant. Taxes designated for the fund are considered "user charges". Whenever one purchases fuel, tires or other items taxed for the fund, a fee is paid. Thus the collection of the user charge is not directly related to use nor to the cost of specific segments of federally-aided highways.

TABLE 4.—Estimated federal subsidy levels to certain motor vehicle classes, 1969

	Diesel 5 axle tractor and semitrailer	Diesel 5 (or more) axle tractor-semitrailer and full trailer
Allocated cost responsibility per mile.....	2.623 cents.....	3.399 cents.
"User charges" paid per mile to trust fund.....	1.639 cents.....	1.781 cents.
Subsidy per vehicle mile of travel.....	0.984 cent.....	1.618 cents.
Estimated total mileage per class (millions).....	11,216.....	6,060.
Subsidy per class (thousands).....	\$104,757.....	\$98,374.

Source: Department of Transportation, Federal Highway Administration, *Allocation of Highway Cost Responsibility and Tax Payments, op. cit.* Table 23, p. 69 and Table 6a, p. 25.

<sup>11</sup> Department of Transportation, Federal Highway Administration, *Allocation of Highway Cost Responsibility and Tax Payments, 1969* by John C. Oehmann and Stanley F. Bielak. May, 1970. Based primarily of Table 6a, p. 25 and Table 23, p. 69. Adjustments were made to correct mileage errors for diesel 4-axle tractor-semitrailers. [While the methods used in this study have been the subject of considerable controversy, it is the latest systematic and complete reference on the subject.]

<sup>12</sup> The average was 66,118 for all types of trucks. The rail-competitive truck specializes in long haul and averages substantially more miles per year.

<sup>13</sup> Based on statistics provided in American Trucking Association, *American Trucking Trends*, (Washington: 1974) and Department of Transportation, Federal Highway Administration; *op. cit.*

<sup>14</sup> Department of Transportation, Federal Highway Administration, *Highway Selected Statistics, 1973* (Washington, 1974), Table 5673-11, p. 11.



Users of other vehicle classes pay more than their share to offset the large truckers' deficit. Residents using primarily state or local roads (that are not classified on the Federal-aid Highway System) contribute to the Federal Highway Trust Fund even though such funds may not be returned to those local facilities but spent on Federal-aid highways, predominantly the costly Interstate system.

The federal subsidy represents only the federal share of capital (construction) costs. In 1972, federal, state and local governments spent \$23 billion for highways. Of this amount, state governments accounted for \$15.5 billion. Maintenance and traffic services cost state governments \$2.3 billion and all levels of government a total of \$5.4 billion.<sup>15</sup>

Data is sketchy concerning what portion of state and local expenditures, especially those for maintenance, should be attributed to heavy trucks. One-quarter of the maintenance costs is caused by factors other than traffic volume, primarily weathering. Charles River Associates estimated that maintenance expenditures would decrease by 19 percent if there were a 25 percent reduction in intercity truck traffic.<sup>16</sup> In a study done for the Association of American Railroads, Battelle Columbus Laboratories allocated 17.8 percent of maintenance costs to trucks.<sup>17</sup>

Once a share of costs has been allocated to the rail-competitive trucks, there remains the question of whether the "user charges" levied on these trucks recovers all federal, state and local expenditures. The 1969 study offers some insight in answering this question.

This study allocates to the typical diesel five-axle tractor-semitrailer [an average] yearly cost-responsibility of \$3,821.81 to cover its share of federal, state, and local government expenditures.<sup>18</sup> Since the same class of vehicle was allocated \$2,011<sup>19</sup> as its share of Federal costs, its share of state and local expenditures was \$1,810 in 1969. The same vehicle paid State and

local taxes ranging from a low of \$1,038 to a high of \$3,670 in 1968.<sup>20</sup>

The state and local taxes in the median state that year were \$1,485, or \$325 less than the fully allocated share of state and local costs. Although motor carriers were paying more than their share of allocated costs in a few states, many states were subsidizing rail-competitive motor carriers.

Northeastern states appear to be in the middle range of user charges. Table 5 shows the typical registration fees and fuel taxes paid by the large trucks in the 17 states of the Northeast region and their rank among states, based on the registration fee, one of the more variable portions of state user charges.

TABLE 5.—Principal State Highway User Charges 17-State Region, 1972

State	5-axle vehicle registration fee	Fee rank in U.S.	Motor fuel tax/gal
Delaware.....	\$362/383	10	1 \$0.08
Massachusetts.....	390	12	.075
District of Columbia.....	393	13	1 .08
Rhode Island.....	410	14	.08
New Hampshire.....	432	15	.09
Maryland.....	455	16	1 .09
Indiana.....	486	20	.08
New York.....	519	24	.10
New Jersey.....	544	25	1 .08
Connecticut.....	555	26	.10
Pennsylvania.....	560	27	.08
Michigan.....	590	28	.07
West Virginia.....	590	29	.065
Ohio.....	605	30	.07
Maine.....	605	31	.09
Virginia.....	662	33	1 .11
Illinois.....	1,492/1,695	50	.075
Vermont.....	1,650	51	1 .00

<sup>1</sup> Increased in 1973 to \$.09.

<sup>2</sup> Tax increase in 1972.

<sup>3</sup> No fuel-tax on diesel fuel. Retailatory-Highway Use Permit of \$20 fee plus \$10 for each entry into state. Levied only on vehicles from states which levy a highway tax on use fee on Vermont vehicles.

Source: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics 1972*, (Washington: U.S. Government Printing Office). Table MF-1, p. 10; Table MF-104, pp. 18-19; and Table MV-103, pp. 48-51.

## Inland Waterways

Of the various types of water transportation, the mode most competitive to rail is the shallow draft vessel on the Inland Waterway System, typically an unmanned, non self-propelled barge.<sup>21</sup> As many as 40

<sup>20</sup> *Ibid.*, Table 26, p. 77 and pp. 75-79. The state user payments do not include property taxes, which are placed in general funds rather than highway funds. Since railroads also pay similar property taxes on both right-of-way and rolling stock, it is hardly logical to consider a property tax a "user charge" for motor carriers. Most states charge relatively low user charges but higher property taxes, thus at times subsidizing highway costs from taxes paid by non-users, including railroads. In a few cases, states may be using high user charges to help supplement general revenue or offset low property taxes. There are restrictions, however, as to how these "user taxes" may be spent.

<sup>21</sup> A large barge can load as much as forty times the tonnage of an average boxcar.

<sup>15</sup> Department of Transportation, Federal Highway Administration, *Highway Selected Statistics 1973*. "Total receipts, and Disbursements for Highways, All Units of Government," p. 11.

<sup>16</sup> Charles River Associates Incorporated, *Competition between Rail and Truck in Intercity Freight Transportation*, prepared for the U.S. Department of Transportation, December, 1969, p. 70.

<sup>17</sup> Battelle Columbus Laboratories, *A Study of the Environmental Impact of Projected Increases in Intercity Freight Traffic*, prepared for the Association of American Railroads, as cited in American Trucking Association, *An Analysis of "A Study of the Environmental Impact of Projected Increases in Intercity Freight Traffic"*, January, 1973, p. 14. The ATA objects to this estimate, partially on grounds that the estimate is based on use of the Interstate System only, for which trucks bear a higher share of responsibility for costs. However, while trucks do use the Interstate System substantially more than other types of highways, the Interstate System was designed to withstand the extra weight of trucks. Although the construction costs were more due to trucks' increased size and weight, the portion of maintenance costs attributed to trucks may be less than the portion of maintenance costs on other roads which were not designed to meet heavy truck weights.

<sup>18</sup> Department of Transportation, FHWA, *Allocation of Highway Cost Responsibility and Tax Payments 1969*, Table 19, p. 59.

<sup>19</sup> *Ibid.*, Table 23, p. 69.

barges are moved in a tow propelled by one or more towboats. The almost 1800 barge towing operators, including private companies, have increased their market share of intercity freight from 2.8 percent in 1942 to 11 percent in 1972.

Inland Waterway operators specialize in moving bulk cargoes which are heavy, have a low value per unit of weight and can be loaded and unloaded mechanically.<sup>22</sup> Barge freight is most competitive to the railroad markets in steel products, grain, petroleum, chemicals and coal. The Inland Waterway operators move 20 percent of the nation's annual coal output.<sup>23</sup> More than 50 percent of the barge coal traffic is centered in the Pittsburgh area where the northeast bankrupt rail carriers have rights-of-ways.

