

August 1980

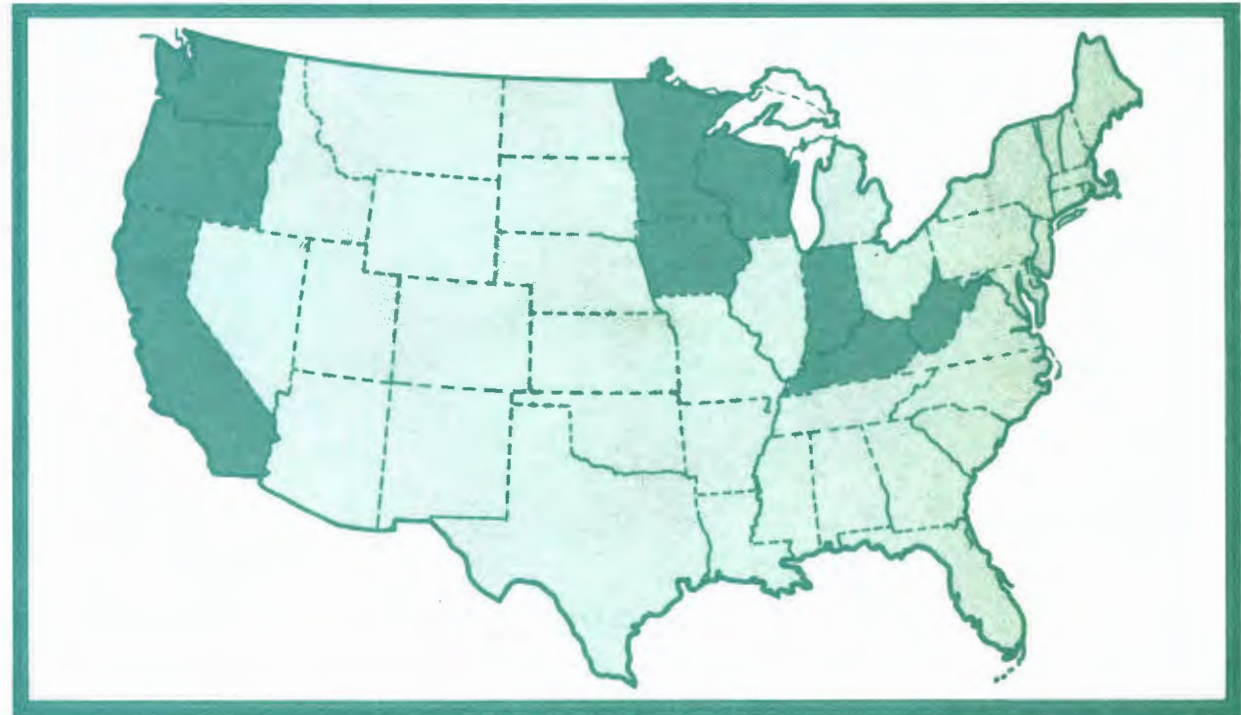


U.S. DEPARTMENT
OF TRANSPORTATION

OFFICE OF THE SECRETARY
OFFICE OF THE ASSISTANT SECRETARY
FOR GOVERNMENTAL AFFAIRS

RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION
TRANSPORTATION SYSTEMS CENTER
TECHNOLOGY SHARING OFFICE

State - Initiated Transportation Programs: Selected Case Studies



TECHNOLOGY SHARING A PROGRAM OF THE UNITED STATES
DEPARTMENT OF TRANSPORTATION

NOTICE

This document is disseminated under the sponsorship of the U.S. Department of Transportation in the interest of information exchange. The views and data contained in these summaries are the responsibility of their respective authors, and the United States Government assumes no liability for this document's contents or use thereof.

The United States Government does not endorse products or manufacturers. Trade or manufacturers' names appear herein solely because they are considered essential to the object of this report.

STATE-INITIATED TRANSPORTATION PROGRAMS: Selected Case Studies

February 1980



U.S. DEPARTMENT OF TRANSPORTATION
Office of the Secretary
Office of the Assistant Secretary
for Governmental Affairs

Research and Special Programs Administration
Transportation Systems Center
Technology Sharing Office

06914

HE
206.2
.582

Table of Contents

Introduction

Section I

- Chapter 1. California State Transportation Plan
 - Chapter 2. Indiana Transit Management Assistance Program
-

Section II

- Chapter 3. Minnesota Paratransit Program
 - Chapter 4. West Virginia TRIP
 - Chapter 5. Wisconsin Demonstration Projects
-

Section III

- Chapter 6. Kentucky Air Commuter Service
 - Chapter 7. Washington State Waterways
-

Section IV

- Chapter 8. Iowa Railroad Branch Line Rehabilitation
 - Chapter 9. Los Angeles Freeway Transit
 - Chapter 10. Oregon Bicycle Path Program
-

Introduction

In the many activities of the Technology Sharing Office of the U.S. DOT's Transportation Systems Center directed toward the transfer of technology and the sharing of transportation knowledge with the transportation community, state and local governments have frequently requested information about what similar units of government have done in addressing their transportation problems.

In an attempt to respond to this requirement, the Transportation System Center's Technology Sharing Office, with the cooperation of many states, engaged in an experimental effort to gather and disseminate information generated at the state level. The initial result of this effort was an annotated bibliography entitled *Sample State and Local Programs*, published in January, 1979. It is our belief that this "horizontal" transfer of knowledge between states will be of benefit to all states and will result in a better system of intergovernmental communications.

The ten case studies that make up this book were chosen to demonstrate responses by individual states to their unique transportation needs. Although, in most cases, the programs and plans have been augmented later with federal funds, at the time they were developed, the states themselves provided the bulk of expertise and money necessary for implementation.

Each of the fifty states has its own singular history of transportation development, and many more than the ten represented here have instituted creative programs. Determining which of these to include as case studies was difficult; there are elements in each which might be instructive to all. The final selection was made because these ten illustrate the resolution of problems common to many areas. Taken together, the case studies reflect the ingenuity in planning and implementation which has characterized transportation development throughout the United States in the last decade.

The book is organized into four sections. The first of these describes the comprehensive, multimodal planning in California, and a similar but less comprehensive effort in Indiana, where the land grant institution, Indiana University, served the functions of a state DOT. The second section deals with state programs in Wisconsin, West Virginia, and Minnesota. These programs demonstrate a variety of innovative approaches to mass transportation and paratransit projects ranging from urban centers to rural villages.

Two programs which were dictated by the topography of the area are described in the third section. An air commuter service that carries patrons over Kentucky's mountains, and public transportation by ferry-boat over the waterways near Seattle, Washington, are each subsidized by the state.

Finally, there are descriptions of three programs which concentrate upon a specific transportation mode, i.e., rail freight in Iowa, freeway bus transit in Los Angeles, California, and Oregon's extensive bicycle path network.

We are most grateful to the many people who provided extensive help and information while this book was being written. We particularly wish to acknowledge the generous cooperation of the following:

Randall Ball
Rail Assistance Analyst
Iowa Department of Transportation

Gibson W. Fairman
Chief, Special Studies
Division of Transportation Planning
Caltrans

George E. Gray
Division Chief
Division of Mass Transportation
Caltrans

Kern L. Jacobson
Planning Engineer
Marine Transportation Division
Washington State Department of Transportation

Rodney Jenkins
Director
West Virginia Department of Finance and Administration
Public Transportation Division

Joseph Kern
Paratransit Projects Manager
Minnesota Department of Transportation

Perry J. Maull
Administrative Director
Institute for Urban Transportation
Indiana Mass Transportation Improvement Project

Dick Singer
Assistant Bikeway Engineer
Oregon Bikeway Program

Ken Warren
Executive Assistant
Milwaukee County Transit System

William R. Wells
Manager
Transit Planning
Southern California Association of Governments

David Woodford
Division of Aeronautics and Airport Zoning
Kentucky Department of Transportation

SECTION I

CHAPTER 1

California State Transportation Plan

CHAPTER 2

Indiana Transit Management Assistance Program

The plan begins by evaluating the strengths and weaknesses of California's present transportation system. After World War II, California focused its transportation resources on the development of an extensive highway system, which now comprises over 175,000 miles of streets and highways. The system is in generally good condition and most places in California are easily accessible by auto. In addition, California has good intrastate and interstate airline service. Freight movement, which the economy of California depends heavily upon, is accommodated by a large trucking industry, and by a railroad system which is in relatively healthy condition compared with those in other states. California also has modern ports, and an efficient pipeline system for transportation of petroleum products.

Despite all of these advantages, California's transportation system has its drawbacks. Although Californians are highly dependent upon the automobile, six million residents are not eligible to drive. Some areas of the state, particularly the Los Angeles area, suffer from severe air pollution problems. Noise pollution from autos, trucks, and planes is a problem throughout the state. No matter what type of transportation, there is a need for increased passenger safety.

Although California's transportation system is in many ways adequate for the present, new demands will be placed on it in coming years. California's population is expected to grow by one-third in the next 20 years. Accordingly, transportation must be provided. Oil supplies are limited, and as seen in the summer of 1979, demand for gasoline can outstrip supplies. Despite improvements in emission control devices, the quality of California's air will continue to deteriorate unless something is done to control the increasing number of automobiles on the road. To the extent that population growth causes urban areas to become more dense, auto congestion will increase unless alternative transportation solutions are provided. A long-term trend in California has been to convert agricultural land into residential use. If this trend continues, another million acres of prime agricultural land will vanish in the next 20 years, cutting into California's food-producing capacity. Rural areas also suffer from the periodic influx of automobiles from outside, straining local resources. Natural scenic areas in California are similarly threatened by the automobile.

Funding of transportation services will become an increasing problem. In 1977, regional transportation plans called for spending more money over a five-year period than was available at the time. It was estimated that highway funding would fall short by \$3 billion and transit funding by \$5.7 billion. Inflation has caused highway construction and

maintenance costs to outstrip the gas tax revenues which partially support these improvements. Transit construction and operating costs are rising faster than revenue from fares and public subsidies. California's present transportation system and transportation policies were instituted at a time when resources were more abundant. The focus in the future must be on how to deploy available resources most effectively.

The California plan does not rely entirely on public subsidies for implementation. A significant role is projected for the private sector, and transportation decisions over the coming years will be made within both public and private sectors. Eight basic principles were proposed in the plan to guide transportation decision-making. These were:

- 1) Role of private enterprise: When possible, transportation decision-making should be left up to private enterprise.
- 2) System management: Improving the efficiency and effectiveness of existing transportation systems should take priority over expansion of systems.
- 3) Analysis of alternatives: Transportation decisions should be based on a full range of alternatives which balance the competing needs of the users, and other affected groups.
- 4) Impact of transportation decisions: Transportation decisions should be based on a full consideration of the social, economic, and environmental effects on all segments of the population.
- 5) User support: Whenever possible, users of a particular transportation service should pay the cost of that service through fares, tolls, or other charges.
- 6) Tax support: When user charges do not pay the full cost and tax support is necessary, taxing mechanisms should assess those who benefit from the system more heavily than those who do not.
- 7) Basic transportation service: Despite the principles of the direct burden on the user, basic transportation services should be available to all who need it regardless of income or physical handicap.
- 8) Government regulation: State regulation should be limited to protecting the public interest, i.e., confined to the areas of environmental protection, safety, health, and the financial liability of transportation systems.

Although the underlying philosophy of these principles promotes transportation decision-making in the private sector, the plan prescribes a public role under the following conditions: 1) presence of side or "spillover" effects not taken into account by the private sector, e.g., air

pollution created by automobiles; 2) inequitable access to transportation services for certain population segments, e.g., the elderly and handicapped; 3) monopolistic conditions created by economies of scale, e.g., as with the railroad industry; 4) need to protect irreplaceable natural resources, e.g., scenic areas; 5) failure of short-range market decisions to anticipate long-range cumulative effects, e.g., unrestrained consumption of energy resources; and 6) need for transportation services too comprehensive to be left to the private sector, e.g., provision of a street and highway system.

As a general principle, the authors of the plan felt that the appropriate level of government-given responsibility for decision-making should correspond to the particular constituency receiving benefits and assuming costs of given transportation services. For example, if an urban roadway serves primarily regional trips, then regional government should assume the decision-making role.

The conservation of scarce resources and the preservation of environmental quality are major themes of the plan. Methods are outlined for the conservation of energy, capital, and labor resources. Ways to protect the environment included prevention of urban sprawl, preservation of coastal and other scenic areas, and conservation of prime agricultural land. Ideas to better air quality, reduce noise pollution, and prevent community disruption in urban areas by transportation system were considered.

Problems with each of California's transportation modes, passenger and freight, are described and possible solutions proposed. Discussed under passenger modes are streets and highways, public transit, intercity buses, intercity rail, air transport, and bicycles; under freight modes, trucking, railroads, ports and shipping, pipelines, air freight, and intermodal freight transportation are treated.

A major problem concerning highways is the availability of funds to maintain the present system. Due to inflation, the funds collected from state and federal gas taxes do not go as far as they did in the past. There will be increasing limits on the amount of funds available for both construction and maintenance. In addition, past federal and state highway policies favored expansion and emphasized construction over maintenance. Most of the federal share of gas tax monies goes for construction of new interstate highways. States with more interstate mileage and lower population receive disproportionately greater shares of federal dollars. In California, for example, the federal government returned only approximately 65 cents for each federal gas tax dollar collected.

In order to enhance the return of federal funds, California has spent state funds to supplement federally-aided construction projects. Exacerbating the situation are the limits on the proportion of state funds that can be devoted to highway maintenance projects. The plan suggests that a change in federal and state policies could allow for more flexibility in funding maintenance projects.

Another problem associated with federal and state highway funding has been the tendency of metropolitan areas to turn to highway solutions to solve peak-hour congestion problems. Since federal and state funds will pay most of the cost of highway construction, local communities have planned highways rather than considered other solutions such as the use of improved transportation system management or public transportation. Since most peak-hour trips are local, the plan suggests that local areas should assume the planning and funding responsibilities for solving peak-hour congestion problems. Concomitantly, the plan recommends that localities be granted the authority to impose sales taxes and/or road-user charges to fund local transportation projects. In this way, the state could concentrate its funding capabilities on interregional travel facilities and the federal government on interstate facilities.

In the area of public transit, several policy changes were suggested. Increased user charges were recommended as a method to fund public transit. Currently public transit users pay only about 30 percent of the cost of transit service. It is suggested that they gradually be required to pay a greater share.

Another recommended policy change is in the area of transit regulation. Federal, state, and local regulations govern entry, rates, and operations of public and private transit operators. These regulations sometimes inhibit innovation and prevent needed services, particularly paratransit services. For example, taxicab regulations preclude the establishment of shared-ride taxis in many areas. Such regulations should be modified to allow for new services.

The state should promote and perhaps subsidize increased intercity bus service and/or AMTRAK service when these services are shown to be cost-effective alternatives to interregional highway expansion.

Intrastate airline flights by California companies are regulated by the California Public Utilities Commission (CPUC). Intrastate and interstate flights by national carriers are regulated by the federal Civil Aeronautics Board. Unlike federal regulations, California's allow and promote competition among airlines, and this has resulted in better scheduling and lower fares. In order to improve scheduling and fares for all

intrastate flights, the plan recommends that the state attempt negotiations to bring all such flights under the regulation of the CPUC.

The plan also suggests that differential airline landing fees be established both to create an incentive for reducing peak-hour congestion and to put pressure on airlines to reduce noise levels. Funds generated by landing fees for particularly noisy aircraft could be used for noise abatement purposes.

The trucking industry in California falls under either state or federal regulation, depending upon operator category — interstate or intrastate. Current state and federal regulations tend to protect the trucking industry rather than the consumer. Trucking rates are set in such a way that they reflect the costs of the least efficient carrier, thus discouraging competition for lower rates. The plan recommends that federal and state regulation of trucking be reduced gradually. Sudden deregulation could have disruptive effects on competing freight carriers, i.e., rail and air, as well as trucking management and labor.

Railroads in California carry over 20 percent of all freight moved in the state. The railroad industry in California does not receive any government subsidies. This is in contrast to trucking, ports, and airways, which have subsidized rights-of-way, traffic control, and/or terminal facilities. Railroad facilities are also subject to taxation; rights-of-way and rolling stock are taxed by state and local governments. The plan recommends that, in the future, railroads not be subject to taxation. Railroad rates are regulated by the Interstate Commerce Commission. Should trucking rates be deregulated, railroads will be at a serious disadvantage. The plan recommends that railroad-rate deregulation proceed in conjunction with the deregulation of trucking rates. It also recommends that the state develop an appropriate plan to qualify California railroads for funds under the federal Railroad Revitalization and Regulatory Reform Act of 1976.

California has ten major ports, all under public management. The ports are modern and efficient; however, new deep-water ports will be needed to accommodate deep-draft ships. The plan recommends that a coordinating committee of private and public officials be established to insure that development of these deep-water ports does not damage the environment, makes maximum use of existing facilities, and does not produce unnecessary duplication of port facilities.

In addition to the recommendations set forth in the policy document, various legislative and procedural changes required to carry out the proposed measures are suggested. Although the final plan was developed over a five-year period, it still did not comply entirely with the original

legislative mandate. Changes in state government and legislature, administrative overlap, pressure by competitive special interest groups, and bad press, all combined to inhibit complete development of a comprehensive plan and to prohibit its acceptance. This developmental history is described briefly in the next section.

HISTORY OF PLAN DEVELOPMENT

The genesis of the California transportation plan was Assembly Bill 69 (AB69) passed in December 1972. This legislation created a state department of transportation (known as Caltrans) and mandated the development of a statewide transportation plan.

The legislation specified that two agencies be involved in development of the plan — Caltrans, the newly created state department of transportation, and the State Transportation Board, a previously existing agency. Caltrans was charged with developing a statewide plan. The state board was to review the plan, hold public hearings, and then submit the plan to the legislature for approval.

Caltrans was created by combining the former Department of Public Works, the Department of Aeronautics, and the Office of Transportation Planning and Research. It was responsible for conducting and coordinating transportation planning at the state and local level and was charged more specifically with development of the statewide transportation plan. The director of Caltrans was appointed by the governor, and Caltrans was located within the Office of the Secretary of Business and Transportation, a cabinet position under the governor.

The State Transportation Board, composed of seven members appointed by the governor and reporting to the secretary of business and transportation, was established in 1970. The board advised the legislature and the secretary of business and transportation, reviewing statewide and regional transportation plans as well as other comprehensive statewide plans to determine any transportation-related implications. The board also monitored state-funded transportation planning and research, and was charged with checking the development of the new statewide transportation plan.

The secretary of business and transportation was not assigned a role in plan development under AB69 but, as time passed, this office did become an active force in the plan's development.

The enabling legislation stated that the following six elements should be included in the plan:

- 1) statewide goals, objectives, and policies for all forms of transportation, public and private;
- 2) statewide forecasts of transportation needs and deficiencies;
- 3) a general transportation plan for the state, including land, water, and air transportation, based on studies of alternative plans and their evaluation;
- 4) environmental impact statements for system planning;
- 5) a statewide implementation program; and
- 6) development of regional transportation plans.

A caveat to the legislation specified that the overall plan could not be adopted until the legislature approved the first item listed above — a statement of statewide goals, policies, and objectives. The development of this necessary element proved so controversial that the remaining elements of the plan were never completed.

AB69 outlined a time schedule for the development and completion of the plan. Caltrans was to submit two progress reports to the board. The first progress report, submitted in April 1974, placed too much emphasis on highways at the expense of multi-modal planning.

Caltrans submitted a second progress report in September 1974. The board approved it and sent it to the legislature in December. In a transmittal letter accompanying the report, the board reiterated its concern that Caltrans' orientation was still dominated by highway planning. The transition from a highway to a multi-modal orientation was, in fact, difficult for Caltrans. The staff was composed largely of highway engineers from the former Department of Public Works. A state hiring freeze, in force at the time, prevented the hiring of new multi-disciplinary staff members, and necessitated the retraining of existing personnel.

In the transmittal letter, the board also noted a number of issues it felt had not been addressed in the progress report. These included energy conservation, air quality, transportation deregulation, the role of private capital, transit operating subsidies, innovative technologies, and non-capital alternatives for solving transportation problems. Other neglected issues included the form and structure of regional transportation planning agencies, regional authority for the allocation of transportation funds, and the relationship of transportation plans to the growth and distribution of population and land use. As seen, many of these topics were subsequently addressed in the final version.

Caltrans, in response to the board's criticism, announced that it would contract for a series of issue papers on topics of concern to the board. These papers were to be ready in the summer or fall of 1975 for inclusion in the final plan. Meanwhile, the board had also decided to seek outside help by convening a panel of experts to recommend appropriate content elements of the statewide plan. In addition, the board asked its own staff to prepare a paper on what the plan should contain. The results of these efforts stressed that the plan should be policy-oriented.

In January 1975, Jerry Brown, recently elected governor, took office, and shortly thereafter appointed a new secretary of business and transportation. The new secretary reacted negatively to the draft plan, stating that policy alternatives should be discussed before proposing programs or making recommendations. Both the board and the secretary of business and transportation agreed that the primary problem with the plan was the lack of consideration of policy issues.

Despite this objection, a draft plan was circulated in anticipation of public hearings. During the summer of 1975, six public hearings were held throughout the state, chaired jointly by representatives of the state board and the business and transportation agency. In general, highway interests and local governments supported the plan. Representatives from rural areas and public transit supporters were less satisfied. After completion of the public hearings, staff from the board, the business and transportation agency, and Caltrans held a joint workshop to evaluate the results of the hearings. A difference of opinion developed, as to which interpretation of the hearing proceedings was more apt. Caltrans claimed strong support for the plan, while the board and the agency claimed the opposite.

The board staff culled testimony given, combined it with their own criticism of the plan, and indicated that the plan was deficient in the following areas: goods movement planning, range of alternatives, integration between regional plans and the statewide plan, definition of private sector role, rural transportation, transit funding, transit labor issues, and cost-benefit or cost-effectiveness analyses. The staff report concluded by recommending that the board not adopt the plan at that time. In turn, the board sent a letter to the governor and the legislature indicating that it would not approve the plan and suggested the establishment of an interagency task force, appointed by the secretary of business and transportation, to redirect development of the plan.

The secretary of business and transportation concurred with the board that the plan should be deferred and that an interdisciplinary task

force should be established to create a new plan. In October of 1975, the business and transportation agency presented the board with an official work program for development of a new plan. The backbone of the program was to be the development of a series of papers on key transportation issues, from which a plan would then be created. An interdisciplinary task force, selected by the agency, was to prepare the issue papers and the draft plan. The board would review the plan, aided by three advisory groups: an interagency group, including representatives of other state agencies involved in transportation and representatives of regional planning agencies; a private sector group, including transportation operators, businessmen, environmentalists, and academicians; and a Caltrans management group.

Work began in January 1976, and a draft was ready by fall. Much of the year was taken up developing issue papers. The board reviewed each paper upon completion and asked for revisions and additions. The subjects of the 15 completed issue papers were as follows:

- 1) State Interest and Significance.
- 2) Selected Demographic and Economic Forecasts
- 3) Plans and Programs of State Agencies which Affect Transportation
- 4) The Movement of People in California
- 5) Competing Demands for Public Resources: Needs and Deficiencies
- 6) Characteristics of Commodity Movement in California
- 7) Inventory of Transportation Facilities and Equipment
- 8) Institutional Roles and Statutory Requirements
- 9) Special Topics in Transportation:
 - The Transportation Disadvantaged
 - Labor Impacts
 - User Safety and System Security
 - Emergency Situations
- 10) Transportation and Land Use
- 11) Environmental Impacts:
 - Air Quality
 - Natural Environment
 - Noise
- 12) Energy and Transportation
- 13) Economic Role of the State in Transportation
- 14) Technology Assessment
- 15) Financing California Transportation

These papers contain a great deal of background information on California's transportation system and thorough discussions of the transportation issues cited.

Six public hearings on the draft plan were scheduled for November 1976 at various locations around the state. In preparation for the hearings, over 150 public information meetings were held by the business and transportation agency, and 4500 copies of the draft plan were printed and distributed a month prior to the hearings.

