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ENERGY STUDY OF RAIL PASSENGER TRANSPORTATION

Volume 3: Institutions

By
Clark Henderson

MASTER

August 1979

Work Performed Under Contract No.EY-76-C-03-1176

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Stanford Research Institute International
Menlo Park, California

U. S. DEPARTMENT OF ENERGY

Division of Transportation Energy Conservation

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Systems Efficiency Branch
Transportation Programs Office

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PREFACE

The Energy Research and Development Administration (ERDA),* recognizing the need for an assessment of energy usage by railroad freight and passenger services and by rail transit systems, has sponsored the Energy Study of Rail Transportation as part of a comprehensive energy conservation program. The objectives of the study were:

- To describe rail transportation systems in terms of physical, operating, and economic characteristics; and to relate energy usage, services rendered, and costs.
- To describe the roles of private and public institutions in ownership, operation, regulation, tariff, and fare determination, and subsidization of rail transportation.
- To describe possible ways to improve efficiency.
- To provide data that the Government may use to determine its future role.

Work was organized in four tasks:

- Descriptions of rail transportation industries
- Regulation, tariff, and institutional relations
- Efficiency improvements
- Industry future and federal role

Results of the study are published in two report series of four volumes each, as follows:

ENERGY STUDY OF RAILROAD FREIGHT TRANSPORTATION:

Executive Summary, Volume I
Industry Description, Volume II
Regulation and Tariff, Volume III
Efficiency Improvements and Industry Future, Volume IV

ENERGY STUDY OF RAIL PASSENGER TRANSPORTATION

Executive Summary, Volume I
Description of Operating Systems, Volume II
Institutions, Volume III
Efficiency Improvements and Industry Future, Volume IV

*The functions of ERDA were transferred to the Department of Energy.

The Energy Study of Rail Transportation was performed by SRI International, Menlo Park, California, under Contract EY-76-C-03-1176. Ms. Estella Romo and Mr. Richard Alpaugh of ERDA were the contract monitors. Dr. Robert S. Ratner was the project supervisor. Mr. Albert E. Moon was project leader and task leader for freight railroad studies. Mr. Clark Henderson was task leader for passenger rail studies.

This report is Volume III of the rail passenger transportation series. The conversion of rail passenger transportation systems in the United States from private to public ownership has greatly reduced the importance of traditional regulatory and tariff agencies and has increased the importance of the public agencies that bear the principal responsibilities for financial support, planning and operation. This accounts for the use of Institutions as the title for this volume. Mr. Clark Henderson was the author. He was assisted by Ms. Marika Garskis.

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I INTRODUCTION

Purpose

This report outlines the roles of institutions in the delivery of rail passenger service, discusses the institutional roles in relation to energy conservation, and identifies the principal private and public institutions participating in rail passenger service.

Method

The institutional structures of most rail passenger systems have undergone major changes during the past decade because of the decline in private ownership and control and the increase in responsibilities of numerous public agencies -- both long established and newly created. Chapter 2 describes these shifts in ownership and control. Chapter 3 discusses some of the institution-related problems that federal agencies may encounter in planning and executing future programs for energy conservation in rail passenger transportation. Chapters 4 and 5 discuss briefly the principal private companies and public agencies participating in rail passenger transportation and lists names and addresses.

Readers are also invited to read Volume II, Description of Operating Systems, which contains brief histories and discussions of the roles of institutions in the national rail passenger network and in suburban railroads and rail transit systems in each of eight city-centered regions.

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II PUBLIC OWNERSHIP AND CONTROL

Ownership and control of rail passenger services in the United States rests mainly within public agencies. The composition of these groups varies and may include municipal, county, regional, state, and federal institutions, as well as private companies. The institutional structures now used differ greatly from traditional arrangements. An understanding of these changes and of the present institutional arrangements is needed to plan and execute an energy conservation program.