The system consists of more than 25,000 miles of waterways navigable by shallow draft vessels. The 38 states served by this system contain 95 percent of the country's population. Although most of the waterways have been improved substantially for navigation, or even artificially created, there are no lock fees, canal fees or other "user charges" of any type for use of these waters.<sup>24</sup>

The Army Corps of Engineers (COE) is responsible for the construction, operation and maintenance of the facilities.<sup>25</sup> It now is reconstructing and enlarging many of the older locks to accommodate longer tows per lockage, thus increasing the efficiency of barge operators<sup>26</sup> and lowering their costs.

After construction, COE maintains the channels through almost continuous dredging, some of which is necessitated by the movement of the vessels themselves. Personnel are available 24 hours a day to operate the locks and dams.

In addition, the U.S. Coast Guard is responsible for aids to navigation (channel markers, lighthouses, fog-horns), search and rescue operations, commercial vessel inspection for safety, policing of the harbors and protection of the maritime environment (cleaning up oil spills). Again, this is all without charge to the user.

<sup>22</sup> Examples include coal, sand, crushed stone, grain, limestone and lumber. Specialized tank barges can carry pressurized or refrigerated chemicals. Barges also transport petroleum products, machinery and both the raw material and finished products of the steel and aluminum industry.

<sup>23</sup> *Big Load Afloat—U.S. Inland Water Resources* (Washington: American Waterway Operators, Inc., 1965), p. 27.

<sup>24</sup> The only tolls charged by the United States for use of any waterway are lock fees on the St. Lawrence Seaway and the Panama Canal.

<sup>25</sup> Virtually all of the routes have required initial dredging to achieve adequate and uniform depths along channel bottoms. Standard depth is nine feet. Additionally, dams are necessary in many instances to assure a relatively constant year-round depth. Locks are frequently needed to compensate for differences in water levels. Finally, many man-made canals connect improved natural waterways.

<sup>26</sup> One trip per tow boat through a lock takes about 30 minutes, while a tow broken into two segments takes about an hour and a half. Operating costs of a tow boat are close to \$100 per hour. [*Ibid.*, p. 41.] More recent information indicates that operating a tow boat may range as high as \$200 per hour. [Department of Transportation, *User Charges on the Inland Waterway System*. (Washington, January, 1971). unpublished, p. III-11.]

From the first federal investment in the early 19th century to the present, it is estimated that almost \$4 billion have been spent on new construction projects on inland or intra-coastal waterways.<sup>27</sup>

Inland waterway navigational costs are often hidden in other COE projects. For a task force study of potential user charges done in 1969, COE estimated that as much as 13.7 percent of the construction cost of multi-purpose projects could properly be allocable to navigation improvement, while 25 percent of the operations and maintenance for flood control projects were related to navigation.

Technical staff in the Department of Transportation and COE provided the estimates shown in Table 6 of the total federal expenditures for Inland Waterways in 1972. The cost of capital is not included in these figures.

The value of this federal subsidy is large. The major advantage of barge over rail is its low cost. Some authorities have maintained that, if the towing industry paid the full cost of the waterways, the water mode would no longer be the low cost carrier. Recent unpublished government studies on the question of user charges pro-

TABLE 6.—Federal funding of barge operators in fiscal year 1972

[Dollars in millions]	
Army Corps of Engineers (COE):	
Waterway navigation:	
New construction <sup>1</sup> .....	173
Operations and maintenance <sup>2</sup> .....	80
U.S. Coast Guard (USCG):	
USCG aids to navigation program.....	14
USCG search and rescue program <sup>3</sup> .....	17
USCG commercial vessel safety program.....	3
USCG marine environmental protection program.....	6
Tennessee Valley Authority:	
Inland waterway navigation operations and maintenance.....	3
<b>Total</b> .....	<b>296</b>

<sup>1</sup> This figure may not include all allocable costs of multi-purpose and flood control projects.

<sup>2</sup> This number has been adjusted to include allocable portions of other projects.

<sup>3</sup> Search and Rescue is largest segment of USCG budget. Not known what portion is related to recreational cost but recreational vessels do alter the sum.

Source: USRA staff interviews with technical personnel in Department of Transportation and Army Corps of Engineers.

<sup>27</sup> This estimate was given to DOT by the Army Corps of Engineers in 1970. COE estimated that as of June 1969 it had spent \$3 billion of new construction on waterways. This estimate included the allocable costs from flood control and multi-purpose projects. Using an assumed economic life of 50 years for the projects covered by the \$3 billion [*User Charges on the Inland Waterways*, op. cit., I-12, 13 and Table I-5.] and an average interest rate of 4½ percent, COE estimated "the total interest and amortization requirements at \$160 million annually". This includes only COE construction expenditures.

A report prepared for the Senate Commerce Committee (No. 91-765) estimated that \$8.9 billion has been spent on coastal and inland waterways from 1947 to 1970. More than navigational-related expenses were included. [*Ibid.*, p. I-12, footnote.]

AAR has estimated that a total of \$5.7 billion has been spent on Inland Waterways, including operations and maintenance. [Association of American Railroads, op. cit., Table 7.]

jected that recovering only maintenance and operations cost would divert approximately 15 percent of the traffic from Inland Waterways.

Part of this tonnage would move by rail or pipelines while some of it would cease moving. Recovering these expenditures from the remaining 85 percent of the traffic would require an average of .6 of a mill per ton-mile user charge, an increase of 19 percent.<sup>28</sup> In most instances the entire user charge would be passed on to the shipper, though in some cases the barge operator would absorb part of the cost.

The actual range of federal cost per major segment of the Inland Waterway system was from a low of .1 of a mill per ton-mile for the lower Mississippi River to a high of 35 mills per ton-mile for the Kentucky River District. Within the 17 state Northeast Region, the range was from a low of .4 of a mill for the Ohio River District to a high of 15.1 mills for the Allegheny River District.<sup>29</sup>

Table 7 indicates the level of toll charge, necessary to recover operations and maintenance costs on major waterways in the Northeast for 1968. If a segment toll to recover operations and maintenance costs were levied on the tonnage moving on the Allegheny system to Pittsburgh, most traffic would shift to rail transport.<sup>30</sup> In 1972 that would have meant 80.5 million ton-miles shifted from barge to rail in Pennsylvania.<sup>31</sup>

TABLE 7.—Tolls required to recover costs of operations and maintenance of Northeast Inland Waterways, 1968

River district	Tons (thousands)	Ton-miles (thousands)	Operations and maintenance cost (dollars in thousands)	Recovery toll/per ton-mile (mills)
Allegheny.....	4, 645	57, 063	\$864	15.1
Monongahela.....	38, 999	1, 702, 310	1, 868	1.1
Ohio River.....	120, 203	27, 324, 903	11, 047	.4
Illinois Waterway.....	25, 633	6, 029, 188	3, 535	.6
Mississippi—North of St. Louis.....	46, 175	7, 643, 440	6, 050	.791
Kanawha River.....	14, 108	750, 367	667	.9
James River.....	5, 613	334, 386	534	1.6

Source: U.S. Department of Transportation "User Charts on Inland Waterways," Washington, January 1971. Table III-2.

Table 8 shows the ton-miles moved by each of these Northeast waterways during 1972.

The National Waterways Conference, Inc. (NWC) estimated that a user fee designed to collect an annual sum of \$150 million would eliminate one-third of the traffic on the waterways. This is about one-half the total federal expenditures for capital projects, operations and maintenance in 1972.

<sup>28</sup> In particular, Department of Transportation, *User Charges*, op. cit., p. III-1, also IV-3.

<sup>29</sup> *Ibid.*, Table III-2.

<sup>30</sup> *Ibid.*, p. IV-9.

<sup>31</sup> Data for barge traffic from 1972 *Inland Waterborne Commerce Statistics*. (Washington: American Waterway Operators, Inc., October, 1973), p. 16.

TABLE 8.—Tons moving on the Inland Waterway System in the northeast region, 1972  
(In thousands)

River district	Tons	Ton-Miles
Allegheny.....	15, 498	180, 447
Monongahela.....	38, 624	1, 527, 939
Ohio River.....	128, 877	22, 066, 467
Illinois Waterway.....	48, 970	8, 350, 420
Mississippi—North of St. Louis.....	60, 746	11, 615, 718
Kanawha River.....	14, 501	815, 333
James River.....	6, 555	408, 542

<sup>1</sup> Includes both improved and open channel portions.