Before the plan could be circulated, however, newspaper articles appeared interpreting the plan to the public. These stories were based on the issue papers, the contents of which were not necessarily endorsed by the board. A number of alternative programs which were only under discussion appeared in the newspaper articles as if they were final policy. Misinterpretations occurred, particularly in the sensitive area of user charges. The issue papers discussed assigning the full cost of transportation systems to system users. Highway users, particularly users of expensive urban freeways, do not pay the full cost of the system. Possible ways to assign user costs are to impose tolls on freeways and/or increase gas taxes. The impracticality of such measures was acknowledged in the draft papers. Nonetheless, newspaper articles implied that freeway tolls would soon be imposed and that gas taxes would rise, perhaps by 50 cents a gallon. These articles generated much public controversy which lasted through the public hearings and beyond. Although the hearings clarified many misunderstandings, the initial negative public reaction to the plan was difficult to dispel.

The combination of public information meetings and extensive media coverage caused considerable interest in the public hearings, in which many groups and individuals participated. Opponents of the plan comprised various highway interest groups, chambers of commerce, local governments, the trucking industry, and auto clubs. Proponents included the Sierra Club, the League of Women Voters, the railroad industry, a number of conservative economists, and the shippers of commodities.

Extensive changes in the draft plan resulted from oral and written testimony presented at the public hearings. As a concession to highway interests which feared substantial gas tax increases, the proposal for full assignment of system costs to users was modified by stating that this policy would be implemented only over a long period of time. A proposal for deregulation of the trucking industry was softened by stating that further research was necessary to determine how regulations could be changed.

During this period of public debate, both the general public and special interest groups directed their criticism of the plan to the governor's office. A former supporter of the plan, the governor began to change his mind. Shortly after the hearings, he directed the secretary of business and transportation and the director of Caltrans to send a joint letter to the board outlining his concerns about the plan. The administration was opposed to disincentives to auto driving, to increase in transportation-related taxes, and to deregulation of transportation industries. More attention to the transportation problems of rural areas was favored as much as a more positive evaluation of the existing transportation system. This letter represented a turnabout by the administration and was interpreted in the press as a rejection of the plan.

There were other public relations problems. The plan was often confused with another statewide plan being released by Caltrans at the same time that the board's plan was being debated. The "other plan," known as the "Six-Year Highway Program," proposed sharp reductions in funding for new highway construction. This drew negative comment from highway interest groups who, in turn, put pressure on the governor and Caltrans for changes. The two documents were often confused, with criticism of the highway plan spilling over onto the statewide transportation plan.

In March 1977, a final hearing on the plan was held. The board made a few minor changes and transmitted the plan, now entitled, *California Transportation Plan — Recommended Statewide Transportation Goals, Policies and Objectives*, to the legislature. It had become evident during the development of the plan that it could deal adequately only with policy issues and not with implementation. A decision was made by the board to submit the plan in fulfillment of the "goals, policies and objectives" requirement of AB69 rather than as a statewide transportation plan.

Due to the controversy generated by the plan, legislative approval was never granted. Instead, another piece of legislation, Assembly Bill 402 (AB402), passed in September 1977, changed the direction of statewide transportation planning in California.

This legislation rescinded the requirements of legislative approval of a goals, policies and objectives statement set out in AB69. The state and regions were still to prepare transportation plans biannually, but the

focus of the statewide transportation planning process shifted to the annual preparation of both state and regional transportation improvement programs (TIPs) as required by federal regulations. TIPs are annual and five-year descriptions of individual transportation projects, new and on-going, with funding sources for each project specified. Each year, 43 regional TIPs and a statewide plan were to be developed and then modified to insure consistency between the state and regional programs. The emphasis placed in AB402 on the TIP process represented a move away from the policy orientation of the proposed statewide plan.

CONCLUSIONS

Although California's statewide transportation plan was not adopted into law, the ideas it generated are likely to influence transportation planning in California and other states. The plan represents a truly multi-modal approach; the relationships between modes are dealt with as well as the characteristics of individual modes themselves. The attempt to integrate transportation goals with other statewide goals, such as environmental quality and social equity, is also important.

The close attention given to the different roles of the private and public sectors, and of federal, state, regional, and local government is noteworthy, particularly the delineation of a state role. In the past, due to massive federal funding, states have tended to follow federal priorities rather than establish their own. The California plan attempted to assert more state control in the area of transportation planning.

Proposed policies, such as user charges to pay the cost of transportation services and the deregulation of transportation industries to promote more efficient service, directly challenge the status quo and represent the kinds of policies often sidestepped in transportation planning.

The scope of the plan and the level of detail with which it treats transportation issues, particularly in the 15 background papers, make it a model for other states to follow. Although each state has its own combination of transportation needs, as well as its particular political climate, lessons may be learned from the California experience in gaining acceptance for comprehensive planning.

REFERENCES

1. **Assembly Bill 69**, Chapter 1253, Statutes of 1972, California Legislature, December 1972.
2. **Assembly Bill 402**, Chapter 1106, Statutes of 1972, California Legislature, September 1977.
3. **Background Study — Plans and Programs of State Agencies which Affect Transportation**, Issue Paper No. 3, Peter R. Oswald, California Transportation Plan Task Force, Sacramento, March 1976.
4. **Background Study — Characteristics of Commodity Movement in California**, Issue Paper No. 6, Paul T. McElhiney, California Transportation Plan Task Force, Sacramento, April 1976.
5. **California Transportation Plan — Policy Element**, Draft Report, California Transportation Plan Task Force, Sacramento, October 1976.
6. **California Transportation Plan — Recommended Statewide Transportation Goals, Policies and Objectives**, California Transportation Plan Task Force, Sacramento, March 1977.
7. "Development of the California Transportation Plan: 1973-1977," in **Transportation System Analysis**, Transportation Research Record No. 677, National Academy of Science, Washington, D.C., 1978.
8. **Competing Demands for Public Resources: Needs and Deficiencies**, Issue Paper No. 5, Stephen L. Gould, California Transportation Plan Task Force, Sacramento, April 1976.
9. "Draft Environmental Impact Report," prepared for the draft **California Transportation Plan — Policy Element**, California Transportation Plan Task Force, Sacramento, October 1976.
10. **Economic Role of the State in Transportation**, Issue Paper No. 13, California Transportation Plan Task Force, Sacramento, June 1976.
11. **Energy and Transportation**, Issue Paper No. 12, Wayne F. Hoffman, California Transportation Plan Task Force, Sacramento, July 1976.
12. **Environmental Impacts: Air Quality, Natural Environment and Noise**, Issue Paper No. 11, Wayne F. Hoffman, California Transportation Plan Task Force, Sacramento, May 1976.
13. **Financing California Transportation**, Issue Paper No. 15, California Transportation Plan Task Force, Sacramento, July 1976.
14. **Institutional Roles and Statutory Requirements**, Issue Paper No. 8, Stephen L. Taber, California Transportation Plan Task Force, Sacramento, April 1976.
15. **Inventory of Transportation Facilities and Equipment**, Issue Paper No. 7, Mehdi Morshed, California Transportation Plan Task Force, Sacramento, April 1976.
16. **Movement of People in California**, Issue Paper No. 4, Peter L. Hathaway, California Transportation Plan Task Force, Sacramento, March 1976.
17. **Selected Demographic and Economic Forecasts**, Issue Paper No. 2, Walter E. Gillfillan, Noreen Roberts, and Pauline Sweezey, California Transportation Plan Task Force, Sacramento, March 1976.
18. **Special Topics in Transportation: 1) The Transportation Disadvantaged, 2) Labor Impacts**, Issue Paper No. 9, Peter L. Hathaway, California Transportation Plan Task Force, Sacramento, April 1976.
19. **Special Topics in Transportation: 3) User Safety and System Security, 4) Emergency Situations**, Issue Paper No. 9(a), Peter L. Hathaway, California Transportation Plan Task Force, Sacramento, May 1976.
20. **Statewide Interest and Significance, Issue Paper No. 1**, Stephen L. Taber and Randall Pozdena, California Transportation Plan Task Force, Sacramento, April 1976.
21. **Transportation and Land Use, Issue Paper No. 10**, Peter R. Oswald, California Transportation Plan Task Force, Sacramento, May 1976.

Chapter 2

INDIANA TRANSIT MANAGEMENT ASSISTANCE PROGRAM

The trend toward public ownership and operation of local transportation companies has been accompanied by the establishment, in many states, of formal state transportation departments (DOTs) that have administrative, regulatory, and funding authority. These departments also act as the conduit for federal transportation funds that support part or all of the planning, capital investment and/or operating costs for urban and rural public transportation. Some 40 multimodal DOT's have been created in states throughout the country.

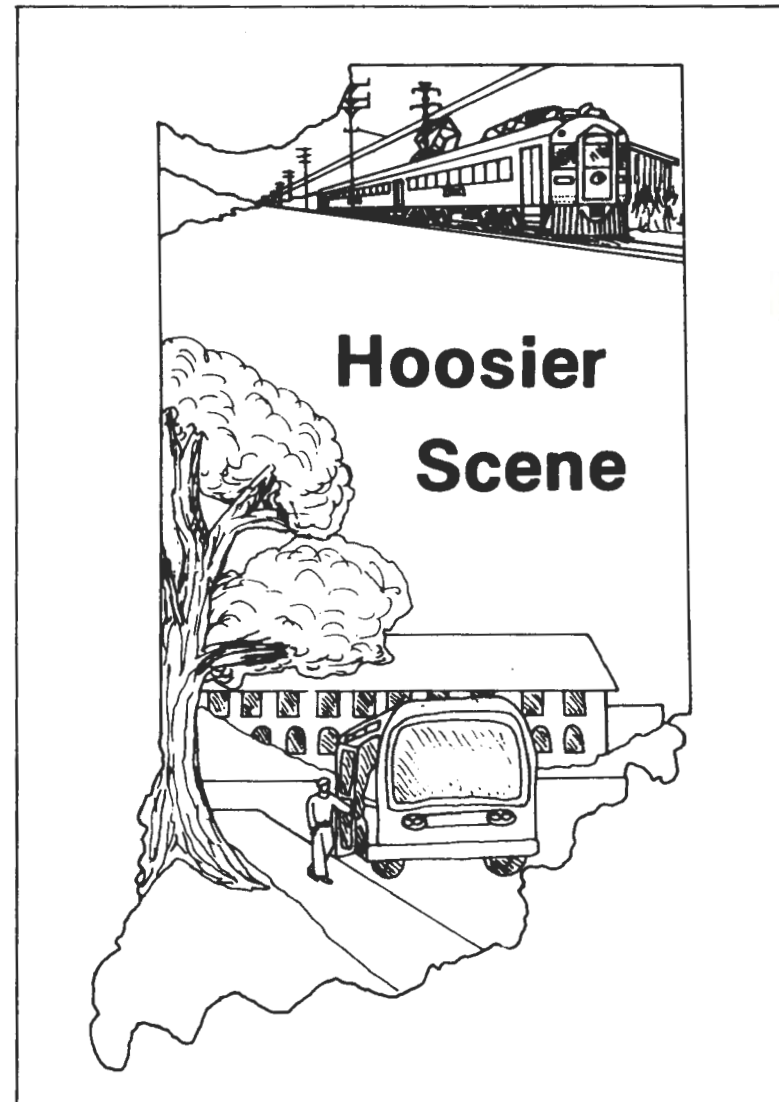
Among the remaining states there are a variety of organizational arrangements which provide the functions of a DOT without the formal legal designation. One of the most unusual and productive of these arrangements is in Indiana where the state land grant institution, Indiana University, through its Institute for Urban Transportation, has served as the state DOT for public transit.

Many of the multimodal transportation agencies around the country were created not only to serve the transportation needs of their citizens but also to allow the state to take full advantage of federal mass transportation funds. These agencies often encompass the functions of the older highway departments as well as planning and programming for other modes of transportation.

Indiana has many of the same transportation needs as other states. Its formal transportation agency, however, a traditional highway department, was not developed or staffed to work on such transportation problems as commuter rail, intercity bus, transit management, or services to special user groups.

Because of these limitations, the transportation needs of several metropolitan areas in Indiana could not be met. These areas included such diverse parts of the state as: the city of Indianapolis; the city of South Bend; the city of Gary, to include those suburbs of Chicago, Illinois contained within Indiana's borders; and the Louisville, Kentucky suburbs of New Albany and Jeffersonville. In addition, prior to 1975, there were nine cities, each with less than 50,000 people, that needed assistance in their efforts to offer various forms of transit services. The poor, elderly, and/or handicapped of rural Indiana also required public transportation services.

In 1975, the Indiana legislature enacted Public Law 22, creating the Division of Public Transportation (DPT). The DPT was designed to assist local public transit agencies and administer the state's role in securing federal transportation funds. Although the DPT was established by the legislature, funds necessary for its operation were not appropriated.



The governor of Indiana, to offset the resulting deficiency in multimodal expertise in general, and transit management in particular, then developed a special staff within the governor's office.

The governor's transportation program was designed primarily to provide transit management assistance to small urban areas which had only recently gained control over what were once privately owned transit systems. These small, publicly owned transit systems were encountering difficulties because of the need to supply business and transit expertise necessary for a smoothly running, efficient transit system. The assistance program focused on providing local transit operators with a wide range of general information and site-specific management and technical advice.

In moving ahead with the transit assistance program, the governor's office sought help from Indiana University's Institute for Urban Transportation (IUT). The charter of the university, as with most land grant institutions, defined a role which included service to the state, and since there were no subsequent laws or regulations prohibiting the university from serving research and other ad hoc needs of the state, Indiana University has become a valuable resource to past and present Indiana administrations. The university's previous service to the state had been varied, including, for example, the preparation of the state rail plan for the Federal Railroad Administration and the Section 701 City Planning Development grant proposals to the U.S. Department of Housing and Urban Development. The university was called upon by the governor again in 1975, to serve many of the functions of a state department of transportation for public transit.

The following discussion of Indiana's transit assistance program is divided into three sections. The first gives an historical and political perspective on how Indiana, as one of the states without a formal department of transportation, has been able to effectively organize to meet its varied transportation needs (see Table 1). The second part describes the specific program which was developed and implemented, followed by some projections for the future.

DEVELOPMENT OF INDIANA'S TRANSPORTATION PROGRAM

Although the university's Institute for Urban Transportation has effectively substituted for a state DOT, time and effort were needed to make things work. Several study groups, commissions, agencies, and legislative sessions were involved in the decision-making process.

Elected officials and private citizens expressed their need for expanded means of transport over and above the ever-present private automobile. The federal government had matching funds available for transit planning, capital, and operating expenses if Indiana could establish a unified transportation program as well as a mechanism for distributing the money.

Indiana's need for an agency which could work on a variety of transportation problems was first officially recognized in 1974, when the Indiana legislature, in an attempt to establish statewide transportation policy, formed the Mass Transportation Study Committee (MTSC).

The 1974 amendments to the federal Urban Mass Transportation Act provided federal funds for individual states to develop multimodal transportation plans. Taking advantage of UMTA funds for state transit management assistance projects, the governor's office initiated a mass transit review in addition to the MTSC investigation. The governor's office contracted with the Institute for Urban Transportation (IUT) of Indiana University's School of Business to carry out a comprehensive study of transit operations in Indiana.

IUT was asked to make an inventory of mass transit services in the state. In addition, IUT was charged with examining transit vehicles and future service alternatives, the transportation requirements of elderly, handicapped and poor residents in the state, and determining how the state could assist local governments to plan and administer transit services.

The findings and recommendations resulting from the Institute's work were reported in the *State of Indiana Mass Transportation Technical Study, 1975* and are summarized in Table 2. The study characterizes transit in Indiana as too conventional in its approach to serving the transportation needs of the area; not providing services tailored to the needs of the transportation dependent; and in need of economic, technical, and managerial assistance. Management of the smaller transit properties was rated so poorly, in fact, that the orderly completion of the transit inventory phase of the study was severely hampered.

Meanwhile, MTSC, after conducting public hearings and other research, proposed legislation that would help establish the legal groundwork for future transportation development in Indiana. In line with many of MTSC's suggestions, the legislature, in 1975, enacted several measures to allow multimodal transportation programs to progress. Specifically, this legislation exempted transit operators from the state income tax, permitted counties to form public transportation authorities

TABLE 1 INDIANA PUBLIC TRANSPORTATION PROGRAM DEVELOPMENT

Indiana Legislature		Indiana Office of the Governor
1974	Mass Transportation Study Commission formed.	
1975	Legislature acts on many Study Commission recommendations; establishes: <ul style="list-style-type: none"> • Public Transportation Advisory Committee • Division of Public Transportation • \$2.5 million appropriation for a matching grant program. 	<p>Transportation study carried out by Indiana University's Institute for Urban Transportation.</p> <p>State Planning Service Agency in the Office of the Governor is expanded to include: <ul style="list-style-type: none"> • Public Transportation Advisory Committee, and • Division of Public Transportation. </p> <p>Indiana Mass Transportation Improvement Project (IMTIP) is formed.</p> <p>Indiana University's Institute for Urban Transportation is selected to carry out IMTIP.</p>
1976	Legislature rejects bill to create multimodal DOT. Legislature continues matching grant program with \$2 million appropriation.	<p>Public Transportation Advisory Committee establishes comprehensive goals and objectives for transit which were approved by the legislature.</p> <p>IMTIP is developed and carries out many state and local technical assistance projects (1976-1979).</p>
1977	Legislature rejects bill to create multimodal DOT. Legislature continues matching grant program with \$2 million appropriation for two years.	IMTIP continues its work.
1978	Legislature rejects bill to create multimodal DOT.	IMTIP continues its work.
1979	Legislature appropriates \$25, 185 to fund Division of Public Transportation. Legislature continues matching grant program with \$4.25 million appropriations for FY 79 and FY 80.	Indiana University's Institute for Urban Transportation continues its local transit management assistance program.
Source: Adapted from information in References 1-13.		

(PTAs), permitted those PTAs to levy local taxes on employment wages, and allowed towns to operate or subsidize public transit services.

Although the study commission did not suggest the use of state funds, the legislature appropriated \$2.5 million to assist transit operators in meeting the federal government's matching fund requirements for capital and operating expenses. In addition, to complement and administer the transit assistance appropriation, other legislation was enacted to establish a Public Transportation Advisory Committee (PTAC) and a Public Transportation Division as part of the Office of the Governor's State Planning Service Agency. The PTAC was to represent both transit users and operators in transit-related government programs. The Public Transportation Division was to administer the state's transit-related programs. Jointly, the two groups were to administer the transit aid appropriation.

The Public Transportation Advisory Committee was directed by the legislature to work with the governor's Public Transportation Division to establish goals and objectives for transit development projects in the state. Goals were further delineated as follows:

- 1) Provide quality mass transportation in Indiana to meet the needs of the general traveling public, especially those without ready access to other means of transportation.

- 2) Provide for the transit needs of special groups, particularly the elderly and handicapped.
- 3) Provide an alternative to the automobile in a period when the cost of private transportation had increased greatly.
- 4) Insure that Indiana's cities would be able to attract new industrial, mercantile, warehousing and other economic activity, and to retain existing enterprises.
- 5) Help meet state and federal goals for safety, conservation of energy, and control of environmental pollution.
- 6) Recognize that rail commuter service may be appropriate in certain densely populated regions of the state.
- 7) Preserve and upgrade existing mass transportation services and facilities and encourage new, innovative forms of mass transportation.

To achieve these goals, the Public Transportation Advisory Committee also identified the following objectives for transit development through the year 1983:

- 1) Provide state funds to match federal mass transportation grants; encourage a systematic program of replacing transit equipment; and encourage improvements in transit maintenance facilities.

**TABLE 2 SUMMARY OF FINDINGS AND RECOMMENDATIONS OF
1975 STATE OF INDIANA MASS TRANSPORTATION
TECHNICAL STUDY**

Finding	Recommendation
1. Mass transit is only marginally healthy.	More federal aid should be sought by encouraging state and local governments to provide more funds for matching grants.
2. Mass transit services are highly conventional.	Mass transit service innovations should be encouraged.
3. Transportation services for the elderly, handicapped, and poor are uncoordinated and inadequate.	Services should be coordinated and special services initiated.
4. Smaller transit systems, especially, require technical assistance to improve planning and managerial capabilities.	A program to provide assistance to transit planners and managers should be established.
5. The state must undertake major new funding and technical assistance programs to improve mass transit.	Transit interests should be represented within the state's general transportation planning efforts.
Source: <i>State of Indiana Mass Transportation Technical Study.</i>	

- 2) Encourage all areas of the state to improve transit services for elderly and handicapped, poor and rural citizens.
- 3) Encourage the development of special service and innovative approaches to mass transit; state laws that might hinder these services should be revised.
- 4) The state of Indiana, to assure that local transit agencies have sufficient local funds to match available federal and state monies, should authorize several ways in which local governments can fund mass transportation.
- 5) Work to improve the quality of mass transportation operations and management and marketing of mass transit service to the public.
- 6) Help preserve and upgrade rail mass transportation services and facilities.

To implement these transportation goals and objectives, the Office of the Governor, responding to recommendations by the Public Transportation Division and the Public Transportation Advisory Committee, established the Indiana Mass Transportation Improvement Project (IMTIP). The governor selected the Institute for Urban Transportation of Indiana University's School of Business to run the IMTIP. A formal contract was signed, establishing the agreement, between the Office of the Governor and the university in September 1975.

THE UNIVERSITY AND THE TRANSIT IMPROVEMENT PROGRAM

The Indiana Mass Transportation Improvement Program (IMTIP) was created to provide small urban areas (populations of 50,000 or less) with assistance in transit planning and operation, and to provide the state with a mechanism for the distribution of federal transportation funds. The Institute for Urban Transportation (IUT), with a \$2.2 million planning grant from UMTA (Section 9), administered the state's mass transportation assistance program; provided technical assistance to small urban areas; and assisted those same communities in preparing UMTA capital grant applications.

The Institute for Urban Transportation, through its role in the IMTIP serves Indiana in a number of ways. IUT assists various state officials and the Office of the Governor in formulating and implementing state public transportation policy. IUT also provides the governor's office

with the assistance necessary to administer either federal or state public transportation programs.

Under Indiana's public transportation program, the state contributes up to half of the local share required for UMTA grants. IUT serves as the clearinghouse for applications for these state funds. Final state grant awards are made after approval by the governor.

All applications from transit operators in Indiana for UMTA grants are reviewed by IUT. This process, known as the A-95 review, includes an assessment of the local planning activities, work programs, and capital and operating assistance requests. In the first eight months of 1978, IUT reviewed 29 applications for UMTA funds.

IUT also reviews applications and recommends recipients for the 16(b)2 program for the Indiana Commission on Aging and Aged. Section 16(b)2 is a capital grant program, funded by UMTA, for private nonprofit human service agencies providing special transportation services to elderly and handicapped persons. Under agreement with the Commission, IUT developed the transit development plans (TDPs) required by UMTA for the eight counties in Indiana where private nonprofit organizations were applying for Section 16(b)2 capital grants. IUT also provides technical assistance to other state agencies involved with special transportation services.

A major effort of IMTIP is to encourage the development of transportation advisory committees (TACs) in counties around the state. The TAC is designed as a forum for human service agencies, public and private transportation providers, and users to discuss the transportation needs of the community. The TAC also assesses existing transportation resources, examines transportation needs, establishes goals and objectives for local transportation planning, and serves an advisory function to government agencies by recommending ways to improve transportation services.

In 1975, IUT had conducted an inventory of mass transit services in Indiana which contributed significantly to the development of a state transportation policy. The transportation needs of the state were further defined in 1978 when IMTIP conducted an inventory of specialized transportation resources in Indiana. The inventory included all human service agencies, taxi operators, and special programs operated by public transit systems that provide transportation to the elderly, handicapped, and economically disadvantaged.

The IMTIP program stresses information collection and information exchange. The information program developed by IMTIP was designed to help transit operators, decision-makers and private citizens

keep abreast of management techniques and innovations in public transportation.

The statewide information program has two major functions. The first involves the collection and analysis of information. IMTIP collects data and information through local technical studies and by ongoing research activities.