Rail passenger systems have their roots in the 19th century and in two distinctly different industries -- the railroads and the street railway companies. Both were almost entirely in the private sector. Both depended on government approval and support in matters such as purchase of rights of way or use of public streets; both were subject to public regulation regarding entry into the business, route structures, determination of fares, specification of services, safety, and permission to exit from the business.

Private companies constructed, owned, and operated most of the rail passenger systems in the United States until recent times. Rail passenger transportation reached its maximum size some 55 years ago while almost entirely in the private sector. Thereafter, for about 40 years, financial difficulties of private owners caused discontinuations of many rail passenger services, or conversions to bus services. Only recently has public ownership become a common alternative to discontinuation of service.

Public agencies began to assume major responsibilities for rail passenger systems at least as early as 1900. Several examples of important shifts of responsibilities are described here:

- The City of New York began constructing publicly owned subways in about 1900. The subways were operated by private companies for a time; then by a public agency, the New York City Transit Authority (NYCTA); and now by NYCTA, under the umbrella of, and with the financial support of, the Metropolitan Transportation Authority, a regional agency.
- The Metropolitan Transportation Authority was created by the State of New York in 1968 to own and control a number of rail passenger systems, plus toll bridges and other facilities in New York City. MTA controls the City-owned subway and the Statten Island heavy-rail system, and acquired the Long Island Rail Road suburban rail system from private

owners. MTA has assumed financial responsibility for continuing certain suburban rail systems operated by Conrail. MTA is purchasing new equipment and financing modernization of facilities on all of these rail systems. MTA also controls several large bus systems.

- The City and County of San Francisco constructed the Municipal Railway system (Muni) about 65 years ago, and acquired a privately owned street railway system during World War II. San Francisco continues to own and operate the surviving elements of the street railway system. It is modernizing facilities and acquiring new light rail vehicles, and will soon move part of the line from street level to a new subway. San Francisco also operates buses, trolley coaches, and cable cars.
- The Bay Area Rapid Transit District was created in the early 1960s to construct, own, and operate the BART heavy-rail system.
- The Washington Metropolitan Area Transportation Authority was created to construct, own, and operate a regional heavy-rail system and to provide bus service.
- The Port Authority of New York and New Jersey acquired the bankrupt Hudson and Manhattan Railroad in the mid-1960s to prevent discontinuation of operations. It has since modernized the entire system and is now planning extensions. The Port Authority is responsible for many other transportation facilities, including commercial airports and three Hudson River toll crossings.
- The Massachusetts Bay Transportation Authority (and an earlier public agency) was created to acquire and operate bankrupt rail systems. It has since enlarged and modernized both the heavy-rail and light-rail transit systems, has assumed responsibilities for the financial support of privately owned suburban railroads, and has acquired suburban railroad right-of-way and equipment. MBTA also operates buses and trolley coaches.
- Amtrak was created in 1970 to assume responsibility for continuation of most intercity services over a national rail passenger network. Amtrak, though jointly owned by railroads and the federal government, depends on financial aid from the government. Railroads and Amtrak share ownership of facilities and responsibilities for operations of passenger services. Amtrak is also responsible for ownership of equipment.

Institutional structures for rail passenger systems have been tailored to satisfy specific needs and local conditions. Some institutional structures have been revised several times to correct deficiencies or to deal with new problems. Consequently, there is great diversity among institutional structures.

For more than 100 years, numerous government agencies have been created or given special powers to regulate privately owned rail passenger systems and other transportation modes. Many of these agencies still exist but their regulatory powers have diminished. Many regulatory powers are not relevant to publicly owned rail passenger systems.

The Interstate Commerce Commission (ICC) has been the principal railroad regulatory agency for a century. State public utility commissions (PUCs) and similar agencies regulate certain aspects of intrastate railroad and rail transit operations. Various municipal and state agencies regulate street railways and subways.