<sup>2</sup> Includes 29,000 tons and 10,849,000 ton-miles oceangoing.

<sup>3</sup> Includes 2,086,000 and unknown ton-miles coastwise and lakewise.

<sup>4</sup> Includes 229,000 tons and 18,998,000 ton-miles oceangoing.

<sup>5</sup> Includes 745,000 tons and unknown ton-miles oceangoing.

Source: 1973 *Inland Waterborne Commerce Statistics*. (Washington, D.C.: American Waterway Operators, Inc., October, 1973).

In supporting its projection, NWC estimated that such a fee would raise cost one mill per ton-mile, or 25-50 percent for 150 billion ton-miles of waterways traffic. Most of such increases would be reflected in higher rates. NWC also suggested that, for high-cost low-volume segments, as much as 50 percent of the mileage would have to be closed.<sup>32</sup> While some of this tonnage would cease moving and some would move by pipeline, a major portion of the tonnage in question would move by rail.

Attempting to recover capital costs as well as operations and maintenance costs from shallow draft vessels only would raise average barge rates from 2.9 mills per ton-mile to an average of 4.54 mills per ton-mile, or an increase of 57 percent. This rate is only 1.5 mills less per ton-mile than rail's unit coal train rate (in 1972 dollar value). Since water is much slower and seldom point-to-point, such a slight price differential would eliminate most of the barge operator's advantage of low cost.

Waterways could lose as much as 50 percent of the present traffic.<sup>33</sup> Much of the retained traffic would be that on the lower Mississippi River, which has a high volume of traffic and low operation costs. User charges per ton-mile on this segment, therefore, would be low. A disproportionate amount of the waterway's lost traffic would be in the Northeast Region served by the bankrupt railroads.

Thus, the federal government's aid to waterways has resulted in the northeast railroads' loss of a major share of the approximately \$400 million of operating revenues of the Region's barge operators.

<sup>32</sup> *The Impact of Waterway User Charges—An Industry-by-Industry Assessment*, National Waterways Conference, Inc., Washington, D.C., 1968 as cited in Department of Transportation, *User Charges on Inland Waterways*, op. cit., pp. IV-1-2.

<sup>33</sup> Department of Transportation, *User Charges on Inland Waterways* (op. cit.), p. IV-3, 4 and Table IV-1. If deep draft shipping using the waterways paid the tolls, the average increase would be 1.29 mills per ton-mile or an increase of 45 percent. In the Northeast Region there is little deep draft shipping, so the higher average would be needed to recover full costs if segment tolls were used.



### Great Lakes-St. Lawrence Seaway

The Great Lakes-Saint Lawrence Seaway System is the third competitor to the midwest-northeast railroads. Modern freight transportation on the lakes began in 1855 with the opening of the first Soo lock, although Chicago to Buffalo traffic predated the locks. The first century of Great Lakes freight movement was as often an intermodal complement to rail as it was a competitor.

The opening of the St. Lawrence Seaway<sup>34</sup> in 1959 changed the pattern of Great Lakes freight traffic by giving ocean vessels direct access to Great Lakes ports. Although tonnage moved on the Great Lakes has been declining, an increasing amount of tonnage moves through the Seaway. In 1972 almost 54 million tons of cargo "locked through" the American portion of the Seaway.<sup>35</sup>

Of that, 30 percent was overseas shipments with the origin or destination being a United States Great Lakes port. Without the Seaway, virtually all of that freight would have moved by northeastern or Canadian rail to an ocean port. Another 29 percent of the tonnage was freight moving between the United States and Canada; <sup>36</sup> much of this market otherwise might have moved by rail. Ironically, virtually all of the international tonnage is moved by foreign flag vessels.

The St. Lawrence Seaway Development Corporation (SLSDC)<sup>37</sup> manages the United States portion, consisting of 110 miles of the St. Lawrence River and the Eisenhower and Snell locks. SLSDC charges the only tolls levied on an American inland or coastal waterway. Toll receipts thus far are sufficient to cover all operations and maintenance costs and contribute funds for retirement of construction debt, but not enough to pay interest.

SLSDC borrowed \$133.8 million directly from the U.S. Treasury for construction and major repairs.<sup>38</sup> By 1970, after 11 years of operation, interest deferrals raised the debt to \$155 million. The Merchant Marine Act of 1970 forgave SLSDC's \$23 million in interest deferrals and eliminated all future interest payments.<sup>39</sup> Forgiven interest on bonded debt amounts to \$4 million annually. If the interest deferrals are included, the total interest subsidy rises to \$6.5 million annually.

The St. Lawrence Seaway necessitated major renovations in Great Lakes facilities to accommodate deeper draft ocean vessels. As with other waterways, the Great Lakes harbors, channels and locks are constructed,

<sup>34</sup> The St. Lawrence Seaway is a joint project of the United States and Canada.

<sup>35</sup> Department of Transportation, St. Lawrence Seaway Development Corporation, *1972 Annual Report*, p. 3.

<sup>36</sup> *Ibid.*, 1971 Annual Report, p. 6.

<sup>37</sup> As noted by SLSDC in its *1972 Annual Report*, SLSDC, though a federal agency, is really a member of the price-competitive transportation business.

<sup>38</sup> *Ibid.*, 1969 Annual Report, p. 19. The SLSDC still has the authority to borrow an additional \$6.2 million.

<sup>39</sup> *Ibid.*, 1970 Annual Report, pp. 6 and 19. SLSDC paid \$37.7 million in interest prior to 1970.

operated and maintained by COE. Navigational aids are provided by the U.S. Coast Guard.

Between 1800 and 1970 the COE spent \$291 million on harbor construction and \$380 million on locks and channels.<sup>40</sup> The bulk of these expenditures has been since World War II, either in anticipation of or in response to the St. Lawrence Seaway.<sup>41</sup> Between 1969 and 1971, COE spent \$25 million for harbor renovation. Although COE construction costs decreased to \$5.1 million in 1972, operations and maintenance costs reached an annual \$20 million.<sup>42</sup>

The Merchant Marine Act of 1970 also gave the Great Lakes the status of being the fourth U.S. sea coast. Such status qualified Great Lakes for the ship construction differential subsidy (SCDS).<sup>43</sup>

The eligibility of the Great Lakes for the SCDS prompted a rush of orders for new ships. Between late 1971 and early 1974, five new ships costing \$67 million were constructed.<sup>44</sup> At the then-prevailing SCDS rate, the federal government paid over \$30 million in 2 years—or about \$15 million for 1972.

Two Great Lakes shipbuilding yards have a backlog of orders through 1980. The SCDS on these existing orders could range as high as \$142.5 million over the next six years or an annual average of \$24 million. Some of these new ships will carry triple the tonnage of older vessels and need no additional crew. To remain competitive, other shippers will undoubtedly modernize their fleets. Thus, SCDS could reach \$50 million annually by the end of the seventies.

The new ships, built with federal money, are all rail-competitive, especially the jumbo-sized 1,000-foot vessel. Howard Andrews, vice-president for marine services, Hanna Mining Company, has been quoted as saying, "Even if shipping rates go up, the new ships will have an economic advantage over rail except perhaps for the short haul."<sup>45</sup>

The Merchant Marine Act of 1970 also qualified Great Lakes operators for the 10 deferrals available to

<sup>40</sup> Great Lakes Basin Commission, *Great Lakes Basin Framework Study*, Appendix C. Unpublished. Table C9-17. Includes the \$125.4 million construction loan for the St. Lawrence Seaway.

<sup>41</sup> For instance, the Indiana Harbor, reopened in 1971, was deepened and enlarged to accommodate ocean vessels at a cost of \$5 million. Annual maintenance cost of this harbor is \$222,000 as of 1972. Similar expenditures occurred for the Soo locks. While the federal government has spent a total of \$150.4 million for construction of these locks, \$47.5 million of these expenditures were for the last two reconstructions of locks which were rebuilt to handle ocean-going vessels.

<sup>42</sup> Department of the Army, Corps of Engineers, *1972 Annual Report, Chief of Engineers on Civil Works Activities*, Vol. II. Presumably, by 1972 most of the renovations to accommodate ocean-going vessels were completed.