The other function keys on dissemination of collected information. In this activity, information is provided to the relevant public in various forms including special information sharing conferences, direct consultation with transit operators, and bi-monthly newsletter, *That's About I.T.* (Indiana Transit)*. In addition, a library of public transportation materials, available to IMTIP staff, transportation planners, managers, and elected officials was established.

IMTIP also sponsors an annual statewide conference for transit planners, public officials, and members of private and public agencies. Topics addressed at the Fall 1978 conference, for example, included marketing research, public information, specialized transportation services, system planning, and vehicle maintenance.

One of the major goals of IMTIP is to help cities in Indiana, particularly the smaller ones, receive all the federal transit aid to which they are entitled. To help the cities qualify for federal capital grants, IMTIP developed UMTA's required TDPs for nine Indiana cities: Michigan City, LaPorte, Marion, Richmond, Columbus, Bloomington, Washington, New Castle, and Wabash. IMTIP also assisted each city in preparing the complicated UMTA grant application which would implement the recommendations found in the TDP.

IMTIP includes a program of direct technical assistance to small urban transit systems designed to provide information and skills generally not available in smaller communities. The IMTIP staff assists the small transit operator in a variety of ways. IMTIP can act simply as a reference to answer quick questions on such issues as operations problems, state or federal legislation, or regulations. On the other hand, IMTIP staff may go to a community and work directly with the transit operator, first learning the system in order to resolve such intricate problems as routing, scheduling, equipment selection, maintenance, servicing, planning, marketing, accounting, and data collection.

IMTIP has been helping transit operators to understand and work with new and generally unfamiliar accounting procedures. The new procedure, Financial Accounting and Reporting Element (FARE), is a system of data collection and reporting recently required both by federal and Indiana regulations.

In addition, local transit agencies are assisted by IMTIP with the development of personnel procedures, e.g., job descriptions for management, operating and maintenance personnel. IMTIP helps to produce site-specific operating manuals and written procedures which outline employee work rules, requirements, and policy.

IMTIP also works with local transit operators to develop an organizational structure that can both operate the local system and make the system attractive to the public. Once this structure is developed, IMTIP helps with marketing and promotional strategies.

One of the most beneficial efforts of the local technical assistance team is in helping to establish a preventive maintenance program which reduces maintenance costs and enables the local transit agency to offer better, more dependable service.

The following synopses comprise a representative sampling of IUT's efforts in the IMTIP local transit assistance program.

In Bloomington, IUT completed a technical study which recommended purchasing new vehicles, shelters, etc., and providing new services. IUT assisted in the preparation of an UMTA Section 3 grant application for the city to implement the recommendations. UMTA approved the grant application in 1978. IUT also developed a transportation improvement plan for the Indiana University campus.

In Columbus, IUT completed a similar technical study, which recommended purchasing new vehicles, shelters, etc., and assisted in preparation of an UMTA Section 3 grant application to implement recommendations. UMTA approved the grant in 1978. IUT also assisted in developing a preventive maintenance recordkeeping program.

West of South Bend, in LaPorte, IUT completed a technical study that advised purchasing small buses, station wagons, and a lift-equipped van for use in a combined fixed-route and demand-responsive system. IUT helped prepare an UMTA Section 3 grant application to implement these recommendations. However, approval of the application was delayed until the rules for funding under the new federal Surface Transportation Act of 1978 were promulgated. This Act amended the Urban Mass Transportation Act of 1964 and established a funding program for small urban and rural areas (Section 18).

Marion, in the eastern part of the state, was the subject of an IUT technical study in 1976. Seven medium-sized buses were recommended as well as a new maintenance and storage facility. Again, IUT assisted in preparation of an UMTA Section 3 grant application, which was approved by UMTA in April 1978.

In the northeast corner of the state, at Michigan City, IUT completed a technical study that recommended purchasing six medium buses and other facilities. Once more, IUT assisted in preparing the Section 3 grant application, which UMTA approved in 1978. IUT also analyzed the effect of a fare increase on ridership, revenue, and level of service; redesigned routes and schedules; and helped locate buses for the city to lease in order to keep the system running until the new vehicles arrived.

In a separate, yet related program, the Institute for Urban Transportation conducted management performance audits of the mass transit systems in Bloomington, Columbus, LaPorte, Marion, Michigan City, and Lafayette. The audits provided an instructive examination and evaluation of each respective transit system, the system's goals and objectives, methods of control, means of operation, and human and physical resources. The audits helped management achieve more efficient administration and provided the public with a way to evaluate the system's effective use of tax dollars. In 1979, IMTIP was undertaking three such transit management performance audits in the cities of Anderson, Evansville, and Terre Haute.

In response to a request by the Chicago, South Shore and South Bend Railroad to the Interstate Commerce Commission (ICC) to discontinue passenger service, IMTIP conducted an impact study for the state. Undertaken in 1977, the study gathered information needed to allow the governor and governmental agencies to properly evaluate the costs, benefits, and other impacts of the railroad's request. Through IMTIP recommendations, a four-county transportation district was formed in northwestern Indiana to work on improving the electrified commuter service to Chicago offered by the South Shore Railroad. The Indiana legislature appropriated funds to allow the South Shore to continue its operations, with the result that the ICC denied the railroad's request for discontinuation of passenger service.

In addition to IMTIP work, the Institute for Urban Transportation also undertakes other projects, funded from various sources. For example, in September 1979, IUT produced a *Handbook of Guidelines for Management Performance Audits* to instruct members of the transit community in the preparation of management performance audits. In conjunction with Purdue University, IUT worked on a study for UMTA entitled *A Comprehensive Analysis of Transit Efficiency and Productivity*, which was published in late 1978. In 1977 and 1978, under contract with two transit systems in Kentucky, IUT conducted management performance audits for the Transit Authority of River City in the Louisville area, and the Transit Authority of Northern Kentucky in

the Covington area. This experience helped IUT to incorporate management performance audits into the IMTIP local technical assistance program. In 1979, IUT planned to conduct management performance audits and training programs for three separate transit operators in Ohio.

THE FUTURE OF IMTIP

In its 1978 sessions, the Indiana legislature again chose not to create a single transportation agency with administrative, regulatory, and funding authority that could both oversee the development and operations of public transit and development and maintenance of street and highway systems. It is expected, however, that Indiana's DOT issue will be resolved when the function of the state's official transportation agency, the Highway Commission, is reviewed under the state's mandatory "Sunset Law." Under this law, the Highway Commission, as well as every other state executive agency, undergoes periodic review to determine if its existence is still warranted, if it should be revamped, or if it should be eliminated.

In 1979, an Indiana General Assembly committee reviewed the function and working of the state Highway Commission. Based on the review, the committee proposed legislation that would create a new organizational structure for the state's transportation agencies.

To be considered during the 1980 legislative session, this proposed reorganization would bring the various transportation agencies together under the umbrella of a transportation coordinating board. The board will set policy for three separate transportation departments established under this plan: the Department of Highways, the Transportation Planning Office, and a department which would handle all transportation issues except highways.

IMTIP may be replaced by the 1980 legislature. However, because Indiana University, in addition to its transportation program, plays many quasi-official roles for the state, it is unlikely that the University's Institute for Urban Transportation will lose all of its transportation responsibilities for the state. New legislation may very well transfer the present administrative functions to a new transportation agency or to an expanded Public Transportation Division while allowing IUT to continue its information sharing, local technical assistance, and transit management performance audit programs.

REFERENCES

1. **City of Columbus, Indiana Mass Transportation Technical Study**, James E. Flynn et al., Indiana Mass Transportation Improvement Project, April 1977.
2. **Guidelines for Preparation of Sunset Agency Report**, Internal Report, Perry J. Maull et al., Indiana Mass Transportation Improvement Project, August 1978.
3. Interview, George Smerk, Executive Director, Indiana Mass Transportation Improvement Project, November 1978.
4. "Looking for Transit Answers," George Smerk, in **Mass Transit**, Volume 5, Number 1, January 1978.
5. **Newsline — Current Research in Public Transportation Development**, Transportation Research Board, Volume 4, Number 8, November 1978.
6. **The Recent Development of a Mass Transportation Policy for Indiana**, Internal Report, Perry J. Maull, Indiana Mass Transportation Improvement Project, 1978.
7. **State of Indiana Mass Transportation Technical Study**, Mass Transportation Study Commission, Indiana Legislature, 1975.
8. **State of Indiana Transportation Inventory**, Jeff McReynolds et al., Indiana Mass Transportation Improvement Project, 1978.
9. "The State Role in Management: A Look at Indiana" George Smerk, in **Transit Journal**, Volume 3, Number 3, Summer 1977.
10. Telephone Interview, Perry J. Maull, Administrative Director, Institute for Urban Transportation, Indiana University, March 1979.
11. **That's About I.T.* (Indiana Transit)**, Institute for Urban Transportation, Volume 3, Number 12, December 1977, Bloomington.
12. **That's About I.T.* (Indiana Transit)**, Institute for Urban Transportation, Volume 4, Number 1-8, January-October 1978, Bloomington.
13. **Indiana Transit**, Indiana State Planning Services Agency, Division of Public Transportation, Volume 5, Number 3-5, May-September 1979, Indianapolis.

SECTION II

CHAPTER 3

Minnesota Paratransit Program

CHAPTER 4

West Virginia TRIP

CHAPTER 5

Wisconsin Demonstration Projects

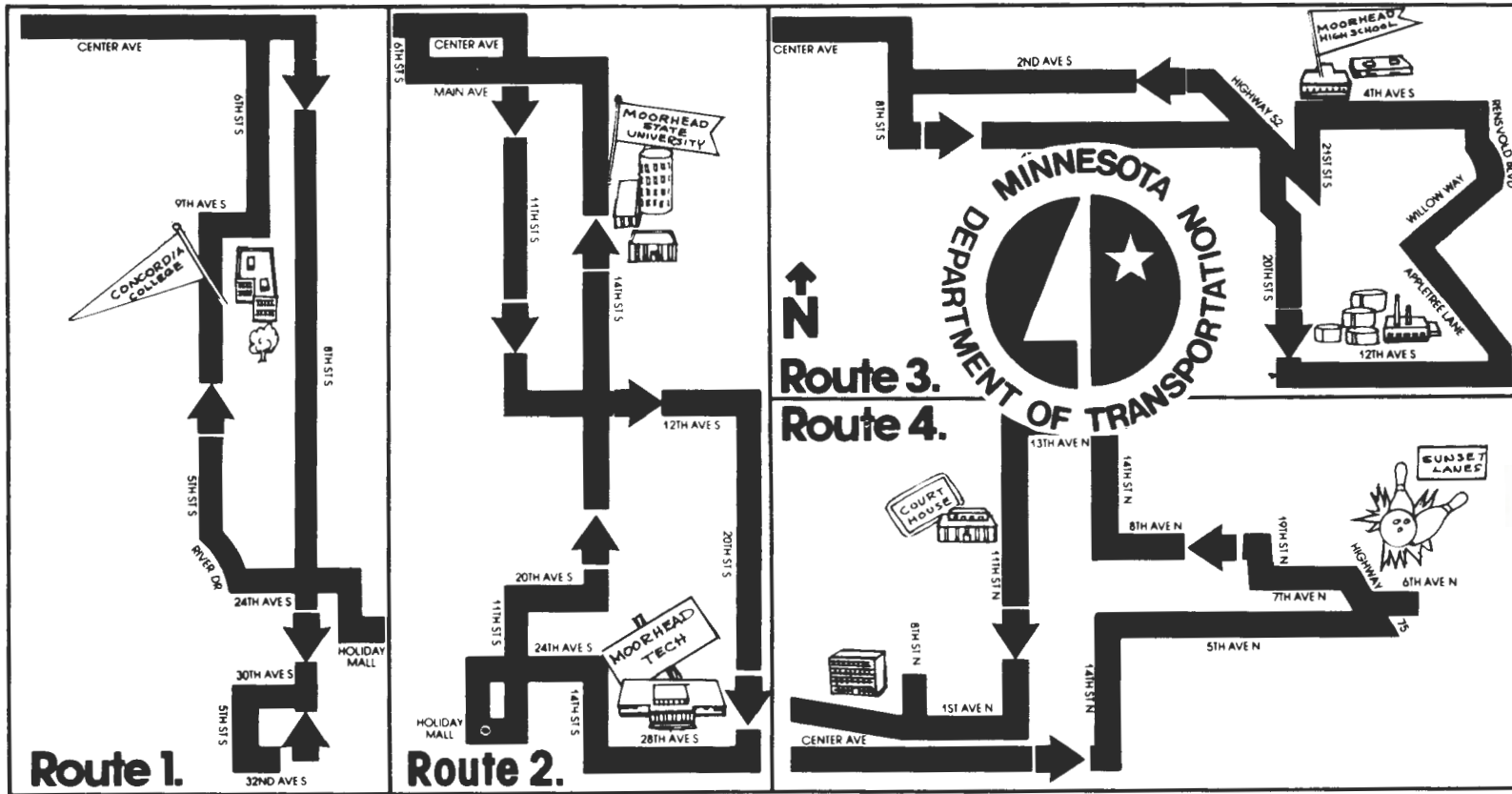
Chapter 3

MINNESOTA PARATRANSIT PROGRAM

In the mid-1970s, efforts to improve transit in Minnesota were initially concentrated on establishing rail and increased bus service to the downtown areas of the state's largest metropolitan area, Minneapolis-St. Paul. However, a study was released showing that only 17 percent of the jobs in the Twin Cities region were actually located in the two downtown areas. Consequently, conventional bus and rail transit would do little to meet the diversified transportation needs of most people in the area.

The 1975 state legislature directed the Twin Cities Metropolitan Transit Commission to abandon its plan for rail or bus expansion and to concentrate instead on promoting alternative forms of transit tailored to the needs of residents. In May 1977, the legislature approved a \$4.5 million two-year program to help launch a variety of paratransit experiments in urban and rural settings.

The legislative action brought Minnesota to the forefront of innovative paratransit development. Although many of the Wisconsin projects described in Chapter 5 can be considered paratransit services, that state's program was designed to augment or initiate regular transit programs on a demonstration basis. Prior to the Minnesota act, no state had ever appropriated funds specifically for paratransit programs on such a potentially wide scale. Minnesota also became the first state to finance a



demonstration program specifically designed to provide a comprehensive review and assessment of paratransit services.

OBJECTIVES OF THE MINNESOTA PARATRANSIT PROGRAM

As many of the state's transit commissions began whittling down bus services to cut financial losses, state officials hoped that vanpools, dial-a-ride, and other paratransit services might soothe towns that had lost regular bus routes and satisfy still other communities that had abandoned hope of acquiring any bus service at all. Most importantly, because of its flexible routes and schedules, paratransit would be able to focus on small areas or groups of passengers with unique transportation needs.

Responsibility for administering the paratransit program was assigned by the legislature to the Minnesota Department of Transportation (MinnDOT), and guidelines for the program were structured around five principal objectives. The first three were established by the law creating the program and two additional goals were developed by state transportation planners. The five principal objectives governing the program were:

- Objective 1. To design paratransit services which will improve the accessibility and productivity of conventional transit in Minnesota;
- Objective 2. To provide effective paratransit services in areas that are inefficiently served by conventional transit;
- Objective 3. To devise paratransit services for those with mobility limitations such as the young, the elderly, the handicapped, and the poor;
- Objective 4. To use paratransit as a means of diverting single-occupant automobile drivers to public transportation; and
- Objective 5. To determine the most cost-effective means by which paratransit services might be provided. (This last objective, a comprehensive assessment of paratransit, represents the first such evaluation of its kind to be undertaken at the state level.)

In the fall of 1977, the availability of state grants to fund one-year paratransit experiments was announced. In most cases, applicants were expected to provide at least 10 percent of the project costs, except when a

particular project was found to be exceptionally promising and sufficient funds were not available locally.

In response to the announcement, over 100 preliminary project applications were submitted to MinnDOT. The applications were judged for their degree of innovation, coordination potential, the amount of local government and community support, potential for continuation, applicability to other areas of the state, and for the extent to which they satisfied the five program objectives.

Guidelines were then set to insure that funds for the \$4.5 million program were distributed fairly throughout the state, so that all eligible recipients would be judged by the same criteria. The guidelines were formulated to achieve a geographic balance of projects, a balance between urban and non-urban projects, and between public and private operators. Under the program's resource allocation guidelines, these urban areas were allocated \$2.25 million, small urban areas received \$1.8 million, and rural areas were allocated \$0.45 million.

PROGRAM OVERVIEW

As the Minnesota Paratransit Demonstration Grant Program got underway, small transportation networks began across the state, carrying passengers to medical clinics, shopping centers, industrial complexes, churches, colleges, and Indian reservations. By the fall of 1979, 37 paratransit experiments were in operation in Minnesota and contracts had been signed for five more.

In order to provide a framework for conducting a comprehensive evaluation of the projects, each project was considered to be within one of five population classes. Services were aimed at one of three travel markets: home-to-work/school, general purpose, or human services. Grouping the projects by population class and primary market helped to insure comparisons between projects with similar supply and demand characteristics.

The paratransit projects characterized as "home-to-work/school" were designed primarily for school and business commuters. Paratransit projects in the human services category were targeted to the needs of the elderly and the handicapped, and were offered exclusively to those persons, or combined with other service markets such as subscription service offered to commuters during peak periods. The third type of service, general purpose projects, was developed for the general public and tailored to fit a full range of trip purposes. General purpose services

included route deviation during off-peak periods or dial-a-ride services offered to the general public.

A geographic overview of 33 service projects underway as of the fall of 1979 is presented in Figure 1. Projects were located throughout the state, with 12 projects in the Twin Cities Metropolitan area.

Grants were awarded to both public and private operators, and the services provided covered a range of paratransit services, including shared-ride taxi, dial-a-ride, fixed route deviation, a volunteer driver

program, commuter vans, subscription vans and buses, shuttle service to colleges, and special transportation for the elderly and handicapped.

Each project was classified into one of five population groups:

Class A: population over 50,000 (e.g., Twin Cities and Duluth);

Class B: population 30,000 to 50,000 (e.g., St. Cloud);

Class C: population 10,000 to 30,000 (e.g., Fergus Falls and Willmar);

Class D: population 2,500 to 10,000 (e.g., Le Sueur and Montevideo);

Class E: population under 2,500 (primarily rural).

Table 1 lists all of the paratransit projects underway as of Fall 1979 by population class, travel market, amount of state funding, and total cost. Of projects under contract, the state had subsidized programs in communities with populations ranging from 10,000 to 30,000 with proportionately more money. However, most of the funds for newer projects still being developed were earmarked for the larger urban centers.

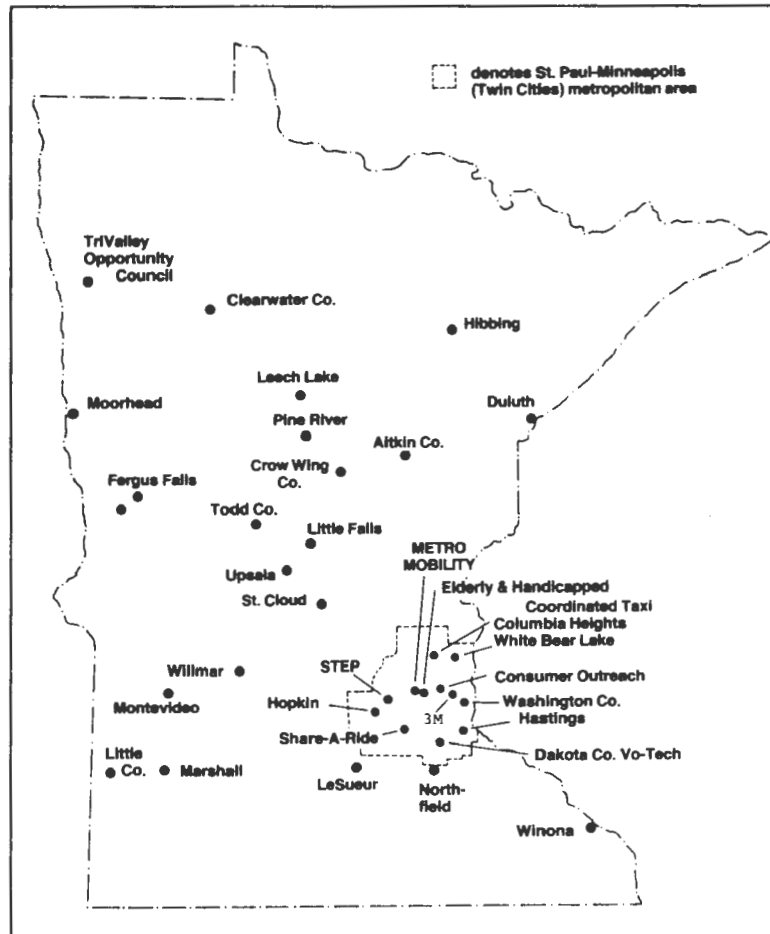


Figure 1 Location of Minnesota Paratransit Demonstration Projects (As of October 1979)

SAMPLE PARATRANSIT PROJECTS

All the projects were designed to address one or more of the principal program objectives discussed earlier. A number of paratransit demonstration projects were devised to improve the accessibility and productivity of existing, conventional transit.

For example, the city of Montevideo, which operated a two-vehicle conventional transit system, decided that additional paratransit services were needed to bolster the existing service. The city applied for a paratransit demonstration grant to help finance a dial-a-ride service which it hoped would improve travel opportunities for those with limited mobility, maintain or improve existing transportation services, and increase the efficiency of the regular-route transit service by testing new management philosophies. In February 1978, the city began mid-day, evening, and weekend dial-a-ride service, utilizing a single 15-passenger van with a wheelchair lift.

The city of Moorhead, home of Concordia College and Moorhead State University, operated a conventional transit system of eight buses during regular working hours. In its application for a demonstration grant, Moorhead proposed that evening and peak-period shuttle service be implemented between the two colleges and the high density housing areas that the bus system did not serve. In its application, the city stated that one objective of the service would be to increase the productivity of

TABLE 1 FUNDING OF MINNESOTA PARATRANSIT OPERATIONS

PROJECT	STATE FUNDING	TOTAL FUNDING		STATE FUNDING	TOTAL FUNDING
CLASS A: POPULATION OVER 50,000			CLASS D: POPULATION 2,500-10,000		
<i>General Purpose</i>			<i>General Purpose</i>		
Columbia Hts. Shared Taxi	113,229	12,810	LeSueur Subscription, Dial-A-Ride	76,553	85,059
Hastings Subscription	91,000	101,111	Lincoln Co. Dial-A-Ride	57,233	63,592
Hopkins Shared Taxi	104,070	115,636	Montevideo Dial-A-Ride	60,313	67,014
Moorhead Evening College Serv.	113,380	125,978	Tri-Valley Route Deviation	90,253	100,281
White Bear Lake Dial-A-Ride (MTC)	306,000	306,000			
<i>Home to Work/School</i>			<i>Elderly/Handicapped Services</i>		
Consumer Outreach	88,040	88,040	Little Falls Route Deviation	18,145	20,161
Dakota Co. Vo-Tech Commuter Van	100,996	103,529	TOTAL	302,497	336,107
Duluth Van Pool	114,459	127,177	CLASS E: POPULATION UNDER 2,500		
3M Share-A-Van	8,100	9,000	<i>Home to Work/School</i>		
Share-A-Ride	28,000	28,000	Crow Wing Co. Commuter Van	9,000	10,000
<i>Elderly/Handicapped Services</i>			<i>General Purpose</i>		
Minneapolis Coordinated Taxi*	500,000	500,000	Aitkin Co. Dial-A-Ride	49,865	55,406
St. Louis Park Emergency Program	7,799	8,666	Clearwater Co. Route Deviation	34,986	38,873
Washington Co. Dial-A-Ride	55,520	171,484	Leech Lake Deviation, Dial-A-Ride	140,328	155,920
Metro Mobility Control Center	316,880	404,410	Pine River Dial-A-Ride	9,583	10,648
TOTALS	1,947,473	2,214,841	Todd Co. Point Deviation	39,192	43,547
CLASS B: POPULATION 30,000-50,000			Upsala Route Deviation, Dial-A-Ride	25,459	28,288
<i>Elderly/Handicapped Services</i>			TOTAL	308,413	342,682
St. Cloud Shared Taxi	86,000	96,222	GRAND TOTAL	3,252,313	3,711,149
TOTALS	86,600	96,222			
CLASS C: POPULATION 10,000-30,000					
<i>General Purpose</i>					
Fergus Falls Commuter Van	24,399	27,110			
Hibbing Route Deviation	78,650	87,389			
Marshall Intra-City Service	34,732	38,591			
Northfield Dial-A-Ride	49,954	55,504			
Willmar Subscription	170,728	189,698			
Winona Route Deviation	248,867	323,005			
TOTALS	607,330	721,297			

*This project actually is composed of three separate contracts to private taxi operators.