Amtrak was created by the federal government and certain railroads to assure the continuation and further development of the railroad passenger network. While Amtrak was also to become a profitable, privately owned company, it has, in fact, remained dependent on the federal government for financial support, for both capital and operating expenses. As a result, Congress, the Department of Transportation, and a few participating states probably have more power than Amtrak and the ICC to determine the routes to be served, the frequency of service, and the equipment to be purchased.

Privately owned firms -- Auto-Train, Southern Railway, and a few others -- provide about 15% of the intercity rail passenger service and remain subject to ICC and state controls.

Only a few suburban railroads, such as the Southern Pacific, remain entirely in the private sector. They operate without subsidies and under the traditional forms of regulation. For example, the fares and schedules of the Southern Pacific are regulated by the California PUC. Most other suburban rail services are provided by railroads under contracts with regional transportation agencies. One major suburban system, the Long Island Rail Road, is owned outright by a public agency.

Rail transit systems in private ownership were regulated mainly by municipal governments through franchises which granted rights-of-way in streets, established routes and fares, and covered a variety of other matters, and, in some cases, by state public utility commissions. Only one light-rail system -- a small line in Newark, N.J. -- remains in private ownership and it receives financial support from the state. All heavy-rail transit systems in the U.S. are owned by public agencies. Traditional forms of regulation have much narrower scope when the transit system is owned by a public agency. However, there are residual powers. For example, the California State Public Utilities Commission has authority for safety regulation over BART.

Several state governments -- Massachusetts, Maryland, and Florida -- have significant roles in planning, financing, owning, or operating rail transit systems.

Several federal agencies created in the 1960s have significant responsibilities for rail passenger systems. The Urban Mass Transportation Administration (UMTA) and the Federal Railroad Administration (FRA) conduct research and development programs on rail passenger transportation. UMTA makes large expenditures for technical planning studies of suburban railroad and rail transit systems, provides capital grants covering up to 80% of capital outlays, and subsidizes operations.

In conclusion, it is important to bear in mind that rail passenger transportation is now almost entirely owned or controlled by public agencies. Furthermore, the institutional arrangements under which the systems plan, operate and receive financial support are diverse.

III INSTITUTIONAL ROLES IN AN ENERGY CONSERVATION PROGRAM

Recent institutional arrangements made to continue and further develop rail passenger transportation with public support do not provide for a comprehensive energy conservation program. National-level agencies are needed to establish policies, goals, and analytical procedures; to coordinate the programs of agencies responsible for planning and execution of projects; and perhaps to provide financial aid to encourage capital and operating outlays for energy-efficient measures.

Major parts of any conservation program must be carried out by diverse public agencies now responsible for the national and regional rail passenger systems (and by agencies responsible for alternative passenger transportation modes). At present, owners and operators propose the changes in equipment, facilities, and operations. In the future, this policy may be reversed, since federal agencies may need power to propose adoption of energy conservation measures.

In the past, operators of passenger transportation systems have viewed the direct cost of energy for current operations as only one relatively small element of the total direct operating costs. They have not recognized that large amounts of energy are embodied in capital assets and in other goods and services consumed in current operations.

Recent increases in energy prices have made conservation of direct energy desirable, but have not yet caused major changes in system designs or operations. If the prices of direct energy continue to advance more rapidly than other goods and services, operators will become increasingly interested in conservation. However, since almost all systems depend upon public subsidies both for capital improvements and for operations, they will not be able to finance conservation programs alone.

Further, measures conceived by owners and operators of rail passenger systems may not be the most desirable from the national viewpoint. For example, different agencies are responsible for rail or other modes. Specialists in these agencies are likely to overlook important alternatives based on cooperation and bias their evaluations by inappropriate analyses or incorrect criteria.

Prevailing institutional arrangements, under which operating agencies are solely responsible for initiating changes, will need to be changed to some degree. For example, federal agencies can be given power to take the initiative regarding energy conservation measures

and to require operating agencies to take positive actions to conserve energy or to achieve other goals.