<sup>43</sup> The ship construction differential pays the difference in cost between an American-built and a foreign-built vessel. Federal law requires all ships engaged in purely domestic trade to be built and registered in the United States. Great Lakes shipping firms did not have the option of buying and operating vessels under a foreign flag. Even without this cabotage law, the Great Lakes style vessel could not have been purchased overseas since most vessels are too long to be handled by the Seaway locks.

<sup>44</sup> "The New Great Lakes Fleet," *Business Week*, May 19, 1974, p. 40.

<sup>45</sup> *Ibid.*, p. 40.



merchant marine operators. These Great Lakes vessels in service between Canada and U.S. Great Lakes ports qualified for the operating differential subsidy. The tax deferral benefits and the operating differential subsidy are described in the "Ocean Shipping" portion of this appendix.

Direct federal expenditures contributed \$60 million in subsidies to Great Lakes shippers during fiscal 1972. Table 9, following, illustrates how these funds were allocated.

TABLE 9.—Federal expenditures on the Great Lakes and the St. Lawrence Seaway System, fiscal year 1972

[In millions of dollars]

Project	Army Corps of Engineers	U.S. Coast Guard	Maritime Administration	Total
New construction.....	5.1			
Operation and maintenance.....	20.0			25.1
Navigation aids <sup>1</sup> safety and policing.....		20.0		20.0
Ship construction differential.....			15.0	15.0
Total.....				60.0

<sup>1</sup> Estimated roughly at slightly less than 10 percent of USCG budget for all Coastal Harbors and Channels. However a large portion of USCG expenditures are for search and rescue operations, of which a major component is recreational craft.

After adding the federal interest payments on the bonds for the St. Lawrence Seaway, the total federal aid to Great Lakes trade in 1972 was between \$65 and \$70 million.

### Aviation Subsidies

Since the Air Commerce Act of 1926, substantial federal aid has been given to the aviation industry. The federal government through the Federal Aviation Administration (FAA) operates the National Airport and Airway System<sup>46</sup> and manages the federal grants-in-aid to airports.<sup>47</sup> The Airport and Airways Development and Revenue Act of 1970 established the Airport and Airways Trust Fund to finance improvements in the system.<sup>48</sup> Generally the Trust Fund covers capital expenditures, but the operations and maintenance costs are covered by general revenues.

<sup>46</sup> Management of the Airways Systems involves a network of electronically complex facilities and equipment. FAA has 400 "control towers" which direct air traffic during landings and take-offs. The control towers cooperate with 20 "enroute" control centers. The "enroute centers provide air traffic control for the users of Flight Instrument Rule and navigational aids to all categories of aircraft. Other flight services, such as weather information and the filing of flight plans, are provided.

<sup>47</sup> The federal government provides matching "50-50 grants" to local sponsors for the development of airports. FAA also owns Washington National and Dulles International Airports. In 1972 the federal government granted \$280 million for the development of airports.

<sup>48</sup> Until 1970 all of these programs were funded entirely from general revenues. Although an excise tax was levied on passenger tickets, there was no "linkage" of these revenues to the cost of operating the Airways. A tax also was levied on non-jet fuel, which after 1956 was earmarked for the Federal Highway Trust Fund. Between 1926 and 1970, the Federal Government spent approximately \$9 billion on the Airways System and another \$2.9 billion on grants-in-aid for airports.

The Department of Transportation developed a "cost base" of the Airports and Airways System which covers the period from 1966 to 1975. During this time federal expenditures (past and anticipated) for capital improvements plus operations and maintenance totaled \$10.8 billion. After allowing for the effects of amortizing capital costs over ten years, the government expenditures for aviation during the ten years amounted to \$11.7 billion.

Under this "cost base," annual federal expenditures from 1971 to 1975 ranged from \$1,135 million to \$1,820 million, while user charges recovered from \$654 million in 1971 to \$976 million in 1975. Thus the annual payments from general revenues to aviation ranges from \$482 million to a high of \$852 million. For fiscal year 1972 the federal government spent approximately \$1,280 million on aviation. Of this sum, \$706 million came from the Airport and Airways Trust Fund. The remaining \$577 million came from general revenues.<sup>49</sup>

The cost responsibility was allocated to each class of users of the Airports and Airways. The air carriers were assigned responsibility for 52.8 percent of the costs for fiscal year 1972, while general aviation was responsible for 27.8 percent of the cost base. In apportioning aviation cost responsibilities among the users, the Department of Transportation study allocated 19.5 percent to the public sector to cover civil government and military use of the Airway System. If the federal government is responsible for this portion of the costs of the Airway System,<sup>50</sup> which in fiscal year 1972 totaled \$250 million, then the subsidy to the aviation industry was \$327 million.

Of the \$706 million recovered from taxes for the Airport and Airway Trust Fund, \$633 million came from the air carriers and only \$73 million came from general aviation. The study assigned the air carriers responsibility for \$676 million and general aviation \$354 million. Thus, air carriers paid 93.6 percent of their allocated share of costs, but general aviation paid only 20.6 percent of its share of costs.<sup>51</sup>

In the mid-1940's, the Civil Aeronautics Board (CAB) authorized a group of local service carriers to give scheduled air service to smaller or isolated communities. Such carriers were given direct federal subsidies by CAB. From 1953 to 1970, at which time there were still nine local carriers receiving direct subsidies, the government paid local service carriers approximate-

<sup>49</sup> Department of Transportation, *Airport and Airways Cost Allocation Study, Part I, Report to Congress*. Washington, September 26, 1973. Table 5 and Table 11.

<sup>50</sup> Other federal government studies done on costs or allocation of cost responsibilities used for this study did not assign portions of the cost to the public sector.

<sup>51</sup> Department of Transportation, *Airport and Airway Cost Allocation Study, op. cit.* Table 11. In fiscal year 1973 air carriers paid \$707 million into the Trust Fund or 95.5 percent of their allocated share of costs. By fiscal year 1974 this group was projected to pay \$792 million in taxes or 97.2 percent of allocated costs.

ly \$1 billion.<sup>52</sup> In 1972 CAB paid more than \$67.3 million of direct subsidies to air carriers. Most of this was to the nine local carriers, though some Alaskan carriers also received subsidies.<sup>53</sup>

There are additional Federal expenditures for programs indirectly related to the operation of the Airway System. Most of these costs would be avoidable except for the aviation industry. These expenditures are for search and rescue operations, aviation safety and safety regulation, private use of the Department of Defense "joint use" facilities and a small portion of aeronautical research. The cost of CAB regulatory activities is excluded. The Federal expenditures for these "ancillary" or supporting programs were at least \$190 million for fiscal year 1971. Thus, after adjusting costs for inflation, the federal government spent almost \$200 million for these programs in 1972.<sup>54</sup>

Total federal expenditures for aviation in fiscal 1972 exceeded \$1.5 billion. Of that amount, \$555 million represented expenditures not covered by payments into the Airport and Airways Trust Fund and in excess of public sector costs. Table 10 illustrates how this amount was allocated.

TABLE 10.—Federal expenditures for commercial aviation  
(In Excess of Payments from Trust Fund and After Allocation of Costs to U.S.  
Government Operations, Fiscal Year 1972)

(Dollars in millions)				
	Airport and airway system	Operating to region carriers	Ancillary <sup>1</sup> programs	Total
Air carriers.....	\$45	\$67.3	\$105.6	\$217.9
General aviation.....	282	.....	55.4	337.4
Total.....	\$27	67.3	161.0	555.3

<sup>1</sup> The total cost responsibility was allocated among air carriers, general aviation, and the public at the same percentage used for allocating Airport and Airway System's cost.

One other potential subsidy looms on the horizon. A provision of the Federal Aviation Act of 1958 authorizes CAB to subsidize a carrier in trouble if such carrier has been managed efficiently and honestly. To date only nominal grants have been made under this provision, but Pan American Airlines recently applied for a subsidy of \$10.2 million per month. Though the request has been rejected, the precarious financial situation of some carriers soon may make this a significant item.

## Ocean Shipping

Since the country's early days, the federal government has been improving harbors, policing free access and providing navigational aids. During fiscal year

<sup>52</sup> Prior to 1953 the subsidy was included in the amount paid by the government for carrying mail.

<sup>53</sup> U.S. Congress, Joint Economic Committee, *Federal Subsidy Programs*, 93d Congress, 2d Session, October, 1974, p. 107.