Source: MinnDOT, October 1979.

regular-route transit. In August 1978, the evening and peak-period shuttle service was implemented using two 19-passenger vehicles. The service is free to students, and fares are recovered through college fees.

Other demonstration projects attempted to provide effective paratransit services in areas which were inefficiently or inadequately served by fixed-route transit. It was hoped that such projects could lead to a better understanding of the relative costs and benefits of providing different types of transit services in a variety of situations. In these projects, the market group was either a particular population segment such as commuters, students, elderly, or handicapped, as was the case in Willmar, or could be defined as the general population, as in the city of Winona.

Willmar had no public intracity transportation system prior to the initiation of its subscription and route deviation paratransit project. The city had four objectives it wanted to meet: to serve students and low-income residents, to meet the special transit needs of the elderly and handicapped, to relieve traffic and parking congestion, and to promote environmental preservation and fuel resource conservation. In November 1978, the Willmar projects began operation. Three vehicles were used, including one minibus with a wheelchair lift. During peak hours, commuters utilized the subscription service. The route deviation service, with door-step access, served the elderly and handicapped population during the mid-day hours.

The city of Winona had previously been served by a privately owned transit company which went out of business in 1971. Its replacement, a limousine service, operated over a figure-eight route. Although the limousine service attained a moderate level of ridership, the community desired a system better suited to its needs, and applied for a paratransit grant to implement general purpose transit service. Winona's paratransit project was designed to increase the attractiveness of transit. Residents had the opportunity to choose different ways of getting to work, and the plan permitted additional transit service improvements in the future based on ridership demand and funding capabilities. The project got underway in December 1977. Four minibuses provided scheduled service, with a route deviation feature during mid-day hours.

Objective 3 was established by the legislature to foster paratransit projects aimed at serving individuals with mobility limitations, such as the young, the elderly, the handicapped, and the poor. The primary focus of this objective was to recognize the needs of different market groups and to design projects that meet those needs. Age, mobility limitations,

income, trip purpose, and time of day for trip making had to be considered in the design of such transportation projects.

The St. Cloud Metropolitan Transit Commission had two vehicles accessible to the handicapped and had operated a program through which eligible handicapped persons might register for the vehicles' services. However, demand for the services exceeded the capacity of available vehicles. The Yellow Cab Company proposed a shared-ride taxi service to serve elderly and handicapped persons whose limitations did not require the use of the specially equipped city vehicles. The purpose of the taxi service was to supplement the city's service by providing needed transportation to the elderly and handicapped at reduced fares. Telephone calls for transportation would be directed first to the Metropolitan Transit Commission and then forwarded to the private cab company if the city's vehicles could not handle the request. The service began in February 1978.

The Washington County Human Services Project combined both MinnDOT paratransit funds and federal Title III funds (administered by the U.S. Department of Health, Education and Welfare) to provide transportation to the elderly over 60 and the handicapped over 18. The primary goal of the service was to help elderly and handicapped individuals become more independent. Beginning in June 1978, service was provided by three minibuses equipped with wheelchair lifts. Reservations made 24 hours in advance were requested, and service was provided throughout Washington County.

The fourth objective established by MinnDOT reflects the department's interest in attempting to divert automobile drivers to paratransit or other modes of public transportation. Projects were developed which focused on marketing promotion and attractive fare structures. Two paratransit projects designed specifically toward this goal were in Fergus Falls and Dakota County.

About 150 people from Fergus Falls and surrounding rural areas are employed by D. B. Rosenblatt Company. The company applied for a paratransit grant to operate a vanpool program, hoping to decrease parking congestion, increase efficiency and plant utilization by encouraging people to arrive at work on time, help solve labor pool problems by making it easier for rural people to get to work, and to save energy and improve safety by having fewer vehicles on the road. In June 1978, the Rosenblatt Company began operating two subscription vans for employees who lived within 20 to 30 miles of the plant.

Dakota County Vo-Technical applied for a paratransit grant to offer subscription van service to students and faculty. The intention was

to reduce transportation costs, alleviate severe parking problems at school, and to provide regular transportation to the school. Under the grant, the school purchased ten 12-passenger vans, one of which was equipped with a wheelchair lift. They operate five days a week on routes to and from the Vo-Tech.

PRELIMINARY FINDINGS AND ISSUES

One objective of the Minnesota paratransit program was to determine the most efficient ways in which paratransit services might be provided. All projects funded under the state program provided information useful in examining paratransit effectiveness in servicing different markets. MinnDOT is currently evaluating paratransit, attempting to analyze each project in terms of structure and service dimensions, institutional and regulatory barriers, marketing strategies, and operational management strategies. Operating data is being collected on a monthly basis for each on-going project. This monitoring includes site visits as well as data analysis. All monthly operating data is kept in computer files for ease of processing.

By the fall of 1979, sufficient operating and ridership data had not been produced to permit a detailed analysis of the overall program. About a dozen projects had gone through the demonstration phase. Only one ceased operations. The others received an extension from MinnDOT or were continued on local funding. However, certain projects in operation have provided some preliminary findings. Ridership response to the projects seems to indicate that there is ample demand for well-developed paratransit services, although it was too early to assess how the characteristics of the population and service area influence ridership or how demand develops over time. There is also evidence in Minnesota of considerable demand for short-trip service (under three miles) provided by subscription van services at large employment sites such as the 3M plant near St. Paul, where 60 percent of the users formerly drove to work alone. At the fare levels, however, costs have not been totally recovered.

In low population areas, initial data indicates that overall impact of paratransit services on single-occupant auto drivers is minimal. In areas with populations under 50,000, the elderly and youth appear to represent a significant portion of the ridership in paratransit systems.

MinnDOT has also determined that when new services are initiated, effective marketing is essential in order to develop and maintain ridership. Reliability and punctuality are also necessary, particularly at the outset.

Several issues raised during the development of the projects have provided valuable insights and represent a major output of the program to date. The transportation department found that community objectives and receptiveness to paratransit projects varied considerably, not only from larger to smaller population concentrations, but within groups of similar sized areas. Strong local commitment and an active individual capable of working with all concerned parties are necessary ingredients for rapidly and effectively developing and implementing projects.

MinnDOT's report to the legislature noted that the use of existing vehicles and private operators may speed up the initiation of services and sometimes reduce costs, but that the involvement of private operators can create accounting difficulties if proper procedures are not employed. MinnDOT also found that publicly subsidized service need not compete unfairly with private taxi operators if the operators are encouraged to take part in project development.

The development of paratransit services in larger urban areas is much more complex due to the greater number of public agencies and interest groups involved. For example, several issues arose in the Twin Cities metropolitan area when the Metropolitan Transit Commission attempted to establish a shared-ride taxi service involving coordinated transfers from the taxis to the regular-route bus system. The taxis were to provide door to bus stop service to area residents who could complete their trips by using regular transit. To make the service more appealing, each taxicab passenger was to receive a transfer allowing him to ride city buses without additional fare. However, the local Amalgamated Transit Union (ATU) would not allow its members to accept the transfers issued by non-union taxi drivers in the suburbs, and the project was eventually abandoned. Although the Minnesota paratransit grant program was widely publicized at its inception as being free of labor constraints, program officials have emphasized their concern and careful attention to labor issues.

CONCLUSIONS

After two years of operation, the Minnesota Paratransit Demonstration Grant Program successfully implemented many projects designed to test the effectiveness and efficiency of a broad range of paratransit services in a cross section of urban and rural environments. However, the majority of these projects had been operating for only 6 to 12 months when the two-year demonstration program was to have ended

in June 1979. Thus, MinnDOT strongly urged the legislature to continue funding the paratransit demonstration program for a second two-year period to allow new demonstration projects in parts of the state where no paratransit service existed.

The first two years of Minnesota's paratransit program appear to have been generally successful. The program was established, guidelines written, applications reviewed, and grants awarded. Thirty-seven projects were funded and put into operation. To continue assaying service types paratransit can offer and to meet the objective of review and assessment, an additional two-year term with a budget of \$5.5 million for the perpetuation of the program was granted by the legislature in May 1979. Minnesota has shown that strong state commitment can do much to make convenient and reliable public transportation available to a wide range of its citizens in rural, small town, suburban and urban settings.

REFERENCES

1. "Demonstrating Paratransit in Minnesota," **AASHTO Quarterly**, Volume 7, Number 3, July 1978.
2. "Minneapolis-St. Paul: In the Vanguard," Dan Wascoe, Jr., in **Mass Transit Magazine**, October 1978.
3. **Minnesota Department of Transportation Paratransit Demonstration Program Guidelines**, Minnesota Department of Transportation, Saint Paul, September 1977.
4. **Minnesota Department of Transportation Plan: A Transportation Plan for the State of Minnesota**, Minnesota Department of Transportation, St. Paul, July 1978.
5. "The Move to Paratransit is Starting to Pick Up," Neal Pierce and Jerry Hagstron, in **National Journal**, August 1977.
6. **Paratransit Demonstration Grant Program Report**, Minnesota Department of Transportation, St. Paul, August 1978.
7. **Paratransit Demonstration Projects**, Office of Transit Administration, Paratransit Section, Minnesota Department of Transportation, St. Paul, August 1978.
8. **Public Transit Assistance and Transportation System Management Report**, Minnesota Department of Transportation, St. Paul, March 1979.
9. Telephone Interview, Judith Hollander, Planning Department, Minnesota Department of Transportation, December 1978.

Chapter 4

WEST VIRGINIA TRIP

Inexpensive public transportation is essential to people living in rural areas who do not have automobiles. Stores, medical services, community activities, and community resources often are not accessible without transportation. The rural poor, elderly, and physically or mentally handicapped are especially dependent upon public transportation to allow them to live in their own homes and retain their independence and dignity.

In West Virginia, the need for public transportation is emphasized because of the specific characteristics of the state. The predominantly rural population is unevenly scattered over the rugged Appalachian terrain and isolated valleys. According to the 1970 census, 61 percent of West Virginia's total population lived in rural areas, that is, in towns, villages, and surrounding areas with a population of less than 2500. Only 12.7 percent of the population lived in urban centers of more than 10,000, where most medical and social service centers were located.

The number of elderly people in West Virginia had been increasing, so that, in 1970, people over 60 comprised 16 percent of the state's total population. Of the West Virginians over 65, 39.1 percent were impoverished, with the more rural counties tending to have a higher percentage of elderly poor. The 1970 census data also showed that there were approximately 150,000 handicapped persons living in West Virginia, about one-third of whom were poor.

Family income levels in West Virginia are generally low. In 1970, the earnings of 18 percent of the state's families were below poverty levels. In the most isolated counties, where the need is the greatest, car ownership per family was among the lowest in the United States.

Not only could few people afford private transportation, but public transportation resources were also limited. The decline of public transportation in West Virginia has been alarming. Between 1964 and 1974, one-third of the licensed bus operators in the state went out of business. A majority of all public transit vehicles were confined to just four of the 55 counties in the state, and 23 counties had virtually no public transportation available. Even where public transportation was available, many people could not afford it.

Clearly, this combination of factors argued that West Virginia develop a plan to improve public transportation. The concept of pro-

viding a subsidy to low-income elderly and handicapped people for transportation was inspired by West Virginia's success in pioneering food stamps. Under the food stamp program, families, depending upon income and number of dependents, may purchase a certain number of coupons below face value and redeem them for food in most stores. It was thought that "transportation stamps" could be used in much the same way. With the firm belief that transportation is as much of a necessity as food, a strong commitment on the state level, and support from the federal government, the Transportation Remuneration Incentive Program (TRIP) was formulated.



PROGRAM OBJECTIVES

TRIP was designed to build a statewide transportation network. It intended to combine and integrate new and existing private and public

transit services for the general public, as well as provide a subsidy to low-income elderly and handicapped people through discount tickets.

The TRIP system sought to distribute new transit resources equitably, so that all regions in the state would have comparable levels of transit service. The basic system was planned with fixed routes connecting small urban areas, coupled with feeder systems linking the more remote areas to the fixed routes. Although the allocation of vehicles was to be on a regional basis, the system would operate on a statewide basis.

There are two major components of TRIP. The first is a ticket subsidy program, which began in June 1974 throughout the state. The second is a three-year regional transit demonstration program which began in September 1976. The West Virginia Department of Welfare was responsible for all phases of TRIP administration.

During the demonstration, many alterations were made in the administration, funding, and range and types of services offered. The original objectives of a coordinated statewide transportation network were not completely achieved. However, a history of the planning, organization, and evolution of the system illustrating the complexity of such a demonstration program may be useful to other rural transportation planners.

PROGRAM DESCRIPTION

The Ticket System

TRIP established an innovative transportation stamp system that enables low-income elderly and handicapped individuals to purchase books of transportation stamps, worth \$8.00, at a discount. The \$8.00 book is made up of 25-cent stamps, and the cost to the individual is between \$1.00 and \$5.00, depending upon the individual's monthly income and family size. In the beginning, those families meeting eligibility standards were authorized to purchase, at their option, one ticket book per eligible individual, up to three for any given household. The 25-cent tickets can be used to pay the fare on any form of authorized transportation for any destination, as long as the fare is paid in West Virginia. Tickets can also be used to pay the fare of a needed attendant or for delivery of food, medicine, and essential supplies by an authorized transportation provider. No time limit is set on the tickets, so that they can be retained for more expensive trips. If a fare does not cost a multiple of 25 cents, change in cash can be given, or the rider can pay the difference in cash.

Eligibility for TRIP tickets was kept to two simple criteria. First, the person had to be over 60, or be physically or mentally handicapped. In addition, he or she had to have an income below the guidelines for poverty established by the Office of Economic Opportunity.

When TRIP began issuing tickets in June 1974, the average price paid per \$8.00 ticket book was \$4.00. Financial eligibility for TRIP tickets was based on the income available to the household of an elderly or handicapped individual. This method of considering household income actually penalized elderly or handicapped people living with their relatives. Maximum allowable income standards were more restrictive for non-farm households than for farm households. Maximum allowable standards for "available resources" for a one-person household were set at \$1500. A household of two or more persons was allowed \$3000 in resources.

In June 1975, key changes were made in ticket price and eligibility requirements. First, new categories of monthly income were established by combining several existing categories. Thus, there were more people in each category (and a wider range of incomes), but fewer categories were eligible for tickets. The net effect of this reorganization was that the original income guideline maximum was advanced 29 percent, and, in addition, the average cost of an \$8.00 ticket book was lowered to \$1.18. Another change was that only income directly available to an elderly or handicapped individual was considered, rather than income available to the household of an otherwise eligible individual. Maximum allowable standards for "available resources" were also revised. New standards allowed \$3500 for a household with one eligible person and \$5000 for a household with two or more eligible persons.

Persons wanting to participate in TRIP have to file an application by mail or in person at the local county welfare office. After eligibility is established, each household receives an identification card and authorization cards for each eligible member of the household, with a maximum of three cards per household. The authorization card, valid for only one month, is used in conjunction with the identification card to purchase tickets, which are valid anytime. Authorization cards are automatically mailed to participants after the first month. In the beginning, tickets could be purchased from the welfare office either in person (by proxy in cases of severe disability) or by mail with a certified check or money order.

Some problems with this method of purchasing tickets developed. Many eligible persons could not get their tickets because of the distance involved in purchasing either them or a certified check or money order. Unofficially, some local welfare offices began accepting personal checks

or cash. These offices also began selling TRIP tickets at other social service centers, such as nutrition sites, homes for the elderly, etc.

Another problem was that the original monthly allocation did not subsidize the number of trips people needed. After it was realized that there were not as many TRIP participants as originally expected, eligible persons were allowed to purchase three books of tickets per month. To qualify for multiple books, participants had to incur higher than average transportation costs, require frequent trips for medical purposes, or live in an isolated area.

Social service agencies were also able to purchase TRIP tickets in quantity, which could then be distributed to needy clients as a transportation allowance. In this way, extra buying power was provided to the elderly and handicapped. For example, Medicaid began buying TRIP tickets with money from the state's General Relief Fund. Medicaid clients used these tickets to pay for travel to medical facilities. After transportation companies redeemed the tickets, Medicaid reimbursed the General Relief Fund account with federal Medicaid funds.

In order for a transportation company to accept TRIP tickets, a Certificate of Convenience and Necessity had to be obtained from the West Virginia Public Service Commission. Companies had to comply with the commission's regulations for insurance, safety inspection, and fares. Each company also had to apply to the West Virginia Department of Welfare and receive a Certificate of Authorization. Before TRIP'S transit development demonstration got underway, many small urban taxicab companies as well as existing bus companies became certified carriers and accepted TRIP tickets. In December 1975, AMTRAK began accepting TRIP tickets, as did Greyhound and Trailways bus companies.

Transportation companies participating in TRIP collect the tickets from customers, cancel them, and send them to the West Virginia Department of Welfare. The companies are then reimbursed twice monthly for the full face value of the tickets they redeem.

Transportation Needs

Before the ticket program began, surveys were made of desired trip purposes in an attempt to assess both pre-TRIP attitudes and demand for transportation services. Work trips did not rank as a major trip purpose; a low percentage of the eligible elderly and/or handicapped people were employed. Greatest demand was indicated for essential services such as trips to the doctor, pharmacy, or grocery store. Church trips also rated fairly high. In spite of this suggested need for Sunday operation, TRIP services were scheduled on the basis of a 40-hour week.

A TRIP on-board passenger survey was conducted in the spring of 1979, in compliance with a FHWA request for evaluations of Section 147 rural highway public transportation demonstration programs. The actual questionnaire was provided by FHWA, and the survey was conducted by the Public Transportation Division of the West Virginia Department of Finance and Administration. The department estimates that their sampling size and method reached as many as 75 to 80 percent of regular TRIP riders.

The survey was conducted by region with results tabulated for each region and then averaged for the five operating regions. Results of the survey indicated that, for the most part, TRIP serves an important need that would not otherwise be met.

An example of the importance of TRIP is best illustrated in Region 8, where nearly 93 percent of TRIP users have no other public transportation services within one-half mile of their homes. In Region 8, 78 percent of the riders take advantage of TRIP between 25 and 40 times per month. Approximately 94 percent of these riders use TRIP to get to work; 10 percent of these workers would be forced to leave their jobs if TRIP services were no longer available.

For the five regions with TRIP services, riders can be generally characterized as female (65 percent), of relatively low-income (50 percent have family incomes under \$7500), from relatively small families (60 percent are either one- or two-person households), and as having few private automobiles (35 percent of the households have no automobile, 31 percent have one automobile). The age of TRIP riders was found to be fairly evenly distributed. According to the interviewers, less than 5 percent of TRIP riders were considered to be handicapped.

The Primary/Feeder Network

The system of statewide transportation service was planned to be a "primary/feeder" network. Basic service would be provided along main roads on fixed schedules. This "primary" network would connect towns and serve a large proportion of the population.

Smaller secondary roads and rural areas with low population densities were planned to be served by a rotating "feeder" demand service. On request, feeder vehicles would carry people from isolated rural areas to coordinated transfer points where primary route vehicles would pick them up and take them into town or to their destination along the fixed route. Feeders would also serve local trips.

Both primary and feeder vehicles would be equipped with two-way radios to maintain communications with the dispatcher. Persons request-

ing service could call a central number at the transportation center, where schedules would be coordinated.

For feeder demand service, requests for service would be required at least two hours before scheduled pick-up time. This way, requests could be grouped together and assigned to a single vehicle. The feeder travel patterns would vary according to where service was requested (origin) and where people wanted to go (destination).

Forecasts of the demand for feeder vehicles were light. Under normal circumstances, demand was not expected to exceed four passenger trips per hour. Based on demand estimates, feeder vehicles were assigned on the basis of one vehicle for every 200 miles of secondary road mileage. One vehicle out of every eight feeders would be equipped with a lift for wheelchairs.

Equipment and Schedules

TRIP services were planned to operate eight hours a day, five days a week, with no subsidized weekend service. Vehicles could be operated by the regions on Saturday and Sunday if revenues could cover additional operating costs. The life expectancy of a vehicle was assumed to be seven to ten years. No vehicle replacement was expected within five years of the start of operations. After four years of service, each vehicle was expected to be overhauled with a new engine and transmission. Existing vans in rural service which became part of regional transit systems were scheduled for replacement after four years.

Administrative Structure

The West Virginia Department of Welfare was designated to administer TRIP, since there was no department of transportation in the state. Also, the welfare department served many TRIP clients in the administration of the food stamp program. The 27 area offices of the Department of Welfare operated the ticket system and coordinated operations through offices located in all 55 counties.

In July 1977, major TRIP administrative changes took place. Initially, the West Virginia Department of Welfare was responsible for all phases of TRIP administration. Under a reorganization, the Department of Welfare continued to be responsible for any activities dealing with TRIP tickets. This included determining eligibility for tickets, redeeming tickets, and reimbursing transportation providers. The regional transit development phase, which included all funding and operations for the demonstration project, was assigned to the West Virginia Department of Finance and Administration.

The statewide transportation system was broken up into 11 regions for ease of management and planning. Under existing West Virginia state codes, it was possible for the boards of the 11 existing Regional Planning and Development Councils (RPDCs) to establish Regional Transportation Authorities (RTAs). These RTAs are made up of county and locally appointed representatives. They carry out transportation operations, regulate routes and schedules of public transit systems in their respective regions, and receive capital and operating subsidies through TRIP. Planning and development regions are shown in Figure 1.

After the planning period for the transit development demonstration, only five of the eleven regions actually started transit demonstration projects. However, the TRIP discount ticket program continued to operate throughout the state.

The role of the TRIP administration in transit development demonstration is to provide technical assistance in the establishment of local transit authorities and sufficient capital and operating support to run these systems on a demonstration basis. After the three-year transit demonstration period, the RTAs will have more responsibility for transportation planning within their respective regions, including routes and services, and for pursuing local and state funding, as well as federal monies which are distributed throughout the state.

Each RPDC was required to develop "sketch plans" of its regional transportation operation. In turn, the State of West Virginia was required to draw up a program plan for transit development in order to qualify for federal assistance from the Urban Mass Transportation Administration (UMTA). This transit development plan evaluated existing conditions, provided a schedule of improvements, as well as a list of priorities and cost estimates for improvements. The financing of improvements was discussed and a plan for maintaining the program presented.

All of these tasks were performed on a region-by-region basis except the last, the plan for maintaining the program, which was uniform throughout the state.

Although each region was to implement its own transportation program, the routes and schedules were designed to facilitate inter-regional coordination of services. After the implementation of TRIP-sponsored services, representatives of each RTA were required to meet together on a regular basis to discuss operational problems and to insure the maintenance of a well-integrated and coordinated statewide transit system. Any significant changes in routes, schedules, or fares had to be approved by the state TRIP administration.