At present, Amtrak is probably most subject to federal initiatives. Presumably, Congress and the Department of Transportation could authorize, finance, and require Amtrak to follow any desired energy conservation program, since Amtrak depends on federal financing for its research and development, capital investments, and operating subsidies.

At present, the federal government probably could not require specific energy conservation action by suburban railroads and rail transit agencies, but the same result might be achieved indirectly. The Urban Mass Transportation Administration (UMTA) is the principal federal agency with responsibilities for urban and regional rail transportation. UMTA conducts research and development programs of new equipment for suburban railroads and rail transit systems. For example, the UMTA sponsored Standard Light-Rail Vehicle is entering service, and the agency is developing other advanced railcars and subsystems. UMTA provides financial aid and a degree of supervision over technical planning studies and field demonstrations of new equipment and innovative service techniques.

Actual decisions to initiate any innovative action in suburban rail and rail transit are made by local agencies who initiate the planning process and file grant applications. UMTA has discretionary power to make capital grants covering up to 80% of the total investment in publicly owned equipment and facilities for suburban railroads and rail transit systems.

UMTA requires that "alternative analyses" be submitted with applications for major capital grants and that an appropriate range of alternatives be considered. Applicants must compare alternatives and must treat a variety of economic, service, social, environmental and resource characteristics. Evaluations of alternatives are not based upon a formal or officially approved set of criteria or weights for various factors but, instead, reflect the values and views of the applicants and UMTA officials. During this process, UMTA has great power. For example, UMTA can and does return applications and require applicants to conduct further studies, including new or revised alternatives or new procedures. In this way, local agencies can be influenced to consider specific innovations of interest to the federal government. It follows that UMTA's process for analysis of alternatives could be used to enforce a federal energy conservation program on all projects involving major capital investments. To accomplish this end, UMTA would have to require evaluation of energy conservation measures as part of the alternatives analysis process and would use those evaluation results to award grants.

UMTA provides operating subsidies covering up to 50% of the operating losses of public transportation agencies. These funds are not

discretionary grants but are distributed annually to regional and local agencies according to formulas and legally established procedures. Eligibility for operating subsidies is not tied to energy conservation practices of rail passenger systems, but adherence to official energy conservation rules and practices could be made a condition for such subsidies.

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IV INSTITUTIONS OF THE NATIONAL RAIL PASSENGER NETWORK

The principal institutions engaged in the delivery of services in the national rail passenger network are listed in Table 1. The National Railroad Passenger Corporation (Amtrak), which had revenues of \$212.4 million in 1975, accounted for about 85% of all intercity service; Auto-Train, which had revenues of \$28.4 million, accounted for about 11%. Three private railroads are classed as parts of the national passenger network but the largest, Southern, received only \$5.2 million in revenues. (See Volume II for description of each principal element of the national rail passenger network.)

The National Railroad Passenger Corporation was established by Congress in October 1970 with the enactment of the Rail Passenger Service Act. The purpose of the legislation was to improve the nation's intercity passenger service. A semipublic corporation, Amtrak was originally expected to become a profit-making organization. However, it remains dependent on public funds for operating subsidies and capital investments.

Amtrak is governed by a board including eight members appointed by the President and three selected by the four railroads that own stock in Amtrak. In April 1971, 20 railroads entered into agreements under which Amtrak would take over common-carrier responsibilities for intercity rail passenger service. Three passenger carriers that did not join Amtrak are also listed in Table 1. A few other railroads offer very small amounts of intercity passenger service.

The U.S. Secretary of Transportation originally determined 21 "end points" (cities) to be served. Since 1971 there have been a number of changes in routes, including extensions to one city in Mexico and two in Canada. Legislation in 1972 provided that states and local governments could require Amtrak to provide service on designated routes if they paid two-thirds of the losses. In 1975, there were 11 such routes. Legislation in 1973 required Amtrak to initiate at least one experimental route each year and keep it in service at least 2 years.