<sup>54</sup> Department of Transportation, *Airport and Airway Cost Allocation Study*, op. cit.

1972, Army Corps of Engineers spent almost \$97 million on new construction related to coastal harbors and channels and an additional \$137 million for operating and maintaining the coastal waterways. During the same year, the Coast Guard spent approximately \$230 million<sup>55</sup> for navigational aids, vessel safety, marine environment protection and search and rescue.

Beyond the costs related to the construction and maintenance of a "right-of-way," the federal government has given aid to our maritime industry unavailable to other transportation modes. By far the most significant help is the "operating differential subsidy,"<sup>56</sup> begun with the Merchant Marine Act of 1936. Since then over \$3.5 billion have been given to the American maritime industry. In 1972, U.S. operators received direct payments totaling \$182 million.<sup>57</sup>

The tax deferral subsidy is less tangible. Basically, a ship owner may deposit a portion of his earnings in a "reserve" fund for future capital expenses. Taxes on the monies in the capital reserve fund are deferred indefinitely. Though the actual tax amount must be paid at some future date, there is no time limitation for the tax payment and no interest charged on the tax deferral.<sup>58</sup> At the end of 1970, \$649.3 million in tax deferred earnings were invested either in equipment or in an operators' reserve fund. The Joint Economic Committee has estimated the deferred tax payments as costing the federal government about \$10 million per year, though it could be as much as \$50 million per year by fiscal year 1975.<sup>59</sup>

Table 11, following, lists the subsidies of direct benefit to American based shippers. The ship construction differential subsidy, often viewed as a subsidy to the maritime industry, has been excluded from this study. American ship operators engaged in foreign trade can buy equivalent quality vessels from foreign ship yards at a lower price. This subsidy, then, is aid to American shipbuilding yards.

<sup>55</sup> The \$230 million is an arbitrary number representing over 90 percent of USCG total expenditures on its "4" coasts. Based on COE expenditures, the Great Lakes seem to represent somewhere between 4 percent and 12 percent of total expenditures for deep draft navigation. Over half of the USCG funds are for search and rescue operations, of which a significant portion is related to recreational craft, but there is no reasonable way to allocate s & r funds between commercial and recreational efforts.

<sup>56</sup> The operating differential subsidy is to encourage U.S. shipping firms to provide regularly scheduled service over 27 international trade routes. The subsidies compensate for the higher costs of using American crew and operating an American owned flag vessel. Prior to 1970 this subsidy was limited only to "cargo liners" following scheduled service, but now the subsidy is available for bulk vessels which go "wherever there is business."

<sup>57</sup> U.S. Congress, Joint Economic Committee, *Federal Subsidy Programs*, op. cit., p. 107.

<sup>58</sup> The description of the tax deferral subsidy is over-simplified here. For a fuller understanding of the mechanisms of net income, capital gains, future reductions of operating costs credited to reserve, depreciation and so on, see Gerald R. Jantscher, "Federal Aids to the Maritime Industries," in U.S. Congress, Joint Economic Committee, *The Economics of Federal Subsidy Programs*, Part 6, 93d Congress, 1st Session, pp. 785-795, February 26, 1973.

<sup>59</sup> *Ibid.*, p. 794 and U.S. Congress, 93d Congress, 2d Session, op. cit., p. 108.

TABLE 11.—Federal expenditures for maritime aid, fiscal year 1972

[In millions of dollars]

Army Corps of Engineers:	
Construction .....	96.80
Operations and maintenance .....	136.60
U.S. Coast Guard—navigational aids, and policing activities .....	230.00
U.S. Maritime Administration—Operating differential subsidy .....	182.00
Internal Revenue Service—deferred tax payments.....	10.00
<b>Total .....</b>	<b>655.40</b>

Likewise, cabotage laws, designed to assure that trade between American ports is limited to domestic operators, has been excluded. Since a ship engaged in domestic trade must be built in America, it is again an aid to American shipbuilders. In practice, cabotage requirements have tended to make domestic coastal trade prohibitively expensive.

### Mass Transportation

Since the end of World War II, operating costs of mass transportation firms have been increasing more rapidly than revenues. By the mid-1960's decreasing ridership plus increased operating expense created a vicious cycle: service cuts plus fare increases leading to more lost patronage yielding still more service cut-backs and with higher fares, etc. Between 1959 and 1970, 235 private bus firms went bankrupt.

To counterbalance this trend, the federal government initiated a capital grant program in 1965. The first year's budget was small—only \$60 million. These grants to urban governments provided two-thirds of the cost of a project with local government funding the other one-third. Projects included the purchase of private bus companies by public agencies, extending or building new rapid rail lines and the purchase of new equipment for bus and rapid rail operations. Total capital grants amounted to \$735 million between 1965 and 1970.

The Urban Mass Transportation Act of 1970 gave the Urban Mass Transportation Administration (UMTA) authority to obligate \$10 billion from 1970 to 1982. To date, \$3 billion of capital grants have been obligated to 160 cities. Some funds may find their way into railroads to help offset the deficit of commuter operations. At present there are 16 commuter rail lines predominantly operated on taxed, privately owned rights-of-way. Because commuter rail operations were caught in the aforementioned cycle, some states or urban areas have initiated various contracts with the private railroads to provide equipment or increased service. Even so, this aid will not be sufficient to cover the fully allocated costs of present commuter rail operations.

Since the Urban Mass Transit program is relatively new, expenditures so far have been slight, but they are

increasing rapidly.<sup>60</sup> For fiscal year 1972 UMTA had authority to commit \$600 million and actually spent \$510 million.

The program has been limited to capital grants, since 1973 on an 80/20 basis, but the Mass Transportation Assistance Act of 1974 provides a total of \$11.8 billion for operating subsidies and capital grants over the next six years. In fiscal year 1975 \$300 million will be available on a 50/50 matching grant for operating subsidy. By fiscal year 1980, \$900 million will be distributed according to a formula which considers relative population and density.

Additional highway program funds from both the Highway Trust Fund and from general funds may be used for urban bus and rail mass transit under limited conditions. For several years highway funds also have been available for various highway public transportation capital projects, such as parking facilities for transit.

### BIBLIOGRAPHY

- Air Transport Association of America, *Air Transport 1973*. Washington.
- . *Economics of Air Transport: An Overview*. Washington.
- American Trucking Association, *American Trucking Trends 1973*. Washington.
- . *An Analysis by American Trucking Association, Inc., of a Study of the Environmental Impact of Projected Increases in Intercity Freight Traffic Prepared for the Association of American Railroads by Battelle Columbus Laboratories*. Washington: January 1963.
- American Waterway Operators, Inc., *Big Load Afloat*. Washington, 1965.
- . *1972 Inland Waterborne Statistics*. Washington, 1973.
- Army Corps of Engineers, *Annual Report Fiscal Year 1972*, Vol. II. Washington: Government Printing Office, 1974.
- Association of American Railroads, *Government Expenditures for Highways, Waterways and Air Facilities and Private Expenditures for Railroad Facilities*. Washington, 1974.
- . "Statistics of Railroads in Class I in the United States, Years 1962-1972." Washington, 1973.
- Aviation Advisory Service, Inc., *Government Support of the U.S. Railroads with Particular Effect upon the Creation and Sustained Viability of a Key Transportation Industry*, prepared for Pan American World Airways, Inc. New York, June 6, 1974.
- Brookings Institution, *Setting National Priorities: the 1974 Budget*. Washington, 1973.
- . *Setting National Priorities: the 1975 Budget*. Washington, 1974.
- Budget of the United States, Fiscal Year 1972*. Washington: Government Printing Office, 1971.
- Budget of the United States, Fiscal Year 1975*. Washington: Government Printing Office, 1974.
- Charles River Associates Incorporated, *Competition Between Rail and Truck in Intercity Freight Transportation*, prepared for the United States Department of Transportation. Massachusetts: December 1969.
- Eads, George, *The Local Service Airline Experiment*. Washington: Brookings Institution, 1972.

<sup>60</sup> At this time, expenditures per year are approximately half of the annual obligations because of the time lag between obligations and project completions.