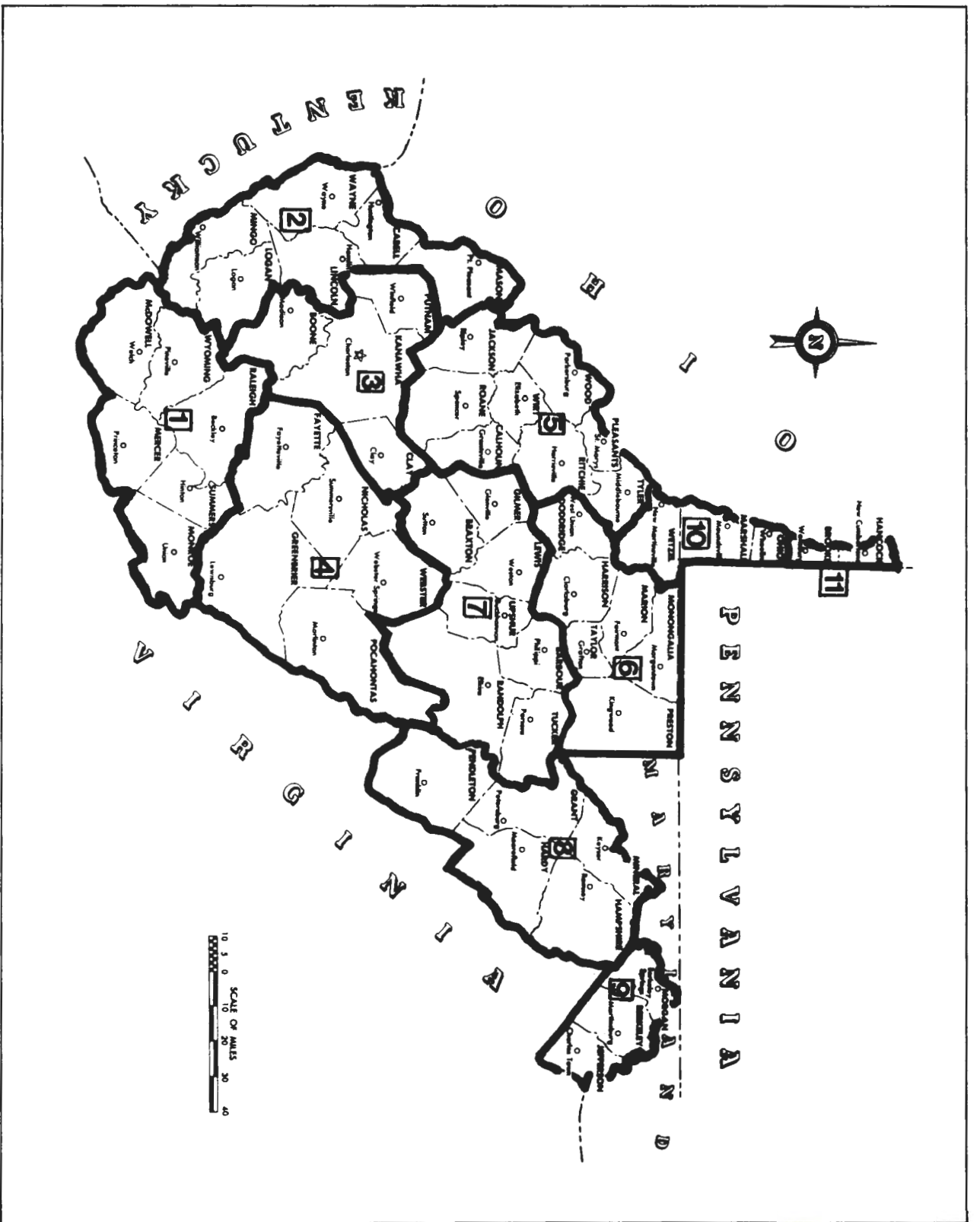


Figure 1 Planning and Development Regions of West Virginia

Each RTA may contract for or operate transit services. The RTAs may contract services from private or public operators, support the expansion of other public transit operators in the region, and/or establish operations in regions where there are no existing transit operations or where present transportation providers do not wish to expand their services.

In those regions where public transit companies (such as municipal or county transit systems or public senior citizen centers providing transportation, etc.) exist, they may subcontract for services under TRIP. There are, however, strict guidelines that the RTAs must adhere to in the allocation of TRIP operating support funds. The funds must be used only for new services; the funds must not be used for capital costs; and there is a limit on the amount of funds allocated to each local authority.

Existing private operators cannot be subsidized under TRIP for their present operations. However, where mutually beneficial, these private operators may subcontract with the RTAs to provide new or expanded transit services. Private operators include non-profit groups such as social service agencies, neighborhood organizations, private welfare agencies (such as the Red Cross), or individuals. All transportation providers are required to have both a Certificate of Convenience and Necessity and a Certificate of Authorization.

A non-competition requirement prohibits transit services supported by federal or state funds from competing with established transportation companies. The Public Service Commission review and approval process of West Virginia also protects the rights of existing transportation providers.

There are various types of contracts. With a "flat rate" contract, the contractor receives an established rate per unit of service, with all proceeds going to the authority. The unit of service can be vehicle hours, vehicle miles, or number of passengers carried. Another type of arrangement occurs when the contractor receives only the vehicle receipts, that is, fare box revenues. Or, a contractor may receive a subsidy plus fare box revenues (for instance, a flat fee per hour plus all bus receipts).

Vehicles may be owned either by the authority or the contractor. Existing private agencies that already own vehicles may wish to use their own vehicles for contract services. Other groups or individuals may want to lease vehicles from the RTA.

It is also possible to allow individuals to contract with the RTAs for an informal feeder service. Individuals can "lease" a feeder van for a nominal amount (such as \$1 per year) and operate the van a few hours each day, as needed. The vehicle may be used for private purposes when

not in use for feeder operations, and fuel and maintenance costs are prorated for the miles driven for public and private use. This system is especially suited to rural areas where the population or demand for transportation services does not warrant a full-time feeder service.

All contracts are awarded from advertised bids. Each RTA board of directors determines which services should be subcontracted and the method that should be used for contracting these services and leasing vehicles.

FUNDING

The complex funding for TRIP comes from a variety of federal and state sources. Some problems arise in the coordination of these resources, due to both the number of funding sources and their dependence upon each other. For example, TRIP's transit development demonstration was held up considerably when funds, although approved, were delayed at the federal level. Once awarded, these federal funds are open-ended and may be used over a period of time. Table 1 shows the variety of grants secured during the early years of TRIP.

Federal Aid

West Virginia, like other states, receives federal funds for transportation from a variety of sources. Some funds, which are allocated to the state based on federal distribution formulas, are to be used, in general, for improvements to existing transit services. UMTA, under Section 5 of the National Mass Transportation Assistance Act of 1974, provided funds to West Virginia for distribution to the five urbanized areas in the state. The specific allocation for each city was the responsibility of the governor. These funds could be used to cover up to 80 percent of the cost of routine bus replacement and up to 50 percent of the net operating cost of the transit systems in these five urbanized areas. Federal formula funds were also provided to West Virginia under UMTA's 16(b)2 program. Section 16(b)2 funds help private, non-profit organizations provide for the special transportation needs of elderly and handicapped persons.

In addition to these federal sources for funding improvements to existing transit, West Virginia received federal grants specifically for the planning, equipment, and operation of TRIP's transit development demonstration and ticket subsidy program.

Open-ended federal grants — UMTA Sections 3, 6, and 9 and FHWA Section 147 — were used for TRIP capital and operations. UMTA Section 3 funds were used to purchase buses and communications equipment for Region 10; UMTA Section 6 provides funds for a state-wide marketing program and subsidizes net project deficits in Regions 6 and 19; UMTA Section 9 funds provide for statewide planning; and FHWA Section 147 provides operating support for Regions 4, 6, 8, and 10. The FHWA grant was expected to run out some time in July 1979.

UMTA Section 6 funds will be sufficient to operate TRIP in Region 6 through FY 80. The other RTAs as well as five other small transit operations in the state will rely on the new Section 18 funds described below.

The Federal Public Transportation Act of 1978, passed in November of the year, amends the Urban Mass Transportation Act of 1964 and replaces the FHWA Section 147 program. The 1978 Act changed the former Section 9 planning program to Section 8, continued the dis-

TABLE 1 GRANTS AND TOTAL EXPENDITURES FOR TRIP: JUNE 1973 THROUGH JUNE 1976

Agency and Authority	Date Approved	Amount Approved	Total Expenditures
Community Services Administration: Community Action Funds	June 1973	\$4,039,500	\$1,247,660
Urban Mass Transportation Administration: Section 3, Capital Grants	June 1975	628,680	407,797
Section 6, Demonstration Project Grants	May 1975	273,730	126,712
Section 9, Technical Study Grants	Oct. 1975	262,344	172,648
Federal Highway Administration: Section 147, Rural Demonstration	Feb. 1976	1,200,000	*
HEW, Administration on Aging: Model Projects on Aging	May 1975	400,000	183,266
West Virginia General Fund (FY 1975)		205,597	205,597
West Virginia Funds: Authorized specifically for TRIP by the state legislature (FY 1976)		1,100,000	444,394
TOTAL		\$8,109,851	\$2,788,074
<p>*These funds were anticipated to be used in FY 1977 for capital equipment for Regions 4, 8, and 9. Source: <i>Hindrances to Coordinating Transportation of People Participating in Federally Funded Grant Programs.</i></p>			

cretionary Section 3 program and the Section 5 formula grant programs, and established, for the first time, a funding program for small urban and rural areas, designated as Section 18.

In December 1978, FHWA promulgated temporary (emergency) regulations to establish interim operating procedures to implement Section 18. Section 18 offers federal assistance to local public agencies, non-profit organizations, and transit operators in the provision of public transportation in rural and small urban areas by way of a formula grant program to be distributed in each state by a state agency designated by the governor. Each state may use 15 percent of its federal allocation to pay 100 percent of the costs of state administration and the provision of technical assistance to recipients. The federal share will provide 80 percent of nonoperating (capital and administrative) expenses and 50 percent of operating cost deficits. Half of the local share may be from other unrestricted federal funds; the other half must be provided in cash, from sources other than federal funds, or from revenues from the operation of the system.

Section 18 funds allocated to West Virginia amount to \$1.186 million. Fifteen percent will be used for state TRIP administration; the remaining funds will go directly to the local transit authorities, according to established criteria.

West Virginia also received federal funding from the Department of Health, Education, and Welfare's (HEW) Administration on Aging. A total of \$1,180,500 was allocated to the state for both capital and operating aid for the entire demonstration period. Capital aid was supplied to four non-urban transit authorities supported under TRIP. Aid in the amount of \$700,000 was made available for operations. Funds from HEW's Model Projects on Aging (\$400,000) were used for a West Virginia University evaluation project; planning for experimental services and administrative costs were also covered by the funds.

Other Financing

Most of these federal programs have a requirement that funds be matched in varying amounts. Matching funds for federal grants must be from other federal sources or from the state. Some state matching funds were specifically authorized by the West Virginia legislature for TRIP. To date, the state has provided most of the funds for the state-and-local share.

The local authorities are expected to cover, however, a percentage of operating costs. In planning TRIP operations, preliminary projections called for a 100 percent subsidy for the first month of operations. A 95

percent subsidy was planned for the second month of operations, i.e., 5 percent of the total operating cost was expected to be generated from fares. Revenues were expected to increase at a rate of 5 percent per month, until a projected 40 percent revenue generation level (and 60 percent subsidy) was reached in the ninth month of operations. This pattern was expected to result in revenues of approximately 25 percent of the total operating costs, prorated over the first 12 months of operations.

COORDINATION OF TRANSPORTATION RESOURCES

The coordination of planned TRIP services with other federally funded transportation services in the state is often very difficult, due to the nature of the services planned under TRIP and the fact that some federal grants are restricted to certain counties.

A number of social service agencies in West Virginia offer various types of transportation services to their clients. These agencies often receive federal funds or subsidies facilitating these services. The grantees may own and operate their own vehicles, reimburse clients for their travel, reimburse paid and volunteer staff for providing client transportation with personal vehicles, or purchase services from existing transportation companies. Some agencies also offer fixed-route services and charge the public to ride the vehicles. In Table 2, federally funded transportation services other than TRIP which were operating during 1976 are listed. In 1976, 12 agencies operated 113 vehicles with federal funds for a variety of purposes in many counties. It was important to attempt to coordinate these transportation services with TRIP services whenever possible.

The RTAs were to be responsible for contacting local social service agencies so that services could be coordinated. It was hoped that many agencies could be persuaded to buy blocks of TRIP tickets for distribution to their clients or to lease vans from TRIP to provide services. In many cases, however, social service administrators did not feel that scheduled, fixed-route public transportation services, such as TRIP offered, would benefit their clients or meet specific social service program needs. The major objections from social service agencies were that fixed routes and schedules were too limiting to meet their client's needs, or, if vans were leased from TRIP, that operating revenues would be inadequate to cover expenses without operating subsidies.

**TABLE 2
FEDERALLY FUNDED TRANSPORTATION SERVICES OPERATING DURING 1976 IN WEST VIRGINIA**

Agency	Number of Vehicles	Estimated Annual Cost of Operation	Source(s) of Federal Funds	Purpose	Service Area
West Virginia Department of Health	7	*	Appalachian Child Development Program Maternal and Child Health Services Program	Early childhood development; maternal and child health services	8 counties
	4	*			Not specified
TOTAL	11	\$103,000			
West Virginia Office of Vocational Rehabilitation	1	41,600	Vocational Rehabilitation Program	Vocational rehabilitation services	1 county
West Virginia Commission of Aging	16 ¹	*	Titles III and VII	Elderly transportation	14 counties
	5	*	Retired Senior Volunteer Program (RSVP)	RSVP	5 counties
TOTAL	21	\$200,000			
Pride in Logan County Community Action Agency (Logan County Transportation, Inc.)	6 ²	\$15,000 ³	Head Start; Titles III and VII	Head Start; elderly services and nutrition programs	1 county
Southwestern Community Action Agency, Inc.	18	N/A	Head Start; Community Action Program	Head Start	4 counties
Multi County Community Action Against Poverty, Inc. (Multi CAP)	19 ⁴	\$ 63,000	Community Action Program	Public, fixed-route transportation	4 counties
	13	N/A	Head Start	Head Start	4 counties
TOTAL	1	N/A	RSVP	RSVP	4 counties
TOTAL	33	N/A			
Wyoming County Opportunity Council, Inc.	1 ⁵	N/A	Title VII	Elderly nutrition	1 county

**TABLE 2
FEDERALLY FUNDED TRANSPORTATION SERVICES OPERATING DURING 1976 IN WEST VIRGINIA (continued)**

Agency	Number of Vehicles	Estimated Annual Cost of Operation	Source(s) of Federal Funds	Purpose	Service Area
West-Central West Virginia Community Action Association (West Central Rural Transportation System, Inc.)	14 ⁶	\$100,000	Head Start	Head Start	10 counties
Mercer County Economic Opportunity Corp.	8 ⁴	\$ 7,000 ⁷	Head Start; Title III	Head Start; elderly nutrition	1 county
West Virginia Department of Welfare Medical Service	None	\$200,000	Medicaid	Reimbursement for client medical travel	Statewide
Governor's Manpower Office	None	\$500,000	CETA programs	Reimbursement for travel to and from job training sites	Various locations throughout the state
Department of Employment Security	None	N/A	Work Incentive Program	Reimbursement for travel to and from work under Work Incentive Program	Various locations throughout the state

*The cost was not broken down between the two programs.

¹ Some of these 16 vehicles may also appear in the totals shown for community action agencies.

² Two additional vehicles were received from TRIP but were never used.

³ The \$15,000 excludes drivers' salaries.

⁴ Three vans received from TRIP are included in this figure.

⁵ One additional van from TRIP was received through Pride in Logan County.

⁶ Three additional vans were received from TRIP.

⁷ Costs shown are for the period August 1 to December 31, 1975.

Source: *Hindrances to Coordinating Transportation of People Participating in Federally Funded Grant Programs.*

A Head Start agency cited problems with using TRIP services that were typical of many social service agencies. The three- or four-year old children that the program served were too young to ride public vehicles; vehicles were required to be readily available for Head Start uses, such as field trips and medical emergencies; sites were often located several blocks from fixed-route bus stops; and school class times conflicted with those of the fixed-route buses.

Often, Community Action Agencies leased vans under TRIP. TRIP did not provide operating subsidies to CAAs, since it was not part of the TRIP plan, and TRIP administrators felt that the CAAs had their own resources to operate the vehicles. The CAAs often did not have the resources to cover the operating deficit. Fare revenues often did not cover even a portion of operating expenses, and many routes were eliminated or service was terminated.

In planning TRIP services, vehicles operating under social service programs often were not included or accepted as legitimate sources of informal or flexible feeder services. Insurance regulations, irregular schedules, and geographical restrictions to one area were often cited as reasons for difficulty in coordinating services.

The fact that some federal grants are tied to specific geographic areas, such as a county or an urbanized area, prevents the state from pooling different federal grants to serve a larger area, such as a regional transportation district. For example, federal CSA grants were made to CAAs, which cover several counties. One CAA cannot provide service in another CAA's geographic area. TRIP operates on a region-wide basis; each region is composed of many counties. It is often very difficult to coordinate the existing transportation services provided by a number of CAAs in the region.

IMPLEMENTATION

As originally intended, TRIP's regional transit development program would have been implemented during the first year of the demonstration for those regions with the most critical need for transit services. Since the TRIP administration did not want regions to have partial service, it was considered important to implement the transit development demonstration on a region-by-region basis. The transportation need by region was established by examining the availability of local transportation resources, including both buses and taxis. The most rural areas, Regions 4, 8, and 9, were to be the first to have TRIP services implemented. Regions 2, 10 and 11 were subsequently selected, since the

non-urbanized portions of these regions had no existing transit services for the most part. (See map, Figure 1.)

Due to various delays, changes in administration, high capital costs, and the decision by some regions not to participate in the transit development program, this implementation schedule was not adhered to. Not until 1978 was complete service instituted in five of the eleven regions.

There are a number of reasons why the transit development demonstration program was neither implemented statewide nor on schedule. For example, it took approximately one year to have grant requests approved by UMTA and FHWA. When preparing the program budget, the TRIP staff expected a more prompt response, if only to acknowledge that the proposed schedule was unrealistic because of the staff's lack of transportation expertise. The size and relative inexperience of the TRIP staff hampered efforts to provide the regions with all the professional transportation planning assistance required, thus further contributing to the delay. Once approved, FHWA funds were delayed at the federal level, preventing TRIP operations from beginning.

Unexpected local problems also contributed to program delay in some regions. For example, in Region 10, between the planning period and the securing of funds, local labor problems caused a private urban bus company to go out of business. This private urban service was to form the hub of the region's TRIP-sponsored services. Federal operational restrictions prevented TRIP from revising its planned operations to replace or compensate for this lost service. Operations were delayed seven months while alternatives were reviewed by local officials.

Difficulties resulting from the original regional distribution also may have contributed to the amount of time involved in implementing TRIP services. Some counties within a region may have been reluctant to participate in the transit development demonstration if they thought that their county would not benefit as much as another. Problems develop when existing transportation providers may not want to extend operations into another county (especially in sparsely populated areas) or when it is difficult to coordinate existing providers into a regional transit operation. Existing transportation systems usually operated on a countywide basis. Shifts to a regional basis were required. Regional coordination of countywide transportation provided by social service agencies was also hindered by the geographical restrictions attached to some federal funding sources.

Once the new TRIP transit services were in operation, high costs and little return soon forced an abandonment of the original service

concept of a primary/feeder system. In the beginning, these five regions had small (eight-passenger) vehicles to pick up passengers in the rural areas and deliver them to a waiting area on a fixed route where a larger vehicle would carry them to their destinations. In many areas, there was insufficient demand to warrant fixed routes. Regions are now reassessing service plans to tailor them more closely to the specific needs and demands of the users.

Various types of transit services have been offered to date. Some of the arrangements that have been tried include dial-a-ride, primary/feeder routes, deviated fixed routes, contract services, charter services, work trip service, and fixed routes serving specific agencies or clients. In order to build ridership and revenues, most RTAs have become more flexible in the services they offer. Authorities are constantly trying to operate cost effectively by running work trips during peak hours, contracting for service during off-peak hours with social service agencies, offering charter service on weekends, and using lift buses as combination dial-a-ride and spare vehicles. Many work trips have been scheduled on a deviated fixed-route service, so that vehicles can regularly pick up workers at their homes. Some fixed routes actually serve social service agencies on a regular basis, thus eliminating the need for those agencies to contract for local transportation services. These combinations of services have continued to boost ridership levels.

Because the three-year regional transit demonstration period ended in FY 79, preliminary preparations were being made to shift from a state-run demonstration to operations run by the local transit authorities with state supervision. State funds will gradually be replaced with local money. FY 80 will be the first year of local-share funding. Since TRIP operations will no longer be demonstration projects but a network of operational systems, the functions of the RTAs will be shifted to the local transit providers actually running the systems. The existence of each local authority must be justified to the people it serves in order to maintain public support so that the systems continue operating after the demonstration period ends. In order to maintain ridership and public support, the local authorities are making every effort to run efficient operations.

TRIP'S ROLE IN RURAL TRANSPORTATION DEVELOPMENT

While the Transportation Remuneration Incentive Program fell considerably short of its original goal to provide a coordinated statewide

transportation system, its contributions to improving rural transportation have been substantial. TRIP brought the need for transportation services in rural areas to national attention in 1973. West Virginia recognized that to people in rural areas, and to poor elderly and handicapped people especially, transportation is as much of a necessity as food. TRIP's pioneering of "transportation stamps" as a method of subsidizing transportation for low-income elderly and handicapped persons could serve as a model for the entire country. TRIP's coordination of funding from many sources was innovative in its own right, although the coordination of transit services was less successful. The new routes and services instituted under TRIP's regional transit development demonstration benefit users of public transportation, whether or not they qualify for TRIP discount tickets.

In the course of the TRIP demonstration, major problems were identified. Steps were taken to make transportation more flexible in order to improve coordination with other transportation resources and to tailor individual rural systems to the specific constituencies they serve. The need for expertise in the planning and operational stages was identified, and the need for improved marketing techniques was established. The future of TRIP and rural public transportation in West Virginia depends on how successfully these problems are addressed. It is hoped that services established under the TRIP demonstration will continue to grow and change with users' needs and demands, and that local share, fare revenues, and state and federal subsidies will sustain the program in coming years.

REFERENCES

1. **Addendum to Transportation Development Plan**, RRC International, Inc., for West Virginia Department of Welfare, Charleston, July 1976.
2. **Development Plan for TRIP**, RRC International, Inc., for West Virginia Department of Welfare, Charleston, May 1974.
3. **Hinderances to Coordinating Transportation of People Participating in Federally Funded Grant Programs**, Volume I, Report of the Comptroller General of the United States, October 17, 1977, pp. 117-137.
4. **Proposal by the State of West Virginia for Transportation Remuneration and Incentive Program (TRIP)**, State of West Virginia Department of Welfare, Charleston, June 1973.
5. **Second Annual Progress Report, Phase II TRIP Evaluation**, Volume III, Appendices, Office of Research and Development, West Virginia University, Center for Extension and Continuing Education, Morgantown, June 1976.

6. Telephone Interviews, Rodney Jenkins, Director, Public Transportation Division, West Virginia Department of Finance and Administration, Charleston, March 1979 and July 1979.
7. **A Transit Development Program for the State of West Virginia**, RRC International, Inc., and TRIP, West Virginia Department of Welfare, Charleston, December 1975.
8. **TRIP, A Sample Sketch Plan for Regional Transportation Development**, West Virginia Department of Welfare, Charleston, October 1974.
9. "T.R.I.P.: A Transportation Demonstration Project in West Virginia," Audley Wolfe, Jr., 1976.

Chapter 5

WISCONSIN DEMONSTRATION PROJECTS

While most states were relying on federal transportation assistance grants to improve their public transit systems, the state of Wisconsin, in 1973, initiated an unusual transit planning and demonstration program to foster improved transportation services in its own communities. Under the program, a variety of fixed-route and paratransit projects were undertaken.