Auto-Train Corporation, a private firm that transports passengers and their automobiles on special mixed trains, was an outgrowth of a 3-year study authorized by Congress in 1965. The corporation was formed in 1969 and began operations in 1971. It is believed to be the only profitable intercity rail passenger service in the U.S.

Table 1

- NATIONAL RAIL PASSENGER NETWORK

RAIL SERVICES

1. National Railroad Passenger Corporation (Amtrak)
955 L'Enfant Plaza North, S.W.
Washington, D.C. 20024

Contractors

The Atchison Topeka and Santa Fe Railway Company
The Baltimore and Ohio Railroad Company
Central of Georgia Railroad Company
The Chesapeake and Ohio Railway Company
Delaware and Hudson Railway Company
The Mobile and Gulf Railroad Company
Illinois Central Gulf Railroad
Louisville and Nashville Railroad Company
Missouri Pacific Railroad Company
Norfolk and Western Railway Company
Richmond Fredericksburg and Potomac Railroad Company
Seaboard Coastline Railroad
Southern Pacific Transportation Company
The Texas and Pacific Railway Company
Union Pacific Railroad

2. Auto-Train Corporation
1801 K Street, N.W.
Washington, D.C. 20006

Contractors

Richmond Fredericksburg and Potomac Railroad Company
Seaboard Coastline Railroad
Louisville and Nashville Railroad Company

CLASS I RAILROADS^a

1. Chicago, Rock Island and Pacific Railroad Company
La Salle Street Station
139 West Van Buren Street
Chicago, Illinois 60605
2. Denver and Rio Grande Western Railroad
Park Central Plaza
1515 Arapahoe Street
Denver, Colorado 80217

^aOther Class I Railroads provide small amounts of intercity service.

Table 1

NATIONAL RAIL PASSENGER NETWORK (Continued)

3. Southern Railway System
Southern Railway Building
920 15th Street, N.W.
Washington, D.C. 20013

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V REGIONAL INSTITUTIONS

Railroads providing suburban railroad passenger services are listed in Table 2. Table 3 lists transit systems providing heavy- and light-rail services. Table 4 is a partial list of state, regional, country, and municipal agencies providing regulatory, planning, and financial support for suburban railroads and rail transit systems.

The institutional arrangements used for the delivery of rail passenger services exhibit no uniformity among regions except for the formation of special metropolitan planning organizations and review agencies to meet the requirements of federal agencies. Volume II includes brief discussions of agencies in each region. However, the institutional structures are exceedingly complex and a comprehensive treatment has not been attempted in this project.

Each local rail passenger institution is unique with respect to authority, responsibility, sources of funds, and labor agreements. Probably no agency has sufficient independence and command of funds to execute important changes alone. It follows that the agencies will not be able to comply, unaided, with any federal energy conservation program if it calls for new investments, higher operating costs, or important changes in operations. All federally initiated energy conservation programs requiring positive actions by regional rail transportation institutions will have to adapt to diverse local problems and conditions.

Table 2

RAILROADS PROVIDING SUBURBAN RAIL TRANSPORTATION (1976)

BALTIMORE REGION

Baltimore and Ohio Railroad
2 North Charles Street
Baltimore, Maryland 21201

BOSTON REGION

Boston and Main Corporation
150 Causeway Street
Boston, Massachusetts 02114

Consolidated Rail Corporation
Transportation Center
Six Penn Center Plaza
Philadelphia, Pennsylvania 19104

CHICAGO REGION

Burlington Northern
BN Building
176 East 5th Street
St. Paul, Minnesota 55101

Chicago and North Western Transportation Company
400 West Madison Street
Chicago, Illinois 60606

Chicago, Milwaukee, St. Paul, and Pacific Railroad
Union Station
516 West Jackson Boulevard
Chicago, Illinois 60606

Chicago, Rock Island, and Pacific Railroad
151 North Michigan Ave.
Chicago, Illinois 60601

Chicago, South Shore, and South Bend
Carroll Avenue
Michigan City, Indiana 46360

Illinois Central Gulf Railroad
233 North Michigan Avenue
Chicago, Illinois 60601

Table 2 (Continued)

CHICAGO REGION (Cont.)