- Friedlaender, Ann F., *The Dilemma of Freight Transportation Regulation*: Washington: Brookings Institution, 1969.
- Gallamore, Robert E., "Testimony on Highways" as found in *Congressional Record*, Vol. 119, no. 31, Wednesday, February 28, 1974, pp. H1255-H1257, Washington: Government Printing Office, 1973.
- Great Lakes Basin Commission, *Great Lakes Basin Framework Study*, Appendix C. Soon to be published.
- Library of Congress Congressional Research Service, *Emergency Federal Financial Assistance to Private Enterprise*: A selective examination of past loan and Loan Guarantee Programs of the federal government.
- Hull, William J. and Robert W. Hull, *The Origin and Development of the Waterways Policy of the United States*. Washington: National Waterways Conference, Inc., 1967.
- National Urban Coalition, *Counterbudget, A Blueprint for Changing National Priorities, 1971-1976*. New York: Praeger Publishers, 1971.
- Nelson, James C., *Railroad Transportation and Public Policy*. Washington: Brookings Institution, 1959.
- "The New Great Lakes Fleet," *Business Week*, May 18, 1974, pp. 40-42.
- Department of Transportation Publications  
*Airports and Airways Cost Allocation Study, Part I, Report to the Congress*, September 26, 1973.
- Brinegar, Claude S., *A Progress Report on National Transportation Policy*. Washington, May 1974.
- Federal Highway Administration, *Highway Selected Statistics 1973*.
- 1972 National Transportation Report. *Present Status—Future Alternatives*. Washington, July 1973.
- Oehmann, John C., and Stanley F. Bielak, *Allocation of Highway Cost Responsibility and Tax Payments 1969*. National Highway Planning Division. Washington, May 1970.
- St. Lawrence Seaway Development Corporation, *Annual Reports, 1969-1973*. Washington.
- User Charges on Inland Waterways* (unpublished). Washington, January 1971.
- United States Congress, 93d Congress, 1st Session, *Joint Economic Committee, The Economics of Federal Subsidy Programs, A Compendium of Papers, Part 6*. February 26, 1973. Especially the following papers:
- Eads, George, "The Impact of Regulation on the Local Service Airline".
- Jantscher, Gerald R., "Federal Aids to the Maritime Industries."
- Tye, William B., "The Capital Grant as a Subsidy Device: The Case of Urban Mass Transportation."
- . 92d Congress, 1st Session, Senate Committee on Appropriations, Hearings, *Public Works for Water and Power Development and Atomic Energy Commission Appropriations, Part I, Vol. 2*.



## APPENDIX |

### Selected Sources

This Appendix is divided into two sections. The first is a selected list of previously published books and public documents used as general background material in the preparation of the Preliminary System Plan. The second section provides a list of reports prepared for USRA by outside consultants specifically for use in preparing the Preliminary and Final System Plans. Because these reports are new additions to the literature of transportation planning, each report is described briefly. These reports represent only part of the information available to the Association; they do not necessarily represent the views, policy, nor final conclusions of the Association. In a few instances, final consultant reports have not been received as of this printing, but their work product has been analyzed in preparing the Preliminary System Plan.

The consultant reports which are identified by an accession number, e.g. PB 239020, may be purchased through the National Technical Information Service. Requests for copies should identify the accession number and indicate the number of copies desired. Please enclose a check or money order made out to the National Technical Information Service and addressed as follows: National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161.

Copies can be ordered by individual volume number or by complete set number. All documents may also be ordered from the National Technical Information Service on microfiche for a price of \$2.25 each.

Copies of the literature and reports listed below may also be reviewed in room 2103, United States Railway Association, 2100 Second Street, S.W., Washington, D.C.

#### Previous Publications

America's Sound Transportation Review Organization. *The American Railroad Industry. A Prospectus*. Washington, D.C. 1970.

Association of American Railroads, Bureau of Railway Economics, *Statistics of Railways of Class I*, Washington, D.C.: Serial.

Association of American Railroads. *Yearbook of Railroad Facts*. Washington, D. C.: 1974 Edition.

Chief Engineer's Advisory Group, Report to the Department of Transportation, *Roadway Maintenance and Rehabilitation Plan—Penn Central Transportation Company*, December 11, 1974.

*Handy Railroad Atlas of the United States*. New York: Rand McNally and Co., 1973.

Joy, Stewart. *The Train That Ran Away*. London: Ian Allan, 1973.

Kahn, Alfred E. *The Economics of Regulation: Principles and Institutions*. Volumes 1 and 2. New York: John Wiley & Sons, Inc., 1970.

Kennedy, John F., President of the United States of America. "Message Relative to the Transportation System of Our Nation," The White House, April 5, 1962.

Locklin, Philip E. *Economics of Transportation*. Homewood, Illinois: Richard D. Irwin, 1960.

Meyer, John R., Merton J. Peck, John Stenason, and Charles Zwick. *The Economics of Competition in the Transportation Industries*. Cambridge, Massachusetts: Harvard University Press, 1964.

Nelson, James C. *Railroad Transportation and Public Policy*. Washington, D. C.: The Brookings Institution, April, 1959.

*The Official Guide of the Railways and Steam Navigation Lines of the United States*. New York: National Railway Publication Company, serial.

*The Official Railway Equipment Register*, Vol. 90, No. 3. New York: National Railway Publication Company, 1975.

Special Court, Regional Rail Reorganization Act; Decision of September 30, 1974; Nos. 74-8 to 74-12.

Task Force on Railroad Productivity, Final Report to the National Commission on Productivity and The Council of Economic Advisers. *Improving Railroad Productivity*, November, 1973.

United States of America, *et al. v. Connecticut General Insurance Corporation, et al.*, Regional Rail Reorganization Act Cases; United States Supreme Court, Slip Opinion of December 16, 1974.

U. S. Congress. House. *An Act to authorize and direct the maintenance of adequate and efficient rail service in the Midwest and Northeast region of the United States, and for other purposes*, Pub. L. 93-236, 93d Cong., 1974, H. R. 9142.

U.S. Congress. House. Committee on Interstate and Foreign Commerce. *The Regional Rail Reorganization Act of 1973*. H. Rept. No. 93-620. To accompany H.R. 9142. Washington: 1973: 93d Cong. 1st sess.

U.S. Congress. House. *Regional Rail Reorganization Act of 1973*. Conference Report No. 93-744. 93d Cong., 1st sess., 1973. To accompany H.R. 9142.

U.S. Congress. Senate. Committee on Commerce. *National Transportation Policy*. S. Rept. 445, 87th Cong., 1st sess., 1961.

U.S. Congress. Senate. Committee on Commerce. *The Penn Central and Other Railroads*. Committee Print, 92d Cong., 2d sess., 1972.

U.S. Congress. Senate. Committee on Conference. Conference Report No. 93-664. *Regional Rail Reorganization Act of 1973*. To accompany H.R. 9142. 93d Cong., 1st sess., 1973.

U.S. Congress. Senate. *Regional Rail Reorganization Act of 1973*. Committee Rept. No. 93-601. 93d Cong., 1st sess., 1973. To accompany H.R. 9142.

U.S. Department of Transportation. *Rail Service in the Midwest and Northeast Region*, Vol. I and Vol. II parts 1 and 2, 1974.

U.S. Department of Transportation. *1972 National Transportation Report*. Washington, D.C.: 1972.

U.S. Department of Transportation. *Northeastern Railroad Problem*. March, 1973.

U.S. Department of Transportation. Proceedings. *Symposium on Economic and Public Factors Influencing Light Density Rail Line Operations*. Colorado: 1973.

U.S. Interstate Commerce Commission, Bureau of Transport Economics and Statistics, *Transport Statistics in the United States (before 1954 entitled Statistics of Railways in the United States)*, 1946-1966.

U.S. Interstate Commerce Commission, Rail Services Planning Office. *Evaluation of the Secretary of Transportation's Rail Services Report*. 1974.

U.S. Interstate Commerce Commission, Rail Services Planning Office. *The Public Response to the Secretary of Transportation's Rail Services Report*. Volumes I and II, 1974.

## Consultant Reports to USRA

*Inventory and Assessment Project for Rail Service in Midwest and Northeast Region*, Bechtel Incorporated, 50 Beale Street, San Francisco.

Bechtel Incorporated and five associate contractors, whose reports are described below, conducted a general inventory of the fixed plant of the railroads in reorganization. These contractors examined the general physical condition of the plant, identified the rehabilitation work necessary to bring the rail system to a specified condition, and estimated the costs for such rehabilitation. In addition, the accuracy of the existing railroad records was reviewed. The total inventory is serving as a basis for developing a rehabilitation work plan.