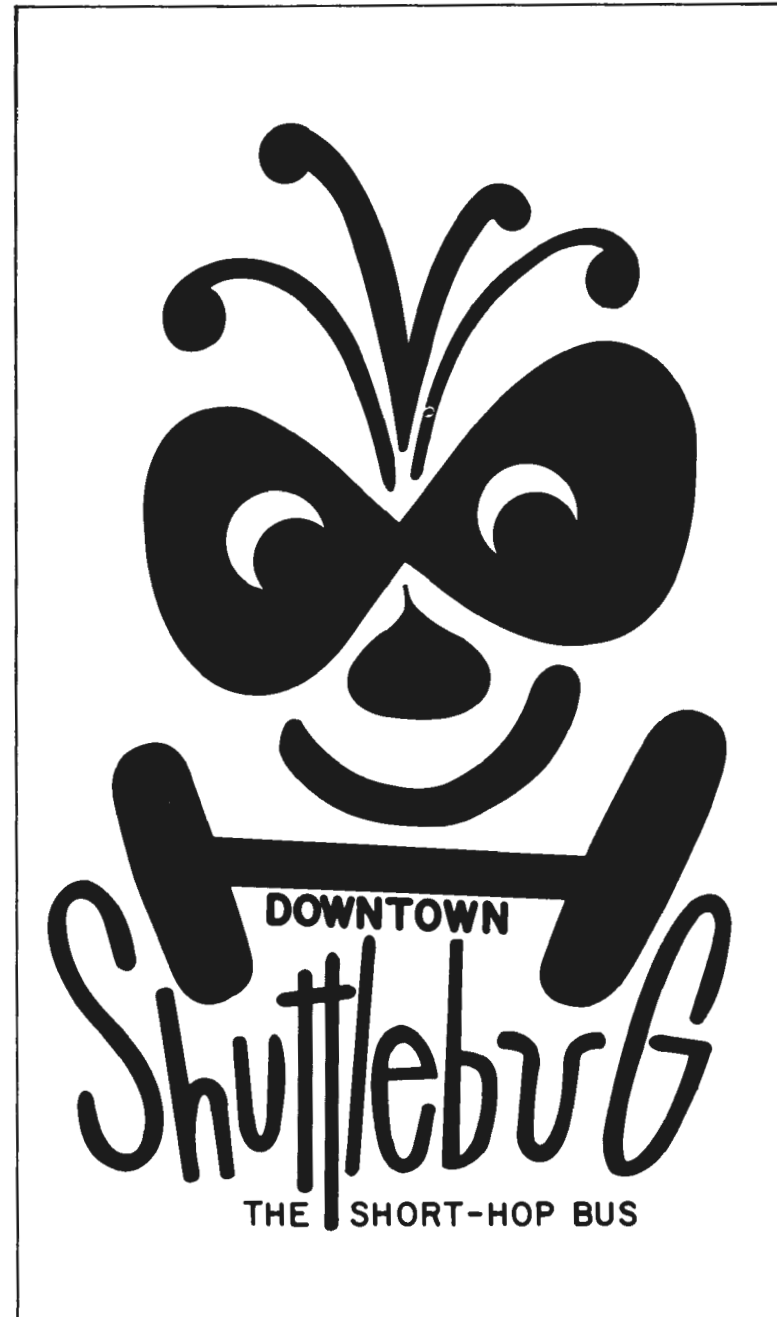
Wisconsin's four-year Mass Transit Planning and Demonstration Program was a model state program in terms of the strong role played by the state in fostering transit improvements and innovations. The program was particularly helpful to smaller cities with populations less than 50,000, which were not eligible at the time for federal transportation grants.

In enacting the program, the Wisconsin State Legislature launched one of the first state-sponsored grants programs of its kind in the nation. Since inception, the program has afforded cities the opportunity to experiment with, and upgrade, their public transit systems and, in some cases, to inaugurate new transit systems where none had existed. A unique feature of the Wisconsin program required that any successful transit demonstration project be permanently integrated into the regular transit system of that community.

The planning and demonstration program represented part of a two-pronged effort by the state to assist public transit and decrease traffic congestion, and still meet the public's need for mobility. The second part of the state's transit aid effort was the Urban Mass Transit Operating Assistance Program, which was created under the same legislation as the planning and demonstration program and enabled communities to continue operating successful transit demonstrations beyond the initial one-year testing stage.

PROGRAM DESCRIPTION

The 1973 State Budget Act created two mass transit aid programs to be administered by the Wisconsin Department of Transportation (WDOT). The first section provided \$5 million from General Purpose



Revenue (GPR) funds during the 1973-1975 biennium for an operating assistance program, and the second section provided \$2 million in GPR funds during the same biennium to finance planning and demonstration projects. Eligible recipients of these funds during the 1973-1975 biennium were limited by statute to those urban areas already served by transit as of August 5, 1973 — the date of the program's enactment.

Two years later, under the 1975 State Budget Act, the two urban transit aid programs were reauthorized for the 1975-1977 biennium with a new appropriation of \$7 million. The \$3.5 million appropriation for fiscal year 1976 was supplied from the GPR fund, and the \$3.5 million

appropriation for fiscal 1977 was from the State Highway Fund.

The 1975 State Budget Act also contained a significant amendment to the transit aid programs. By adding the phrase, "to establish a new urban mass transit system" to the definition of an eligible applicant for operating assistance funds, the amendment effectively expanded the purpose of the planning and demonstration program to include new transit system start-ups in communities not served by transit prior to August 5, 1973.

A breakdown of the transit aid appropriations contained in the 1973, 1975, and 1977 State Budget Acts is shown in Table 1.

TABLE 1 WISCONSIN STATE TRANSIT AID APPROPRIATIONS FOR OPERATING ASSISTANCE AND DEMONSTRATION GRANTS

	1973 STATE BUDGET ACT		1975 STATE BUDGET ACT		1977 STATE BUDGET ACT	
	Fiscal Year 1974	Fiscal Year 1975	Fiscal Year 1976	Fiscal Year 1977	Fiscal Year 1978	Fiscal Year 1979
Operating Assistance	\$2,500,000	\$2,500,000	\$3,237,600	\$3,241,200	\$8,139,200	\$9,360,100
Demonstration Grants	934,600	932,500	195,200	187,100	N/A*	N/A*
Administrative Costs	65,400	67,500	67,200	71,700		
Totals	\$3,500,000	\$3,500,000	\$3,500,000	\$3,500,000	\$8,139,200	\$9,360,100

*N/A: The fiscal 1978 and 1979 operating assistance appropriations were substantially increased, while appropriations for the planning and demonstration program were dramatically reduced. In addition, the language of the program was revised under the State Budget Act of 1977, limiting the demonstration program to transit planning and technical assistance activities to be undertaken by the Wisconsin Department of Transportation. The net effect of these changes has been the elimination of state-funded demonstration projects. Appropriations for the purpose of planning/technical assistance totaled \$60,000 for both 1978 and 1979.

Source: Adapted from *Wisconsin Urban Transit Report Number 5: State Aids*.

THE OPERATING ASSISTANCE PROGRAM

Under Wisconsin's Urban Mass Transit Operating Assistance Program, local public bodies were eligible to receive state reimbursement for up to two-thirds of the operating deficits incurred by local transit systems. Thus, in large urbanized areas eligible for federal assistance, the

theoretical ratio of shared operating deficits was one-half federal, one-third state, and one-sixth local.

Non-urbanized communities, which were not eligible for federal assistance, could receive state grants to cover up to two-thirds of all operating losses. In non-urbanized areas, though, the theoretical ratio of shared transit operating deficits was two-thirds state and one-third local.

THE PLANNING AND DEMONSTRATION PROGRAM

Under Wisconsin's second aid program, the Mass Transit Planning and Demonstration Program, grants were made available to suitable "local public bodies" to design and conduct new transportation demonstration projects.

For both the demonstration program and the operating assistance program, eligible applicants were considered to be any local public body in an urban area which had been served by a mass transit system as of August 5, 1973, or which had received a state demonstration grant to establish a new transit system

The 1975 State Budget Act defined local public bodies as either, "a) counties, municipalities, towns or agencies thereof; b) transportation commissions or authorities; or public corporations established to provide mass transit services; or c) two or more of the above acting jointly."

Although state statutes permit the department to fund 100 percent of the costs of a demonstration project, the department followed a policy of requiring at least a 10 percent local share.

The intent of the demonstration program was to fund projects which showed the effect of improved mass transit service in reducing urban vehicular travel, meeting total transportation needs at a minimum of cost, or reducing urban highway and parking facility requirements.

Selection of Demonstration Projects

For each of the four fiscal years that the original demonstration program existed, the Wisconsin DOT published booklets explaining the statutory objectives of the program and the eligibility requirements. The booklets were made available to prospective applicants.

Upon receipt of an application, the department conducted an initial review of the proposal to determine whether all legal requirements, such as the eligibility of the applicant and the meeting of statutory program objectives, were met. The department then informed the applicant whether the applicant met the necessary requirements to be considered a candidate for funding.

All applications approved by the department for possible funding were then evaluated and ranked in accordance with established criteria. The criteria used by the department in evaluating demonstration grant applications were:

- 1) compatibility with local objectives,
- 2) compatibility with existing transportation services,

- 3) compatibility with local and area transportation plans and programs,
- 4) economic efficiency, and
- 5) financial and managerial capabilities of the applicant.

Over the four fiscal years that the demonstration program operated, 16 local demonstration grants totaling \$2,207,298 were awarded for a variety of projects ranging from a downtown transit information center in Madison to an express university bus service to the Milwaukee campus of the University of Wisconsin. The locations of the demonstration projects are shown in Figure 1.

Projects approved by the department were expected to proceed in three phases: project development, project demonstration, and project evaluation. All phases were to be accomplished within 18 months following approval by the department. The project demonstration phase was generally limited to one year or less in duration, although several projects were granted extensions.

The rules stipulated that successful projects be continued beyond the demonstration period, with modifications if necessary. These projects would be automatically eligible for state operating assistance.

DEMONSTRATION PROJECT RESULTS

By the spring of 1979, 14 of Wisconsin's 16 demonstration projects had been completed. Of completed projects, 11 were deemed successful by state transportation officials. In keeping with department policy, the 11 projects were either continued and/or integrated into the regular transit system.

Bus transportation experiments which showed successful results, such as the university UBUS and the downtown Milwaukee Shuttlebug, have been continued with either federal and/or state operating assistance grants. Wisconsin's first paratransit project, the Merrill-Go-Round, demonstrated in 1974, has been continued with state operating assistance grants.

Other successful demonstration projects included the city of Madison's downtown transit information center, the city of Wausau's downtown transit terminal, and Superior's transit marketing program. The neighborhood "feeder" bus system implemented in Chippewa Falls continued under local and state operating assistance. The similar "feeder" system demonstrated in DePere was regarded as successful during the time it operated, although the service was subsequently suspended when neighboring Green Bay expanded its own extensive, regular-route service in June 1977.

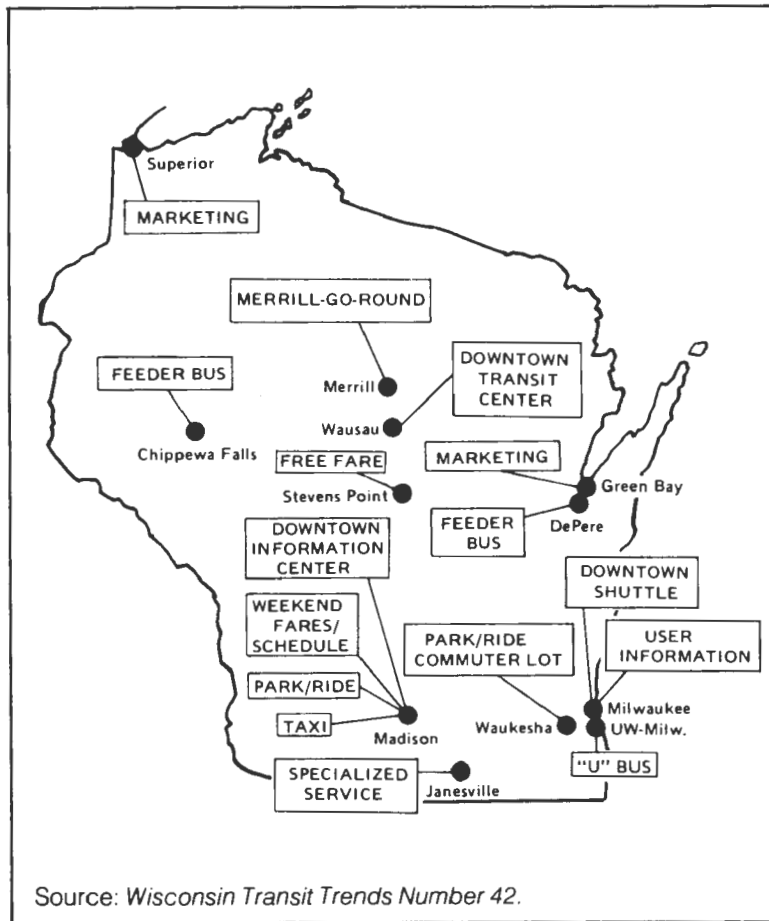


Figure 1 Locations of Wisconsin Transportation Demonstrations

The park-and-ride services tested in both Waukesha County and the city of Madison were permanently integrated into those local transit systems, and are being subsidized with federal and state operating assistance.

One project, the Green Bay transit marketing program, is still in the demonstration phase. The final report is scheduled to be released in the summer of 1980.

Three of the 14 completed projects resulted in no lasting favorable impact, according to Wisconsin transit officials. Among those was the

free-fare promotion conducted by the city of Stevens Point. According to officials, the promotion had no long-range effect upon ridership, although transit use did increase briefly during the free-ride period.

Madison's weekend promotion program, which involved reduced fares and improved services on weekends, also produced disappointing results. One element of the project, improved service on Sundays at regular fare levels, was continued on a permanent basis with federal, state, and local operating assistance.

Finally, the specialized service experiment conducted by the city of Janesville was regarded as the most disappointing demonstration. The project involved the expansion of fixed-route service combined with demand-responsive features for the elderly and handicapped. The small, lift-equipped buses were leased by the city and put into service in October 1977. The project ended in August 1978, without producing any notable success, according to WDOT officials, who attributed the project's disappointing performance to poor project design and management.

Another project, the evening taxi program in Madison, although funded, was not implemented. A feasibility study indicated such strong opposition to the project that it had little chance of success.

Capsule descriptions of the 16 demonstration programs funded by the state of Wisconsin are provided in Table 2, along with the amounts awarded for the projects and the results of the demonstrations. Three projects, described in greater detail below, illustrate the variety of these demonstration programs. These are the University UBUS; a downtown shuttle service, "the Milwaukee Shuttlebug"; and expansion of passenger conveniences in the Wausau transit depot.

The UBUS: User-Oriented Service

The UBUS demonstration project, undertaken in August 1974, provided "user-oriented" bus service (UBUS) to the Milwaukee campus of the University of Wisconsin, to which hundreds of people travel daily. The UBUS traversed routes serving a large portion of the Milwaukee metropolitan area.

The major goal of the UBUS project was to test the effectiveness of high-quality, user-oriented transit service on the well-traveled route to the university campus. The project was also designed to determine the degree to which such service could divert new riders away from their automobiles while minimizing any adverse effects upon existing transit services.

The specific objectives of the project were as follows:

- 1) to reduce urban vehicle travel,

**TABLE 2 WISCONSIN MASS TRANSIT DEMONSTRATION PROGRAM GRANTS AWARDED
DURING FISCAL YEARS 1974-1977**

Grant Recipient	Amount and Year	Project Status as of March 1979
<p>1. City of Merrill: The MERRILL-GO-ROUND, a dial-a-ride bus service which demonstrated "point deviation," a transit concept which was innovative at the time. The Merrill project represented only the second point deviation bus system to be implemented in the U.S., and the first to be implemented in a city the size of Merrill (pop. 9,500).</p>	<p>\$185,814 FY 74</p>	<p>Continued: Operation of the Merrill-Go-Round has been maintained since its inception in 1974 with the aid of state operating assistance funds. Application has also been made for federal operating assistance.</p>
<p>2. Milwaukee County: THE UBUS, a "user-oriented" bus network designed to serve commuters to the University of Wisconsin at Milwaukee. The system provided both integrated services in which existing bus routes were extended to the campus, and exclusive services in which new routes were developed for the use of university students only.</p>	<p>320,345 FY 74</p>	<p>Continued: The UBUS project was deemed successful and has been integrated into the county's permanent transit services. It is now funded under federal and state assistance programs with local matching contributions from the university.</p>
<p>3. City of Madison: DOWNTOWN TRANSIT INFORMATION CENTER, a project which utilized communications equipment, information specialists, and an intensive marketing program.</p>	<p>61,700 FY 74</p>	<p>Continued: Madison's transit information center has been integrated into the county's regular transportation services under federal, state, and local operating assistance programs.</p>
<p>4. City of Madison: WEEKEND PROMOTIONS, a project which enabled the city to test the impact of reduced fares and improved services on weekends. The same marketing consultant retained for the information center also monitored and analyzed the weekend project.</p>	<p>110,200 FY 74</p>	<p>Discontinued: This demonstration, begun in January 1975, was not intended to have an extended life span. The weekend promotion project was suspended in August 1975, after having no significant impact on ridership.</p>
<p>5. City of DePere: DEBUS, a neighborhood "feeder" bus system which provided bus service within the small city of DePere itself, as well as a connecting link to existing bus service from the more urbanized area of Green Bay. The project budget included funds to purchase three 20-passenger minibuses and dispatch radios, as well as operating funds.</p>	<p>158,553 FY 74</p>	<p>Discontinued: Although the demonstration phase of this project was deemed successful by local officials and continued until the summer of 1977, the DePere "feeder" service was eventually suspended in June 1977, when a neighboring bus service expanded to provide equivalent service.</p>

**TABLE 2 WISCONSIN MASS TRANSIT DEMONSTRATION PROGRAM GRANTS AWARDED
DURING FISCAL YEARS 1974-1977 (Continued)**

Grant Recipient	Amount and Year	Project Status as of March 1979
<p>6. Milwaukee County: The SHUTTLEBUG, which provided convenient, low-fare (10¢) service along downtown Wisconsin Avenue as a means of vitalizing downtown activities and minimizing vehicle and pedestrian use of the avenue. Permanent continuation of the Shuttlebug was favored by 92 percent of riders and 94 percent of city merchants.</p>	<p>\$392,951 FY 74 & 75</p>	<p>Continued: Following widespread support among riders and merchants, the Milwaukee Transit Board approved continuation of the Shuttlebug in June 1976, under federal, state, and local aid. The local commerce association has also pledged support.</p>
<p>7. City of Wausau: DOWNTOWN TRANSIT TERMINAL, which was designed and constructed along with four peripheral passenger shelters to make bus travel more convenient and efficient, to provide shelter from inclement weather, to provide a visible attraction for travelers; and to reduce the need for urban highways and parking facilities.</p>	<p>59,247 FY 75</p>	<p>Continued: Wausau's downtown transit depot and passenger shelters continue to serve as major transfer points in the transit network. As a capital investment project, the transit depot is not eligible for operating assistance.</p>
<p>8. City of Chippewa Falls: B.U.S. or Bi-City Unlimited Service which, like DePere's project, demonstrated the neighborhood "feeder" bus system concept. The project provided both local bus service as well as a connecting link to the more urbanized City of Eau Claire. Prior to the project, no service existed between Chippewa Falls and Eau Claire.</p>	<p>267,788 FY 75</p>	<p>Continued: Like DePere's "feeder" bus system, Chippewa Falls' B.U.S. service proved successful in attracting riders. Local officials elected to continue the project on a permanent basis under local and state operating assistance programs.</p>
<p>9. Waukesha County: PARK-AND-RIDE EXPRESS, a project designed to test improved commuter express bus service into downtown Milwaukee. A key element of the project was a park-and-ride lot on Interstate Route 94 which was served by the bus system. Service is provided by Wisconsin Coach Lines, Inc., under third-party contract with Waukesha County.</p>	<p>208,400 FY 75</p>	<p>Continued: Following a test period from September 1975, to December 1976, non-productive express bus trips were eliminated from this demonstration project and county officials elected to continue the service permanently.</p>
<p>10. City of Stevens Point: FREE FARE PROMOTION, a six-week period of free transit service in 1976 intended to attract new riders to the city's transit system. About one-half of the project budget was to cover lost revenues, while the remaining funds covered the cost of reports and studies.</p>	<p>7,811 FY 76</p>	<p>Discontinued: Like Madison's weekend promotion project, Stevens Point's free fare promotion was not intended as a long range project. It concluded its demonstration phase without any significant impact on ridership.</p>

**TABLE 2 WISCONSIN MASS TRANSIT DEMONSTRATION PROGRAM GRANTS AWARDED
DURING FISCAL YEARS 1974-1977 (Continued)**

<p>11. City of Superior: MARKETING PROGRAM, a 12-month project scheduled to begin in January 1977, including elements such as portable information booths, on-bus destination signs, pocket-size route maps, new operator uniforms, special training of operators in human relations, coach painting, and a new system name and logo.</p>	<p align="center">53,000 FY 76</p>	<p>Continued: Although the evaluation phase of Superior's marketing program had not yet begun at the close of 1978, department officials said the program was successful and was likely to continue operating under local assistance programs.</p>
<p>12. City of Madison: PARK-AND-RIDE, designed to test whether new express bus service originating from a peripheral parking lot to downtown Madison would increase bus ridership on the South Belt-line. The experiment included research of the potential transit market, intensive promotion, and construction of a passenger shelter and bicycle racks at the park-and-ride lot.</p>	<p align="center">62,505 FY 76</p>	<p>Continued: Department officials in late 1978 said they expected the Madison park-and-ride project to continue operating beyond its demonstration stage with federal and state operating assistance.</p>
<p>13. Milwaukee County: BUS STOP INFORMATION SIGNS providing route and system information were designed to promote public awareness of the transit system, improve the system's image and increase bus ridership. During the 18-month project, distinctive bus stop signs were field tested on three separate routes.</p>	<p align="center">71,884 FY 76</p>	<p>Continued: The prototype bus stop signs developed under this demonstration project have been deemed successful and Milwaukee transit officials are seeking federal funds to erect the signs throughout the county.</p>
<p>14. City of Green Bay: MULTISERVICE MARKETING PROGRAM, a comprehensive marketing campaign designed to increase public awareness of urban transit service, as well as other services including taxis, inter-city bus service, and special service for the elderly and handicapped. Much of the work was performed by the University of Wisconsin.</p>	<p align="center">54,000 FY 77</p>	<p>In demonstration phase: Final report to appear in summer of 1980.</p>

**TABLE 2 WISCONSIN MASS TRANSIT DEMONSTRATION PROGRAM GRANTS AWARDED
DURING FISCAL YEARS 1974-1977 (Continued)**

Grant Recipient	Amount and Year	Project Status as of March 1979
15. City of Janesville: SPECIALIZED SERVICE which involved an expansion of fixed-route service combined with demand responsive features for the elderly and handicapped. Funds for the project allowed the city to lease three small lift-equipped buses which were put into service in October 1977.	66,000 FY 77	Discontinued: the specialized services project was suspended in August 1978, after showing disappointing results during its demonstration stage.
16. City of Madison: EVENING TAXI SERVICE will study the feasibility of utilizing taxis to provide transit service during the late evening hours when insufficient use was made of large buses. Pending results of the project, the city may contract with a cab company to provide the service on a trial basis.	67,100 FY 77	Not implemented: A feasibility study by Multisystems, Inc., indicated that local opposition was so strong that the project had little chance of success.

- 2) to reduce urban highway and parking facility requirements in the university area,
- 3) to attract enough students, faculty, and staff from areas of concentration to make these routes worthy of integration into the regular bus service in order to facilitate general public transit service,
- 4) to provide efficient and reliable transit service as an alternative to the private automobile and to improve the overall campus/community environment by easing local traffic and parking congestion,
- 5) to develop procedures for future development projects and service experiments.

The project included two general types of service. The first was integrated transit, in which existing local bus routes were extended to the campus; the second was an exclusive service, in which special routes were developed and operated for the use of university students, faculty, and staff. These two types of services differed in characteristics such as the provision of park-and-ride facilities, the provision of partial or full express service, the hours of operation, and the general routing pattern.

By employing service variations and data collection and monitoring techniques, it was possible to judge the effectiveness of different types of service and to test the potential for absorption of the demonstration program within regular transit operations.

The project was conducted under a \$320,345 grant from the state and Milwaukee County. There were third-party contracts between the county and the University of Wisconsin-Milwaukee (UWM), and between the university and the Milwaukee and Suburban Transportation Corporation.

Following the demonstration project, surveys showed that UBUS ridership was higher than that of 19 of the 21 urban bus systems in the state. Only the metropolitan bus systems serving Madison and Milwaukee had more riders. Surveys also showed that transit trips to the university nearly doubled during the demonstration (from 12.3 percent to 21.3 percent), while auto use dropped from 70.1 percent to 61 percent of total trips. According to the surveys, approximately three-fifths of the UBUS riders were new users of transit who had been diverted from their automobiles. Parking studies indicated that the UBUS had eliminated some 1,000 automobiles from the UWM area, reducing parking pressure and traffic tension in the campus community.