Norfolk and Western Railway Company
8 North Jefferson Street
Roanoke, Virginia 24042

Consolidated Rail Corporation
Transportation Center
Six Penn Center Plaza
Philadelphia, Pennsylvania 19104

DETROIT REGION

Consolidated Rail Corporation
Transportation Center
Six Penn Center Plaza
Philadelphia, Pennsylvania 19104

Grand Trunk Western Railroad
131 West Lafayette Boulevard
Detroit, Michigan 48226

NEW YORK REGION

Consolidated Rail Corporation
Transportation Center
Six Penn Center Plaza
Philadelphia, Pennsylvania 19104

The Hudson-Harlem and New Haven Divisions
New Jersey Division

Long Island Rail Road
Jamaica Station Building
Jamaica, New York 11435

PHILADELPHIA REGION

Consolidated Rail Corporation
Transportation Center
Six Penn Center Plaza
Philadelphia, Pennsylvania 19104

Penn Central Transportation Company
1700 Market Street
Philadelphia, Pennsylvania 19103

Table 2 (Continued)

PITTSBURGH REGION

Baltimore and Ohio Railroad
The Terminal Tower
Cleveland, Ohio 44101

Pittsburgh and Lake Erie Railroad
P&LE Terminal Building
Pittsburgh, Pennsylvania 15219

SAN FRANCISCO REGION

Southern Pacific Transportation Company
Southern Pacific Building
One Market Plaza
San Francisco, California 94105

WASHINGTON, D.C. REGION

Baltimore and Ohio Railroad
Two North Charles Street
Baltimore, Maryland 21201

Chesapeake and Ohio Railway
The Terminal Tower
Cleveland, Ohio 44101

Table 3

RAIL TRANSIT SYSTEMS

Light rail (LR)
Heavy rail (HR)

BOSTON REGION

Massachusetts Bay Transportation Authority LR, HR
45 High Street
Boston, Massachusetts 02110

CHICAGO REGION

Chicago Transit Authority HR
Merchandise Mart Plaza
P.O. Box 3555
Chicago, Illinois 60654

CLEVELAND REGION

Greater Cleveland Regional Transit Authority LR, HR
1404 East 9th Street
Cleveland, Ohio 44114

NEW YORK REGION

New York City Transit Authority HR
370 Jay Street
Brooklyn, New York 11201

Port Authority of Trans-Hudson HR
One World Trade Center
Suite 64W
New York, New York 10048

Staten Island Rapid Transit Operating Authority HR
25 Hyatt Street
Staten Island, New York 10301

Transport of New Jersey LR
180 Boyden Avenue
Maplewood, New Jersey 07040

Table 3 (Continued)

Light rail (LR)
Heavy rail (HR)

PHILADELPHIA REGION

Southeastern Pennsylvania Transportation Authority	LR, HR
2028 PSFS Building	
12 South 12th Street	
Philadelphia, Pennsylvania 19107	
 Port Authority Transit Corporation	 HR
Benjamin Franklin Bridge Plaza	
Camden, New Jersey 08102	

PITTSBURGH REGION

Port Authority of Allegheny County	LR
Beaver and Island Avenues	
Pittsburgh, Pennsylvania 15233	

SAN FRANCISCO/OAKLAND REGION

San Francisco Bay Area Rapid Transit District	HR
800 Madison Street	
Oakland, California 94607	
 San Francisco Municipal Railway	 LR
949 Presidio Avenue	
San Francisco, California 94115	