Bechtel Inc. also served as the Technical Direction Contractor to coordinate the activities of the associate contractors.

The railroads in reorganization were divided into six sections, each to be inventoried by a contractor, as follows:

*Bechtel Incorporated*, inventoried the eastern region of the Penn Central system, located in parts of New York, New Jersey, Pennsylvania and Maryland; the Metropolitan Region, located in New York and Connecticut; and the Pennsylvania-Reading Seashore Line.

*Dalton-Dalton-Little-Newport*, 7315 Wisconsin Avenue, Bethesda, Maryland, inventoried the central division of the Penn Central, located in parts of Ohio, Pennsylvania, New York and West Virginia.

*DeLew, Cather and Co.*, 1030 15th Street, N.W., Suite 868, Washington, D.C., inventoried the Cleveland division, Canada division and the northeastern region of the Penn Central, located in parts of New York, Connecticut, Massachusetts and Ontario, Canada;

*Morrison-Knudson Co.*, 319 Broadway, Boise, Idaho, inventoried the southern region of the Penn Central;

*STV, Inc.*, Griffith Towers Bldg., King and Charlotte Street, Pottstown, Pennsylvania, inventoried the facilities of the Reading, Lehigh Valley, Lehigh Hudson River and the Central of New Jersey;

*Sverdrup & Parcel and Associates, Inc.*, 800 North 12th Boulevard, St. Louis, Missouri, inventoried the western and northern regions of the Penn Central and the Ann Arbor.

*An Environmental Assessment of the Potential Effects of the Railroad System Plan*, Battelle Columbus Laboratories, 505 King Avenue, Columbus, Ohio.

This study assesses the environmental effects of the railroad system plan for the region. The study includes an overview of the potential environmental problems, an environmental assessment of the railroad system's effects and recommendations of subjects for continuous assessments. This study will be completed in May, 1975 and will be referenced in the Final System Plan.

*An Economic Model for the Railroad Industry*, Chase Econometrics Associates, Inc., Bala Cynwyd, Pa., December 1974 (NTIS Accession No. PB239020, \$5.75).

This study analyzes unit price developments affecting the rail industry on an annual basis to 1985. The contractor generates long run-national macroeconomic and regional economic forecasts and develops econometric equations to forecast railroad unit costs.

*Analysis of Community Impacts Resulting From Loss of Rail Service*, Consad Research Corporation, 121 North Highland Avenue, Pittsburgh, Pennsylvania, October 1974. (NTIS Accession Numbers: Volume I—PB239034, \$5.25; Volume II PB239035, \$5.75; Volume III PB239036, \$5.25; Volume IV PB239037, \$5.25; (Complete Set PB239033—set, \$18.00).

This four-volume study describes a method for estimating the community impacts of the loss of railroad freight service. The study documents methodology developed for estimating community impact and presents the results of applications of the methodology to twenty communities. Included in the study is a guidebook designed for state and community use in estimating impacts on potentially affected communities.

*Criteria for Line Retention*, Consad Research Corporation, 121 North Highland Avenue, Pittsburgh, Pennsylvania, February 1975. (NTIS Accession No. PB239041, \$10.00.)

This study develops economic criteria for identifying the viability of line segments under analysis in USRA planning. The study identifies applicable costing techniques and developed supporting rationale for each criterion selected. Consideration was given to approaches to forecasting branch line revenues, revenue allocation criteria and alternative means of evaluating overhead traffic divertible to other rail lines if uneconomic lines are not retained.

*Controlled Transfer as a Restructuring Mechanism*, Economics and Science Planning, Inc., 1200 18th St. N.W., Washington, D.C., January 1975. (NTIS Accession No. PB 23918, \$7.00.)

This study develops the economic, social and environmental consequences of reorganizing the railroads by controlled transfers. The study explores the consequences of a controlled transfer reorganization to establishment of a single Consolidated Rail Corporation. The legislative and regulatory changes necessary, the problems of timing, manner of bidding and conditions of sale are also explored. Included in the study are recommended combinations of potential bankrupt rail properties and solvents.

*Study of Critical Maintenance Problems and Analysis of Capital Expenditure Proposals*, Thomas K. Dyer, Inc., 1972 Massachusetts Avenue, Lexington, Mass.

This study identifies maintenance needs and costs on key rail facilities and lines and analyzes major capital expenditure proposals. The contractor assisted in the preparation of an economic overview of maintenance-of-way program planning.

*Trackage Rights Costing Study*, Thomas K. Dyer, Inc., 1762 Massachusetts Avenue, Lexington, Mass.

This study identifies and quantifies the full economic impact of trackage rights agreements upon the participants. The study covered savings realized by tenant and/or owning railroad, costs incurred from handling tenant traffic and development of methods of assessing charges. From these findings the contractor developed a set of standard costs and appropriate charges for main line train operations. This study will be completed in May, 1975 and will be referenced in the Final System Plan.

*Study of Rail Passenger Service in the Northeast and Midwest Region*, Harbridge House, N. Arlington Street, Boston, Massachusetts.

This study assesses the scope, quality and needs of rail passenger service in the Northeast and Midwest region. The contractor analyzes the movement of passengers in the regions and identifies short-to-medium distance corridors which would benefit substantially from improved high speed service. USRA did not request a final report of this study.

*USRA Yard Classification Planning Project*, R. L. Hines Associates, Inc., 1030 15th Street, N.W., Washington, D.C., January 1975. (NTIS Accession No. PB239031, \$3.75)

This study analyzes selected yard operations, including handling of inbound/out-bound trains, interchange and transfers, line planning procedures and operating and managerial controls. The contractor developed the maximum throughput of road train cars for each of several terminals and yards premised upon "reasonable" upgrade and expansion of existing facilities.

*Analysis of Railroad Operated Ferry and Lighterage Operations*, A. T. Kearney, Inc., 100 South Wacker Drive, Chicago, Illinois, January, 1975 (NTIS Accession No. PB 239029, \$7.50)

This study presents a preliminary analysis of the marine operations of the railroads in reorganization and examines alternative approaches to meeting the transportation needs of the shippers now served. The study deals with the Ann Arbor Railroad car ferry on Lake Michigan; the Penn Central carfloat from Cape Charles, Virginia to Norfolk, Virginia; and the Lehigh Valley and Penn Central carfloat operations from New Jersey to Brooklyn. In addition, the contractor analyzed lighterage service in New York Harbor.

*Long Range Pricing Philosophy for the Consolidated Rail Corporation*, A. T. Kearney, 100 South Wacker Drive, Chicago, Illinois.

This study proposes an interim pricing strategy and an appropriate long-range pricing philosophy for the Consolidated Rail Corporation. The contractor reviewed various theories of pricing economics and the impact of regulatory economics

on the development of pricing strategy; conducted cost and marketing analyses; measured the price sensitivity of commodity and origin destination groups and developed traffic/revenue estimates. Additionally, the contractor developed a traffic/revenue simulator to test the impact of various price increases in a variety of configurations.

*Community Impacts of Abandonment of Railroad Service*, Public Interest Economics Center, 1714 Massachusetts Avenue, N.W., Washington, D.C., December 1974. (NTIS Accession No. PB 239030, \$7.50)

This study provides an overview and analysis of the problem of track abandonment, including its economic and social impact, and the development of a basic model relating rail abandonment to income and employment levels in affected communities. The study was developed from nationally available data using the county as the community structure.

*An Economic Overview of the Consolidated Rail Corporation*, Reebie Associates, P.O. Box 1436, Havemeyer Place, Greenwich, Connecticut, August 1974. (NTIS Accession No. PB 239025, \$4.25)

This economic overview study identifies the principal problems to be overcome by ConRail if it is to become a self-sustaining operation, and the opportunities to improve rail service and earnings. The study deals with specific marketing, operating and investment problems that need to be resolved and makes recommendations for achieving profitability.

*An Interim Pricing Strategy for ConRail*, Reebie Associates, P.O. Box 1436, 12 Havemeyer Place, Greenwich, Connecticut, January 1975. (NTIS Accession No. PB 239040, \$3.25.)

This study proposes a pricing philosophy for the Consolidated Rail Corporation. The study analyzes the merits of the various types of short term price increases in terms of general rate increases, commodity increases, terminal surcharges and region surcharges. An estimate of the traffic diversion under each arrangement is presented and the net profit for each alternative calculated.