Particularly successful was the express bus service from a south-west perimeter of the city directly to the university. The Oklahoma Avenue express bus was highly successful in attracting people to public transit and away from automobiles and in establishing a strong park-and-ride pattern.

Among students, faculty, and staff, there was near unanimous agreement that the UBUS service should not be reduced to save costs. In fact, most of the UBUS demonstration features have been integrated into the Milwaukee County Transit System's permanent services. The UBUS is currently receiving federal and state operating assistance grants with local matching contributions from the university.

UBUS was one of the first projects assumed under the Wisconsin demonstration program. An evaluation produced the following conclusions, which may be of import to transit services in other cities. Many people are diverted from private automobiles and attracted to public transit when transit service is convenient and enhances access to major urban centers. Transit service packages should be developed that cater to people's needs along major routes, thereby serving a larger portion of regular travelers. An extensive marketing program is needed whenever a new venture in mass transit is undertaken. Finally, parking facilities should be provided to enhance and complement transit services.

The Shuttlebug: Downtown Shuttle Service

The main goal of the Shuttlebug demonstration was to provide an efficient, dependable, low-fare transit service in the Milwaukee central business district (CBD). The shuttle was developed to improve and vitalize downtown areas by encouraging more trips to the central business district and, at the same time, reducing automobile congestion and vehicle/pedestrian conflicts in the urban corridor. Shuttle service was provided by Milwaukee Transportation Services along a single route (Wisconsin Avenue), six days a week, at a basic fare of 10 cents.

According to a final report on the demonstration, average weekly ridership rose from 7,480 in the summer of 1975, to 11,190 in the summer of 1976. A user survey indicated that 96 percent of users felt the shuttle service should be continued beyond the demonstration stage; 94 percent of downtown merchants favored the Shuttlebug. The Shuttlebug was shown in surveys to be an important impetus for economic activity in the central business district. Approximately 80 percent of users said they had increased their use of downtown services since the implementation of the Shuttlebug.

Continuation of the Shuttlebug was approved by the Milwaukee Transit Board in June 1976. The service has continued to operate under federal, state, and county operating assistance programs.

Shuttlebug ridership continued to increase. From July 1976 to December 1976, average weekday use rose by approximately 150 more riders per day than during the demonstration. During the first four months of 1977, average daily ridership was 2,429 riders, or 487 more riders per day than during the demonstration. The ridership for FY 1979 was 3,600 riders per day, or 900,000 for the year.

It should be noted that the positive response to the downtown shuttle was not entirely unanimous. At the time of the demonstration, cab operators in the city expressed concern that their businesses had suffered from competition with the low-fare shuttle service.

Downtown Wausau Transit Depot: Transit Attraction

During the summer of 1976, the City of Wausau used a \$59,247 state grant to construct a partially enclosed, heated transit depot. This was built in conjunction with four new passenger shelters located at strategic points along the transit network. The primary objectives of the demonstration project were to make passenger transfers more convenient and efficient, provide shelter from inclement weather, devise a visible attraction and focal point for boarding and transfer, and help reduce the need for urban highways and additional parking in the central business district, and promote additional ridership on the Wausau Area Transit System.

According to a final report on the demonstration project, the construction of the depot and shelters succeeded in encouraging people to use transit. A large number of riders using the system are elderly, and the availability of a protected transit depot has provided safety and convenience in making transfers. Traffic congestion has decreased and pedestrian-automobile conflicts which formerly occurred at the transfer point have been greatly reduced.

Surveys conducted during 1977 indicated that transit riders were overwhelmingly satisfied with the project. Overall, 90 percent of the respondents rated the facility as good or excellent, while nearly 80 percent suggested that similar facilities should be constructed in other Wisconsin communities.

Evaluators of the project recommended that the city of Wausau and the Wausau Area Transit System Board of Directors consider placing additional passenger shelters along the route network. While the shelters were intended to augment the central transit depot, the evaluators con-

cluded that the peripheral passenger shelters themselves had a positive impact on increasing transit ridership.

1977 STATE BUDGET ACT: DEMONSTRATION FUNDING ENDS

The 1977 State Budget Act, which became effective July 1, 1977, contained a \$17.5 million biennial appropriation for the state Urban Mass Transit Operating Assistance Program. This appropriation provided \$8.14 million for fiscal year 1978 and \$9.36 million for fiscal year 1979, allowing sufficient funds for the Wisconsin DOT to provide about two-thirds of the non-federal share of the state's urban transit systems' operating deficits during the two-year period. In addition to substantially increasing the appropriation for the state urban mass transit operating assistance program, the 1977 State Budget Act contained other major changes which effectively eliminated state-funded demonstration projects from Wisconsin's transit aid programs.

The mass transit planning and demonstration program was revised in size and substance. The previously existing version of the act was replaced by a new section which limited the program to transit planning and technical assistance activities to be undertaken by the state DOT. A biennial appropriation of \$60,000 was earmarked to match federal planning funds available under Section 9 of the federal Urban Mass Transportation Act. The net effect of these changes was the elimination of new, state-funded demonstration projects in the state of Wisconsin. In late 1978, transit officials applied for federal operating assistance, newly available to communities with populations of less than 50,000 under Section 18 of the Surface Transportation Assistance Act of 1978. Prior to the 1978 act, communities of fewer than 50,000 were not eligible for federal operating grants and were forced to rely solely on programs like Wisconsin's state-funded operating assistance program.

IMPACTS OF THE WISCONSIN DEMONSTRATION PROGRAM

During its four years of operation, the Wisconsin Mass Transit Planning and Demonstration Program allowed local communities and county governments the opportunity to test a variety of transit innovations. Many of these have proven successful in meeting neglected transportation needs and in attracting new riders to public transit.

The impact of these transit innovations was felt, not only by the riders, but in many cases by the business communities and merchants in the cities served by the transit demonstrations projects. The success of the demonstration program can be measured by the number of projects established as permanent improvements to their respective transit systems. In addition, Wisconsin's commitment to provide ongoing operating assistance to successful projects has enabled these projects to continue.

In addition to providing the financial impetus for local transit demonstrations, the program also supplied cities and counties with the assistance of professional transportation planners and consultants. State transportation officials also pointed out that the Wisconsin program was able to fund a range of projects which would not have met federal demonstration requirements. Wisconsin was also able to award grants and implement the demonstration projects more quickly than would have been possible under a federal demonstration program.

The Wisconsin program was unique in that the legislation which created the program did not draw a rigid distinction between conventional mass transit and paratransit projects. As a result, a number of paratransit services (such as dial-a-ride) have been permanently integrated into the state's regular public transit system and are being coordinated with, and funded under, the state's regular transportation assistance program.

REFERENCES

1. **B.U.S.: Chippewa Falls Project Final Report**, Multisystems, Inc., for Wisconsin Department of Transportation and City of Chippewa Falls, June 1977.
2. **DeBus: DePere Project Final Report**, Multisystems, Inc., for Wisconsin Department of Transportation and City of DePere, May 1977.
3. **Demonstration of Demand-Responsive Transportation in Merrill, Wisconsin**, ECI Systems, Inc., for Wisconsin Department of Transportation and City of Merrill, September 1975.
4. **Downtown Transit Center, Marathon County Planning Commission**, for City of Wausau, November 1977.
5. **Merrill Project Final Report**, Multisystems, Inc., for Wisconsin Department of Transportation, January 1977.
6. **Shuttlebug: The Short-Hop Bus**, Milwaukee County, Department of Public Works, Transportation Division, Milwaukee, June 1977.

7. **A Tale of Three Cities: A Comparison of Transit Demonstration Projects in Chippewa Falls, DePere and Merrill**, Multisystems, Inc., for Wisconsin Department of Transportation, June 1977.
8. **UBUS Demonstration Project Final Report: The Potential for Improved User-Oriented Transit to a Major Trip Generator**, Edward Beimbom, et al. Center for Urban Transportation Studies, University of Wisconsin-Milwaukee, January 1976.
9. **Wisconsin Urban Transit Report No. 5: State Aids**, Urban Transit Assistance Section, Wisconsin Department of Transportation, Madison, August 1976.
10. **Wisconsin Transit Trends No. 42**, Transit Assistance Section, Wisconsin Division of Planning, Madison, December 1977.
11. **Wisconsin Urban Transit Trends No. 40**, Urban Transit Assistance Section, Wisconsin Division of Planning, Madison, July 1977.

SECTION III

CHAPTER 6

Kentucky Air Commuter Service

CHAPTER 7

Washington State Waterways

Chapter 6

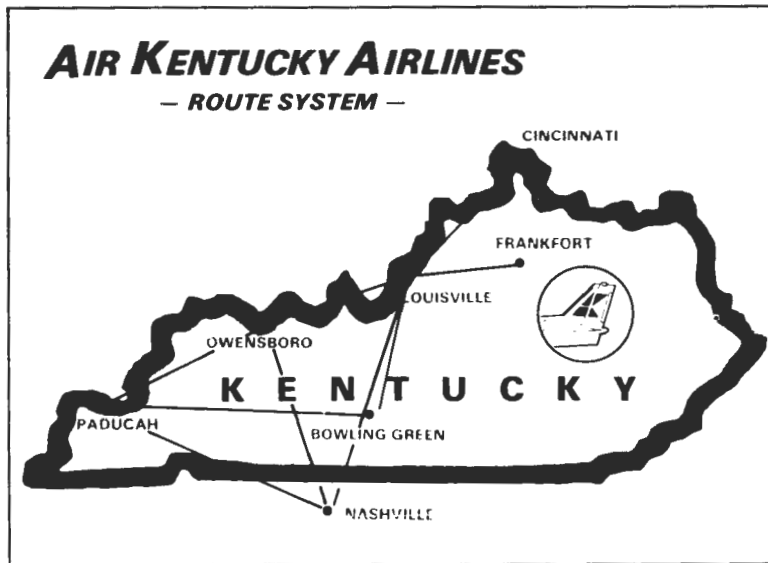
KENTUCKY AIR COMMUTER SERVICE

The commuter market is the fastest growing sector of the commercial aviation industry. Although such services are operated within many states, in 1974 Kentucky was the first to provide state subsidies to intrastate carriers from funds specifically appropriated by the state legislature for that purpose.

Scheduled air service in the United States is provided by four main classes of air carriers: trunk, local, intrastate, and commuter.

Trunk carriers operate large aircraft (e.g., DC-10, Boeing 747, et al.) with an average hop of approximately 600 miles. Eastern, United, and American airlines are among the eleven trunk carriers in the United States certificated and regulated by the Civil Aeronautics Board (CAB).

Local service carriers also operate large aircraft and are certificated and regulated by the CAB. Among the 19 carriers in this group are Allegheny, Frontier, and Southern airlines. By definition, local service carriers operate "routes of lesser density between the smaller traffic centers and . . . principal centers." Because the role of the local carrier is to serve shorter haul "feeder" markets, flights average 200 miles.



Seven intrastate air carriers (e.g., Southwest and Pacific Southwest airlines, et al.) are currently in operation. These carriers fly large aircraft exclusively on intrastate routes and comply only with state regulations.

Because of the rapid growth in the air commuter industry and shifts in carrier classification (due, in part, to the Air Deregulation Act of 1978), it is at present difficult to fix the number of commuter air carriers. However, in 1977, the Official Airline Guide listed 160 commuters, among them Air Kentucky. The Federal Aviation Administration (FAA) defines commuter operations as those consisting of small aircraft with a maximum of 30 seats and a payload of 7500 pounds. Additionally, per CAB order, commuter operators must perform five scheduled round trips per week between two or more points, or carry mail. These carriers operate under authority granted by the CAB, require operating certificates from the FAA, and must obey all applicable Federal Air Regulations. The average hop is 75 miles.

EVOLUTION OF THE COMMUTER CARRIER

Several factors have influenced the growth and regulation of the commercial aviation industry since World War II. New aircraft technology developed during the war was applied to commercial aviation and a new era, characterized by larger and faster passenger planes, emerged. However, trunk carriers that upgraded their fleets felt that low-density points could no longer be served efficiently and economically with the new aircraft.

A new class of airline, the local carrier, was developed to specialize in service to small communities. The local carrier was visualized as a revolutionary service intended to meet the demands of smaller communities on relatively short hauls. The market encompassed smaller points interspersed between larger ones dropped by the trunks.

In 1954, the CAB issued permanent "Certificates of Public Convenience and Necessity" to local service carriers. At this time, the CAB authorized the payment of subsidies to local carriers to insure the maintenance of an adequate level of service to small communities. In many small markets demand was not sufficient to permit economical operations without subsidy. From 1954 to 1977 these payments exceeded \$1.2 billion.

The growth pattern of these local carriers has been similar to the growth of the trunk carriers. Over the past two decades the locals have purchased larger aircraft and have concentrated services in larger markets over longer, more economical routes. Periodically, service to low-

density markets has been suspended and cut back as market forces and regulatory changes have caused the locals to concentrate on certain routes and diminish services to others. The availability of subsidies has not altered this trend, and it appears that local service airlines will increasingly resemble the trunk carriers in terms of volume of business, routing, and operating complexity. The same pattern may ultimately apply to air commuter operations as a result of deregulation.

Today's commuter operators provide service to small communities previously served by the local carrier. The commuters operate small aircraft and provide scheduled service linking hundreds of smaller communities with major hubs. The present commuter air carrier was created by a 1969 CAB order.

Initially, commuters were restricted to operating aircraft with a gross take-off weight of less than 12,500 pounds, which approximately translates to a 19-seat capacity. However, in July 1977, the CAB liberalized these restrictions, enabling commuters to operate 30-passenger aircraft, provided payload not to exceed 7500 pounds.

In October 1978, the Air Deregulation Act went into effect. Trunks abandoned certain routes that local carriers subsequently picked up. In turn, the locals left routes that commuters have since added.

Consequently, service has been dropped to certain small communities which had been eligible for subsidies as commuters have shifted equipment to cover routes taken over from the locals. The pattern first established by the trunks and local carriers seems to have been replicated by the commuters. The result of deregulation appears to be that, although overall operations have become more economical, service to small communities has diminished.

THE COMMUTER'S MARKET

In a word, the market for air commuter operations has flourished. In 1978, U.S. commuter operators flew over one billion revenue-passenger-miles for the first time. By 1990, the FAA predicts commuter operators will service 4.1 million points in the U.S., compared to the estimated 2.8 million points serviced in 1978. Table 1 provides some basic airline market statistics. As shown, growth in commuter passenger, cargo, and mail volume has significantly outpaced that of the CAB-certificated trunk and local carriers during the first half of the decade. Commuter service clearly benefits passengers and assists the certificated carriers by allowing them to suspend uneconomical service.

**TABLE 1
COMMUTER AIRLINE MARKET STATISTICS**

	Year			Annual Growth Rate	
	1970	1974	1976/1978	Commuter	CAB Carriers
Commuter Airlines	138	190			
Seats	8,814	12,633	N/A*		
Aircraft	864	1,042	N/A		
Passengers (millions)	4.3	6.8	7.3	9.4%	5.0%
Cargo (tons)	21,800	69,100	107,400	30.5%	4.2%
Mail (tons)	36,700	78,100	54,300	6.7%	0.2%
*Not available					
Source: Adapted from "Time for Commuters."					





Other data also underscore the value of commuter air service. Table 2 and Figure 1 show the population distribution of communities receiving scheduled passenger air service. Of 645 communities in the 48 contiguous states receiving service, over two-thirds of the communities (440) are served by commuter planes. Of these communities, commuter air carriers provide exclusive service to 221.

TABLE 2
POPULATION DISTRIBUTION OF COMMUNITIES RECEIVING SCHEDULED PASSENGER AIR SERVICE IN 1977

Populations	Communities served by			
	Commuter	Locals	Trunks	Intrastate
Less than 5,000	79	20	2	2
5,000 to 9,999	36	36	4	—
10,000 to 14,999	26	27	3	1
15,000 to 19,999	28	23	2	—
20,000 to 24,999	33	24	8	2
25,000 to 49,999	80	86	30	2
50,000 to 99,999	62	62	40	5
100,000 to 249,999	47	60	54	5
250,000 to 499,999	23	26	27	6
500,000 to 999,999	19	20	20	4
1 million or more	7	7	7	4
Total	440	391	197	31
Percent of Total	68.2%	60.6%	30.5%	4.8%

Note: Excludes Alaska and Hawaii

Source: Adapted from "Time for Commuters."

Communities Served By:		Number	Percent
COMMUTERS		440	68.2
LOCALS		391	60.6
TRUNKS		197	30.5
INTRASTATE		31	4.8

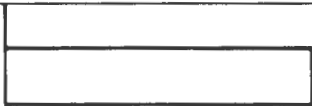
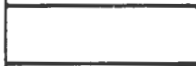


Communities Served Exclusively By:		Number	Percent
COMMUTERS		221	58.9
LOCALS		139	37.1
TRUNKS		13	3.4
INTRASTATE		2	0.5
		375	100.0

Figure 1 Number and Percentage of Communities Served by Four Classes of Air Carriers

KENTUCKY

In the early 1970s, the Commonwealth of Kentucky began looking into ways of stimulating air commuter operations within the state. In doing so, the Commonwealth took measures similar to those of Oregon which, in 1975, initiated a prototypical program for improved state air services.

Kentucky conducted a study, the results of which led the state to contract with an operator, Air Kentucky, to provide commuter air service to several low-density points in the state. Some of these communities now have air feeder service to several major hubs.

The subsidy program has been successful as far as it has gone. However, subsidies were suspended in July 1979 as a result of Air Kentucky's discontinuing service to subsidized routes in order to provide equipment to its more economical routes. The Commonwealth still has funds set aside to subsidize the discontinued routes, yet negotiations with intrastate and local carriers had not produced any agreements to date.

Kentucky Air Commuter System Study

In February 1974, the Kentucky legislature passed Senate Bill 263, authorizing the Kentucky Department of Transportation (KDOT) to establish, with the cooperation of the local airport boards, a "Pilot Demonstration Air Service Project." The program was devised to inhibit and reverse the downward trend in air carrier services. The objective of the demonstration project was to develop regularly scheduled service between five or more points in Kentucky, and to induce private operators to provide the required commuter air service.

Under the provisions of the bill, the Division of Aeronautics and Airport Zoning of KDOT contracted with an airport consulting firm to perform the Kentucky Air Commuter System Study. The study was undertaken to investigate the state's air commuter needs, review elements of commuter air services, propose an air commuter system, and investigate the impacts of the proposed system.

Aircraft type best accommodating anticipated passenger demand was studied and recommendations made. In addition, aircraft type vis-a-vis varying airport facilities and government regulations was examined. Fares, routes, and service patterns were established. Finally, overall costs, revenues, and subsidies were projected.

The study was completed in December 1974, and provided the basis for a significant portion of the revised State Aviation Regulations, as well as the establishment of state subsidies for air commuter operators.

PROGRAM DESCRIPTION

Requirements and Regulations

The level of certificated air carrier service in Kentucky is fairly typical of most states. There are two hub airports within Kentucky's boundaries: Standiford Field in Louisville, and Greater Cincinnati Airport, located in Boone County, Kentucky. Each receives service from several trunk and local carriers. In addition to the two major air centers, Lexington, London, and Paducah received scheduled feeder service from a few CAB-certificated carriers. These airports provide a skeleton for a comprehensive, coordinated intrastate air transportation network. However, from 1961 until the inception of the Kentucky Air Subsidy Program in 1975, air service to more than 173 points in the state had been suspended.

A number of factors considered in the study suggested the advantages of utilizing commuter flights to extend air service within the state. The recent population shift to small and medium-sized cities argued for commuter air service. Industrial plant location (often dependent in part on availability of air service) and increased public acceptance of commuter air service were other considerations. And, although Kentucky has a good highway network, intercity passenger travel in certain areas is difficult because of the mountainous topography. To prosper, small cities within the state required sound, dependable transportation linking them with larger urban areas.

Conclusions based on the Air Commuter System Study dictated the criteria and regulations to be applied to the Kentucky Commuter Air Carrier Subsidy Program. Operating subsidies were selected as an inducement to private operators to expand their service, and funds were appropriated from the Governor's contingency funds. The subsidy guaranteed the operator who met program criteria that all costs would be met and that a reasonable rate of return would be earned.

The state devised several eligibility requirements which included the following:

1. Operators must provide service to five or more points in Kentucky.
2. Routes must connect intrastate points.
3. Level of service provided must be exactly two round-trips between points per day, five days a week.
4. Financial reports must be open to state review to demonstrate accountability, cost efficiency, and appropriate allocation of costs to service points.

5. Airport boards must oversee the activity of carriers at local airports and be responsible for filing subsidy applications on behalf of the operator. (Kentucky statutes prohibit the state from subsidizing private entrepreneurs. However, monies can be passed through the local airport boards to the operator.)

Subsidy Computations

The subsidy was devised to guarantee the operator that eligible routes “break even,” i.e., all costs would be compensated and a reasonable rate of return would be insured. Formulas for the computation of the operator’s system costs were worked out. Costs were computed for each route on a per/mile basis.

Because the subsidies passed through the local airport boards, subsidy requirements had to be computed for each point served by each eligible route. The revenue received by the operator from fares, rates, and charges for passengers, mail, and cargo, respectively, was summed for each route segment, that is, two consecutive points on a route. Half of the total revenue was allocated to the point of origin and half to the destination point.

The route costs were computed as the cost per mile multiplied by the route mileage. The cost of service to a single point was equal to the total route cost divided by the number of points on that route.

The subsidy was computed for each point as the difference between allocated costs and actual revenues for that point. If one point along the route was computed as profit-making, its excess funds were apportioned to the other points along that route, reducing the total subsidy available to the entire route.

Air Kentucky

Air Kentucky was formed as a replacement carrier to Ozark Airline service for the Owensboro-Louisville route. An application for a state Certificate of Public Convenience and Necessity was filed in April 1974. Service was initiated in September 1974 upon issuance of the certificate. Air Kentucky served four points, three in-state (Owensboro, Bowling Green, and Louisville) and Nashville, Tennessee. During February 1975, service was initiated to Frankfort, Greater Cincinnati, and Lexington, all in-state points. Initial operating subsidy payments were made in February 1975, the first month Air Kentucky served the requisite five points.

Several changes in the route structure and frequencies of service have occurred since early 1975. By 1978, service to Paducah was added,

service to Lexington suspended, while the Owensboro-Louisville route became the backbone of the network.

Later, Paducah became a self-sufficient service point and subsidies were discontinued. Following deregulation and the abandonment of a Memphis-Paducah-Evansville-Chicago flight by Delta, Air Kentucky picked up the first leg on the route. (Air Illinois, another commuter operator, took the rest.) Ozark then abandoned one run of its Paducah-Louisville route, which Air Kentucky subsequently took over. To accommodate increased ridership on the added routes, Air Kentucky shifted aircraft from other subsidized commuter stops. As a result, service was cut back and, later, suspended at Bowling Green and Frankfort, where monthly enplanements were averaging 100 patrons or less. With the suspension of service, Air Kentucky was no longer operating the requisite five intrastate routes and the Commonwealth of Kentucky withdrew all operating subsidies.

Subsidy Budget

The original pilot demonstration was authorized for a two-year period. In 1976, after review by the legislature, the Kentucky Commuter Air Carrier Subsidy Program was extended through fiscal 1978 and was again extended for another two-year period to July 1, 1980. The program was originally budgeted at \$258,000 per year. These funds were allotted from general revenue sources for the first time-period. The dollar amount was derived from the estimated subsidy cost computed in the Air Commuter Systems Study.

According to the Kentucky Department of Transportation (KDOT), the program worked out well, as evidenced by the results of its second review during the spring of 1978, at which time funding was approved for two more years at \$250,000 per year. However, in July 1979, by mutual agreement between Air Kentucky and the Commonwealth, the subsidy program was suspended. Commonwealth funds for subsidies are still available, however, should an air commuter operator conform to criteria.

PROGRAM COST AND IMPACT

Costs and impact of the Kentucky commuter subsidy program are best described by comparing subsidy dollars spent to increased passenger enplanements. Subsidies steadily decreased as enplanements went up.