WASHINGTON, D.C. REGION

Washington Metropolitan Area Transit Authority	HR
600 Fifth Street N.W.	
Washington, D.C. 20001	

Table 4

PARTIAL LIST OF
REGULATORY, PLANNING, AND FINANCIAL AGENCIES

ATLANTA REGION

Metropolitan Atlanta Rapid Transit Authority
100 Peach Tree Street, Northwest
Atlanta, Georgia 30303

BALTIMORE REGION

Mass Transit Administration of Maryland
109 East Redwood Street
Baltimore, Maryland 21202

Public Service Commission of Maryland
State Office Building
301 West Preston Street
Baltimore, Maryland 21201

BOSTON REGION

Central Transportation Planning Staff
27 School Street
Boston, Massachusetts 02108

Massachusetts Bay Transportation Authority
45 High Street
Boston, Massachusetts 02110

Metropolitan Area Planning Council
44 School Street
Boston, Massachusetts 02108

CHICAGO REGION

Chicago Southern Suburban Mass Transit District
148 East 154th Street
Harvey, Illinois 60426

Chicago Transit Authority
Merchandise Mart Plaza
P.O. Box 3555
Chicago, Illinois 60654

Chicago Urban Transit District
123 West Madison
Chicago, Illinois 60602

Table 4 (Continued)

CHICAGO REGION (Continued)

Illinois Department of Transportation
1000 Plaza Drive
Schaumburg, Illinois 60172

Northeastern Illinois Planning Commission
2 North Riverside Plaza
Chicago, Illinois 60606

Northwest Suburban Mass Transit District
1 Railroad Street
Bartlett, Illinois 60103

Regional Transportation Authority
300 North State Street
Chicago, Illinois 60610

Regional Transportation Planning Board
1 East Wacker Drive
Chicago, Illinois 60601

CLEVELAND REGION

Greater Cleveland Regional Transit Authority
1404 East 9th Street
Cleveland, Ohio 44114

DETROIT REGION

Michigan Public Service Commission
525 West Ottawa Street
Lansing, Michigan 48913

Southeastern Michigan Transportation Authority
Detroit Bank and Trust Building
211 West Fort Street, Suite 1600
P.O. Box 333
Detroit, Michigan 48231

NEW YORK REGION

Connecticut Department of Transportation
24 Wolcott Hill Road
Wethersfield, Connecticut 06109

Metropolitan Transportation Authority
1700 Broadway
New York, New York 10019

Table 4 (Continued)

NEW YORK REGION (Cont.)

New Jersey Department of Transportation
State Highway No. 21
Newark, New Jersey 07114

Tri-State Regional Planning Commission
1 World Trade Center
New York, New York 10048

PHILADELPHIA REGION

New Jersey Department of Transportation
State Highway No. 21
Newark, New Jersey 07114

Port Authority Transit Corporation
Benjamin Franklin Bridge Plaza
Camden, New Jersey 08102

Southeastern Pennsylvania Transportation Authority
200 West Wyoming Avenue
Philadelphia, Pennsylvania 19140

PITTSBURGH REGION

Port Authority of Allegheny County
Beaver and Island Avenues
Pittsburgh, Pennsylvania 15233

SAN FRANCISCO REGION

Association of Bay Area Governments
Claremont Hotel
Berkeley, California 94705

California Public Utilities Commission
350 McAllister Street
San Francisco, California 94102

Metropolitan Transportation Commission
Ashby Avenue and Domingo Avenue
Berkeley, California 94705

Department of Transportation
State of California
150 Oak Street
San Francisco, California 94102

Table 4 (Continued)

WASHINGTON, D.C. REGION

Metropolitan Washington Council of Governments
1225 Connecticut Avenue, Northwest
Washington, D.C. 20036

Washington Metropolitan Area Transit Authority
600 Fifth Street, Northwest
Washington, D.C. 20001