*A Study and Plan—ConRail Bi-Modal and InterModal Operations*, Reebie Associates, P.O. Box 1436, 12 Havemeyer Place, Greenwich, Connecticut, January 1975. (NTIS Accession No. Volume I—PB 239038, \$5.25; Volume II—PB 239039, \$4.25.)

This study reviews the intermodal problems of today and defines prospects for the future. The study covers the historical development of intermodal operations and identifies economic and organizational problems and opportunities. From these findings, the contractor developed short and long range alternative plans based upon recommended changes and adoption of certain operating concepts.

*Freight Transportation, Future Modal Competitiveness*, Reebie Associates, P.O. Box 1436, 12 Havemeyer Place, Greenwich, Connecticut, February 1975. (NTIS Accession No. PB 239219, \$3.25.)

This study examines rail, truck and barge transportation in the Region in light of current and projected future programs of various governmental bodies and changing technology. The study reviews current and future government programs and analyzes their influence. Similarly, changes in technology were reviewed and an analysis made of the impact of these changes on productivity. After quantifying the effect of these changes, the contractor developed a cost model for alternative operating configurations. The contractor's study also includes a market share analysis and identification of opportunities for securing additional rail traffic through improved service.

*A Study of Economics of Interrail and Intermodal Competition in the Region*, Smat, Helliesen & Elchner, Inc., 345 Boylston Street, Newton Center, Massachusetts, February, 1975.

This study analyzes the economics of railroad competition in the Region and its relationship to freight transportation by trucks and barges. The contractor reviews the literature on



the economics of competition and prepares an analysis of the presumed benefits of competition. A seminar with shippers was conducted and an analysis of their views on competition was prepared. The contractor also evaluated the competitive effects of different possible ways of organizing rail service in the Region.

*Economic Study of Alternative Modes for Rail Traffic and Their Costs*, Wilbur Smith & Associates, 1100 Connecticut Avenue, Washington, D.C. (NTIS Accession No. PB 239032, \$8.50)

This is an economic study of alternative modes for rail traffic and their relative costs, including the social and environmental costs. The study summarizes the problem of diverting rail traffic to alternative modes, discusses the prospects for substituting different modes while preserving competition and describes the principal factors affecting comparative costs of the several modes of transportation.

*Study of Blocking and Train Operations Planning*, Stanford Research Institute, 333 Ravenswood Avenue, Menlo Park, California.

This study of blocking and train operations planning includes development of detailed integrated yard, train and main line operational plans. For various potential networks, the contractor develops a blocking and over-the-road train operating plan; a description of significant capacity and/or operating constraints; the results of each plan (service, operating statistics and operating cost); recommended facilities changes (their cost, expected benefits and time to implement); and commentary on the relative strengths and weaknesses of the plan. There is no written report; the work product is in the form of computer printouts.

*Freight Car Planning for ConRail*, Strong, Wishart & Associates, Inc., 50 California Street, San Francisco, California.

January, 1975 (NTIS Accession No. Volume I-PB 239027, \$5.25; Volume II-PB 239028, \$7.00)

This study examines methods of improving equipment utilization within various network configurations and estimates the magnitude and impact of the potential improvement. Included in the study is an examination of whether additional freight cars are needed and whether car repair or building capacity should be increased. The contractor defines alternative strategies for meeting car requirement needs and makes recommendations on effective options.

*Appraising the Viability of ConRail*, Strong, Wishart & Associates, Inc., 50 California Street, San Francisco, California, August, 1974 (NTIS Accession No. PB 239026, \$5.75)

This study identifies the principal operating, marketing and investment problems to be overcome for ConRail to improve rail service and earnings. A financial planning model is used to project operating and financial results for ConRail under varying network assumptions and operating plans being tested. The study further describes a detailed approach to planning ConRail operations with a view toward achieving ConRail financial self-sufficiency.

*Forecast of Traffic and Revenue 1974-1980*, Temple, Barker & Sloane, Inc., 15 Walnut Street, Wellesley Hills, Massachusetts, October 1974. (NTIS Accession No. Volume I-PB 239022, \$6.25; Volume II-PB 239023, \$8.50; Volume III-PB 239024, \$5.75; complete set—PB 239021—set, \$18.00)

This study analyzes present and projected traffic and revenues in the Region from 1974 to 1980 and through 1985. The contractor developed two forecasts—the first based on the present level of physical plant and the second based on the volumes of tonnage and revenues that could be realized if capital were invested to upgrade facilities and service significantly.



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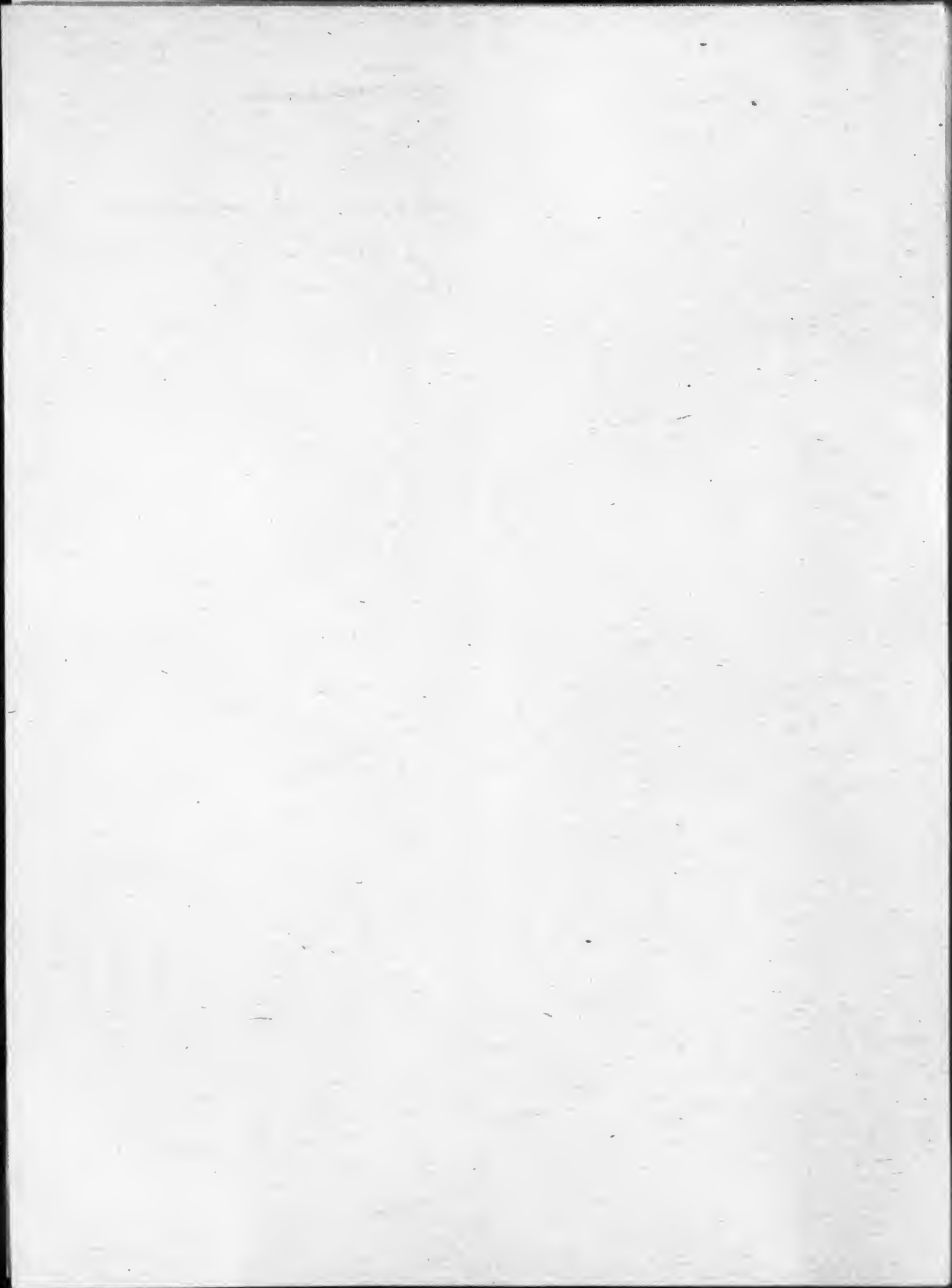
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