Subsidy Payments

The greatest percentage of the program costs to the state are the financial subsidy payments passed on to Air Kentucky. Some costs are accrued by KDOT and the local airport boards to cover their administrative responsibilities, but these expenses are small and usually covered by the regular operating budgets of these agencies.

Table 3 reports Air Kentucky passenger revenue and state subsidy through December 1977. Total revenue remained fairly constant until the second quarter of 1977 when a large increase occurred. It was at this time that Paducah was added to an old route that was subsequently modified to become the Paducah-Bowling Green-Louisville run. It was extremely successful. Another significant increase in non-subsidized revenue is noted for the following quarter.

Of more importance is the consistent decrease in state subsidy payments. During the period from July 1975 to December 1976, the subsidy accounted for 24.2 to 34.4 percent of total revenues, averaging 28.6 percent. As of the first quarter of 1977, the subsidy portion of total revenue decreased to 19.7 percent. By the third quarter, this percentage fell to 8.8. In July 1979, when Air Kentucky ceased participating in the subsidy program, state subsidy averaged 8 to 10 percent of total revenue.

Two factors indicated a strengthening of Air Kentucky's financial base: 1) the subsidy portion of total revenue decreased greatly in percentage and in absolute dollars, and 2) the subsidy claimed in fiscal 1977 was less than the amount budgeted by the state.

TABLE 3
AIR KENTUCKY REVENUES, JULY 1975 - DECEMBER 1977

Period	Passenger Revenue	Percent of Total	State Subsidy	Percent of Total	Total Revenue
1975					
Jul-Sept	\$131,995.46	65.6	\$69,291.05	34.4	\$201,286.51
Oct-Dec	158,090.27	72.4	60,357.13	27.6	218,447.40
1976					
Jan-Mar	150,493.52	69.1	67,484.33	30.9	217,977.85
Apr-Jun	174,347.21	75.8	55,630.53	24.2	229,977.74
Jul-Sept	157,575.15	72.9	58,562.95	27.1	216,138.10
Oct-Dec	161,554.49	72.7	60,568.53	27.3	222,123.02
1977					
Jan-Mar	182,716.74	80.3	44,960.22	19.7	227,676.96
Apr-Jun	231,146.38	82.2	50,139.74	17.8	281,281.12
Jul-Sept	329,984.00	91.2	31,870.96	8.8	361,854.96
Oct-Dec	276,053.00	N/A*	N/A	N/A	N/A
Source: <i>Commuter Air Service Information</i> .					
*Information not available					

Enplanements

Air Kentucky began service in September 1974. In that month, 117 passengers were transported. This figure grew steadily as shown in Table 4. Growth occurred as other points were added to the network, as schedules and flights were adjusted, and as reliability improved. By April 1975, enplanements reached a plateau of 1700.

Schedule changes in September 1975 (see Table 4) resulted in a jump to 2141 passengers. Volumes remained at this level until early 1977.

The addition of Paducah to the network caused an increase of 1000 passengers in June 1977 enplanements. Monthly volumes averaged more than 3400 through November.

As winter approached, enplanements fell, dropping to 3140 in November, and then to 2500 in December. Preliminary statistics for January 1978 indicated that total enplanements dropped to 1400. Several winter storms grounded Air Kentucky for various lengths of time. Grounding impaired Air Kentucky's commuter service since the airline

relied on two aircraft to provide continuous daily service. Twenty flights, including many multistop trips, were scheduled from 5:00 a.m. to 10:00 p.m. If a plane were grounded at one point, service would be curtailed for the remainder of the day throughout the system.

When good weather returned, ridership increased once more. By the summer of 1979, enplanements were as high as 5000 per month.

Impact of Subsidy on Total Enplanements

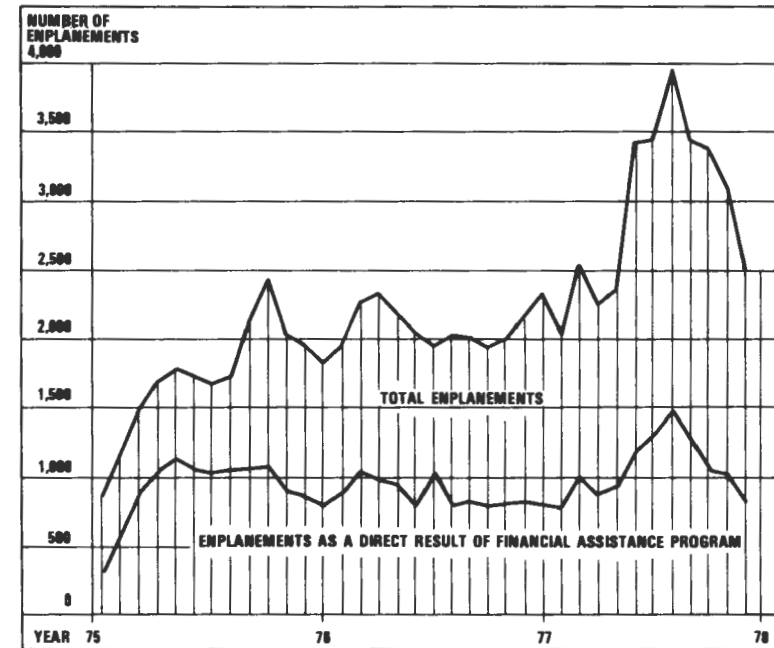
Enplanements are divided into two categories: total enplanements and enplanements from subsidy-eligible points. Figure 2 provides plots of both categories.

Comparison of these two plots is useful in evaluating the success of the subsidy program and Air Kentucky's service. The ratio of subsidized passengers to total enplanements decreased from two-thirds in 1975 to approximately one-third in 1977. While total enplanements during this period increased, the subsidized volume remained fairly constant.

TABLE 4
AIR KENTUCKY ENPLANEMENTS

	1974	1975	1976	1977
January		879	1,799	2,331
February		1,182	1,854	2,054
March		1,516	2,261	2,562
April		1,704	2,329	2,264
May		1,817	2,207	2,389
June		1,736	2,076	3,436
July		1,686	1,969	3,449
August		1,731	2,043	3,975
September	117	2,141	2,027	3,485
October	451	2,466	1,936	3,396
November	769	2,019	2,013	3,140
December	783	1,937	2,146	2,550
Total	2,120	20,814	24,660	35,031

Source: *Commuter Air Service Information*.



Source: *Commuter Air Service Information*.

Figure 2 Monthly Enplanements

The program succeeded toward several ends. The subsidy program was developed to help establish intrastate commuter service. Air Kentucky not only operated this service, but developed several profitable markets and as illustrated in Figure 2, grew substantially. Meanwhile, the actual dollars subsidized per eligible passenger decreased.

FUTURE CONSIDERATIONS

The institutional environment affected both the problem addressed by Kentucky and the program devised as a solution. The problem, the demise of local air carrier service, occurred because of CAB-approved cutbacks in service. The economics of servicing low-density points dictated the necessity for these changes in service.

On the other hand, commuter operations have had a distinct advantage since regulations governing these services have been minimal in comparison to the CAB-certificated carrier. However, the Air Deregulation Act of 1978 may change this. Stricter safety regulations now obtain for the small aircraft used by air commuter operators and adherence will be monitored by the FAA. Instrumentation and pilot licensing procedures have been upgraded, which should improve the safety record of air commuter services, but likewise increase overhead.

Nevertheless, Kentucky's subsidy program operates with minimal requirements and is an inducement for small private operators to develop markets throughout the state with the knowledge that costs on eligible routes will be met. With this in mind, a review of Air Kentucky's operations suggests several problems that should be addressed by any air commuter service within the state. Scheduling and allocation of equipment have caused problems. Although the Owensboro-Louisville and Paducah-Louisville routes eventually became self-sufficient and no longer required subsidies, other routes were hampered because Air Kentucky operated a two-plane system, with both aircraft based in Owensboro. Since most passengers used the commuter planes to make connections at major hubs (i.e., Greater Cincinnati, Louisville, and Nashville, Tennessee) reliable service was jeopardized by the paucity of aircraft. Delays en route, whether for reasons of weather, equipment, or otherwise, diminished the strongest appeal the intrastate air commuter held: timely service to major airports. Schedule adjustments were needed (and are anticipated) to provide improved service to travelers.

Another problem concerned the marketing of services. Many people simply were not aware that they could take a flight from their local

airport rather than drive to a distant hub. There was a strong need to promote the new, unfamiliar air commuter services. Unfortunately, Air Kentucky's limited funds and personnel available for advertising and marketing cramped those efforts. But they are important to future air commuter operations in the state.

Finally, it is unclear how the changes under the new federal Public Law 95-544, which deregulates passenger service, will affect state programs like Kentucky's. Due to the federal preemption clause that removes control by the states over interstate airlines, Kentucky's program may have to be altered because any successful air commuter operator will need to provide commuter service to Nashville, Tennessee, a major transfer point to national airlines. The right of federal authorities to supercede state authority in intrastate systems has been unsuccessfully challenged by the Public Utility Commission of California on two separate occasions. Both cases were appealed. One argument against the continuation of state control is that intrastate carriers may claim interstate status because they carry transferring interstate passengers on intrastate systems.

In any event, Kentucky's program stimulated commuter air travel by patrons, mainly within the business community, who could afford to save time by flying. For instance, the cost of a round-trip ticket from Paducah to Greater Cincinnati Airport, the longest intrastate route flown by Air Kentucky, was \$76 as of February 1978. A one-way ticket cost \$47. Paducah-Louisville, one of the most successful runs, cost \$64 round-trip, \$39 one-way. Owensboro-Louisville cost \$54 round-trip, \$35 one-way. For passengers connecting with locals or trunks at major hubs, discount fares were offered.

As commuter operations have improved and become better known, more riders have chosen to fly. This has been true not only in Kentucky, but across the United States.

REFERENCES

1. "Air Kentucky: Its History and Potential," David Woodford, Kentucky Department of Transportation, presented at the Cincinnati Tri-State Transportation Conference, February 1977.
2. **Air Service to Small Communities: Directions for the Future**, Joseph F. Vittek Jr., Ed., Final Report of the Workshop on Low/Medium Density Air Transportation, M.I.T. Flight Transportation Laboratory, February 1974.
3. **Commuter Air Service Information**, Kentucky Department of Transportation, for the Senate Appropriation and Revenue Committees, February 1978.

4. "Commuters," in **Air Transport World**, Volume 16, Number 3, March 1979.
5. "Commuters Predict Major Increases in Traffic Revenues," Dana K. Henderson, in **Air Transport World**, Volume 15, Number 1, January 1978.
6. **FAA Aviation Forecasts Fiscal Years 1979-1990**, U.S. Department of Transportation, Federal Aviation Administration, Office of Aviation Policy, September 1978.
7. **Kentucky Air Commuter System Study**, Landrum and Brown, for the Division of Aeronautics and Airport Zoning, Kentucky Department of Transportation, December 1974.
8. **Kentucky Aviation System Plan**, Division of System Planning, Kentucky Department of Transportation, 1977.
9. "Local and Commuter Airlines in the United States," Jonathan D. Mayer, in **Traffic Quarterly**, Volume 31, Number 2, April 1977.
10. **Official Airline Guide: North American Edition**, R.H. Donnelly, Inc., Oak Brook, Illinois, 1974-1978.
11. **Oregon Commuter Air Service Project**, Aerospace Corporation, for Oregon Department of Transportation, May 1975.
12. **Senate Bill No. 263**, "An Act Relating to Commuter Air Service," Commonwealth of Kentucky, March 1974.
13. **Time for Commuters, Commuter Airlines 1977 Annual Report**, Commuter Airlines Association of America, Inc., Washington, D.C., October 1977.
14. **Title 602 Kentucky Aviation Regulations: Air Carriers and Airport Boards**, Division of Aeronautics and Airport Zoning, Kentucky Department of Transportation, 1977.

Chapter 7

WASHINGTON STATE WATERWAYS

Geographical barriers often affect the development of transportation services in urban areas. For example, waterways which at one time provided the primary means for interregional access, today hinder the prevailing mode of travel — the motor vehicle. The Washington State Ferry System is an integral part of the Washington Department of Transportation (WDOT) and is the largest such system in the U.S. Because waterways now divide rather than unite cities and towns in northwest Washington, the state has assumed the responsibility of creating a public transportation system on and across Puget Sound.



In the state of Washington, there are several means of mass transportation and many operators, both public and private. The 1970 census reported that a majority of the state's 3.5 million residents lived in the central Puget Sound region. Of these, approximately two million resided in the Seattle-Tacoma metropolitan area located on the east bank of the sound.

The Washington State Ferry System serves a critical function in the local transportation network by linking communities on the Kitsap and Olympic peninsulas with the Seattle urban area. For several Puget Sound islands, the ferry provides the only means by which people and goods are transported. The ferry network, comprising 88 nautical miles, is shown on the map in Figure 1.

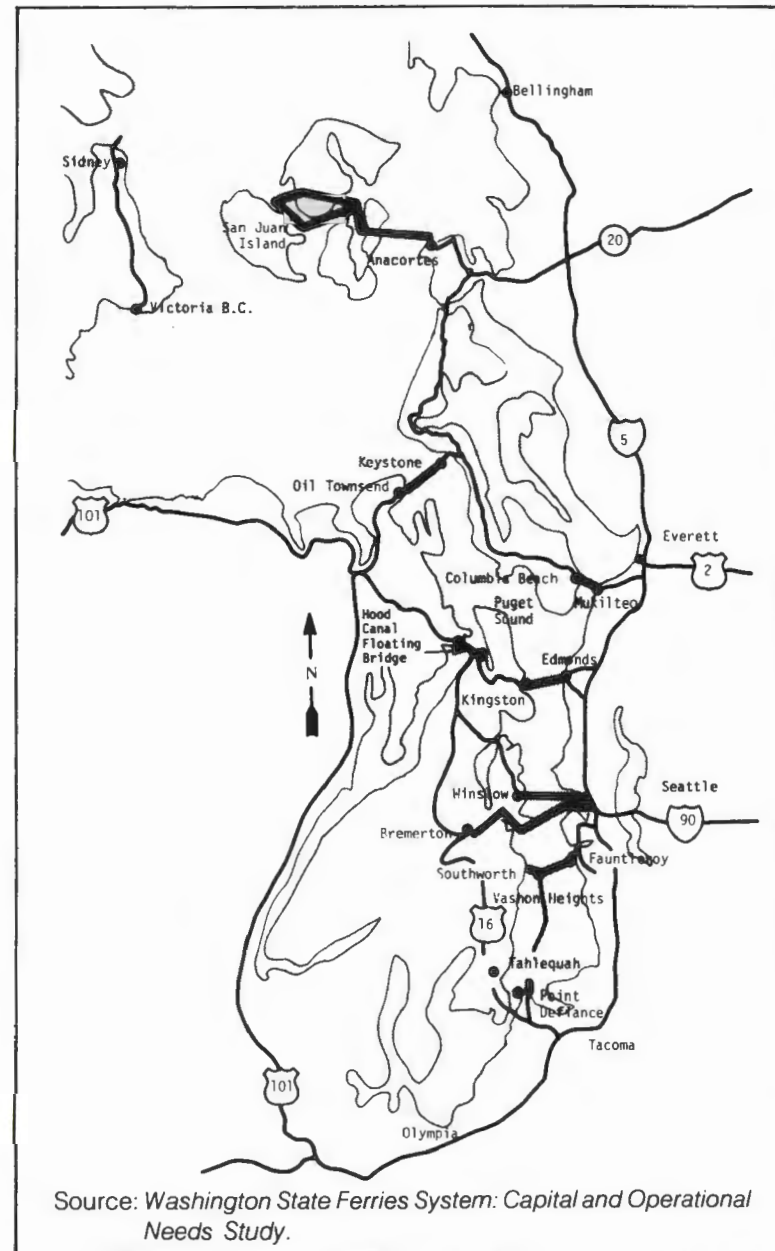


Figure 1 The Washington State Ferry System.

There are two major route complexes. One is composed of the San Juan Islands and the North Sound routes, which serve largely rural areas. There is greater demand on these routes during the summer months due to recreational travel. Peak summer traffic requires about double the ferry vehicle and passenger capacity normally provided by the ferry service.

The Central Sound routes, which provide urban public transportation services to the Seattle area, make up the other complex. As is typical of urban travel patterns, most trips are for home-work travel with peak demand occurring during the weekday commuter hours. Summer traffic increases slightly but not to the extent experienced by the other routes.

The efficiency of ferry operations in Washington is inhibited by two problems that plague such transportation services across the country. The first is the age of the fleet. Several of the vessels are old, unreliable, and scheduled for retirement prior to 1985. Replacement of the fleet is expensive; cost in 1977 dollars for one vessel with an 800-passenger, 100-vehicle capacity was estimated at \$18 million. However, capital costs may be partially offset by lower operating costs of new, more efficient equipment.

The second problem is that most of the terminal facilities do not permit effective coordination of transportation services. Terminal inadequacies include lack of covered walkways, insufficient parking, and inadequate mode transfer facilities for walk-on passengers. In addition, the preferential loading of buses and other high occupancy vehicles would be desirable, but present design does not permit such treatment.

These problems have led to long lines, loading delays, and severe overloading. Often, trucks and automobiles must be left behind on the dock. As a result, automobile drivers are often forced to divert to highways.

PLANNING FOR THE IMPROVEMENT PROJECT

To improve the ferry service and its coordination with landside public transportation services, the state of Washington, through the Washington State Department of Transportation (WDOT), Division of Marine Transportation, has initiated a ferry acquisition and terminal improvement program which focuses on plans both to upgrade the ferry system and to improve its coordination with seventeen other transportation companies in the Puget Sound area. Table 1 lists the variety of carriers involved in this coordination effort.

**TABLE 1
MASS TRANSPORTATION CARRIERS IN THE CENTRAL
PUGET SOUND REGION**

Type of Transit	Transit Operator
Intra-Urban Transit	Metro-Transit (Seattle) Snohomish County Public Transportation Benefit Area Corp. Tacoma Transit Bremerton-Charleston Transportation Co. Everett Transit
Intercity Transit	Cascade Trailways Evergreen Trailways Greyhound Continental Trailways Pacific National Lines Bremerton-Tacoma Stages AMTRAK (rail)
Airport Transit	Suburban Airporter Everett Airporter Airport Hustlebus Service Tacoma Suburban Lines, Inc.
Inter-Island Transit	Island Empire Bus Lines Washington State Ferry System
<i>Source: Washington State Ferries System: Capital and Operational Needs Study.</i>	

Service Policy

During the early 1970s the ferry operations were guided by an optimistic service policy. Weekday capacity on each route should be sufficient to serve 100 percent of the August weekday peak-hour demand, and weekend capacity should be sufficient to serve 80 percent of the August weekend day recreational demand with less than a one-hour wait.

The last year this level of service was met systemwide was 1974. During 1975, the policies were met on a systemwide average, with several routes falling short. By 1976, because of the combined effect of increasing demand and deteriorating service, few of the ferry routes managed to meet these requirements.

Further complications resulted from the loss of the Hood Canal Bridge, a major toll bridge, during a severe storm in February 1979. To compensate for the loss of the bridge, several new ferry routes had to be established across the canal, often at the expense of existing routes.

In planning the ferry system improvement program, the following alternative service level policy options were identified.

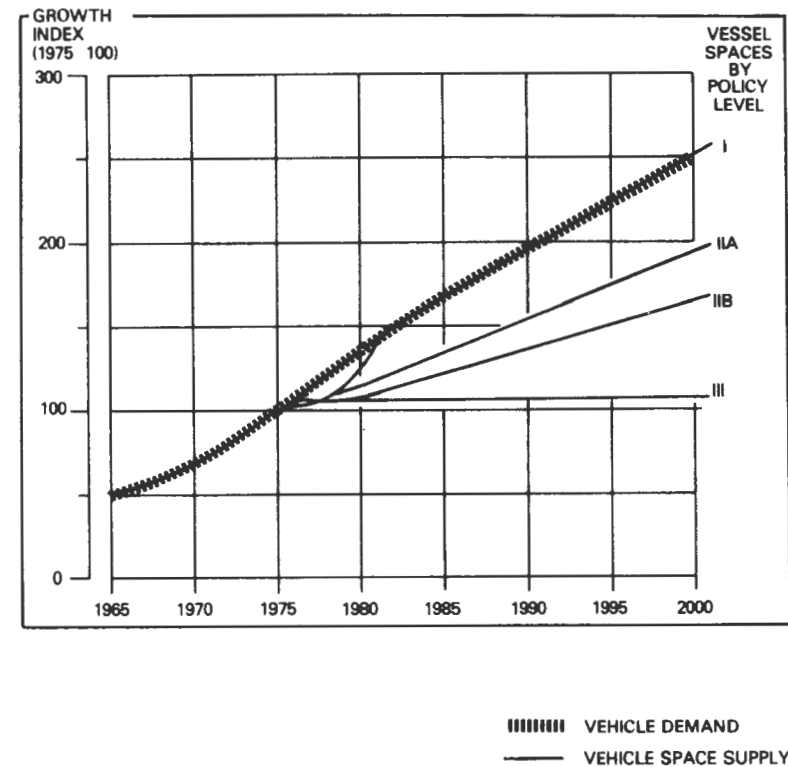
- I. Increase capacity in accordance with expected growth to maintain present service policies. Encourage non-vehicular use by terminal redesign and by coordination of service with landside public transportation.
- IIa. Increase capacity in accordance with growth in ferry travel, ignoring summer recreational peak loads. Encourage non-vehicular use as in Option I. When warranted, provide only passenger service. Capacity should satisfy spring weekday and weekend peak demand levels on all routes.
- IIb. Same as Option IIa, but restrict Seattle urban routes to vehicular levels less than the spring weekday commuter peak, to divert drivers to other modes of travel.
- III. Limit capacity expansion to vessel replacement. Replace retired vessels with vessels of 100-auto capacity. Emphasize acquisition of passenger-only vessels and non-vehicular use.

Figure 2 diagrams these service policies. Option I meets 100 percent of the peak demand (i.e., summer peak travel). Options IIa and IIb are intended to serve ferry-dependent travel, but not necessarily the summer recreational peak traffic. Option III provides capacity equivalent to the 1976 peak demand.

Objectives

Options IIa and IIb were selected as the objective for the ferry acquisition and terminal improvement program. The goal of the program is to create an efficient and economical service for transportation needs on either side of the sound.

A basic objective in both current and future operations is to maximize the ratio of persons to vehicles carried. The intentions are to promote use of carpools, vanpools, and buses, and to encourage more



Source: *Washington State Ferries System: Capital and Operational Needs Study.*

Figure 2 Service Policy level Options

walk-on passengers. Because vessel size and cost are highly dependent upon vehicle capacity, a high person-to-vehicle ratio minimizes vessel requirements and costs.

A future objective is to coordinate ferry schedules with landside public transportation services. Table 2 lists the operators who presently serve ferry terminals or use a ferry run as part of their regular route. It is anticipated that this list will grow in the future because of the current improvement program.

**TABLE 2
COORDINATION WITH LANDSIDE
PUBLIC TRANSPORTATION**

Operator	Terminal Served	Ferry Route
Metro Transit	Fauntleroy Vashon Seattle	Fauntleroy-Vashon
Bremerton Transit SCPTBA Everett Transit Evergreen Trailways	Bremerton Edmonds Mukilteo	Mukilteo-Columbia Beach Edmonds-Kingston Seattle-Winslow
Cascade Trailways Bremerton-Tacoma Stage Lines		
Source: UMTA Grant Application.		

PROGRAM DESCRIPTION

Present System

A map of northwest Washington showing the location of the nine ferry routes appears in Figure 1. This network is served by a fleet of 18 vessels, 12 of which operate year round. The other six are used as backup vessels, providing additional capacity on peak weekends, and operate full-time from mid-spring to early autumn. The loss of the Hood Canal Bridge in February 1979 necessitated the leasing of two barges for two additional ferry routes. With the addition of these barges to the fleet, the total number of vessels in service rose to 20. A description of the vessels which comprise the state ferry fleet, both past and present, is presented in Table 3.

The fleet travels more than 2200 miles each day, making approximately 500 landings. Table 4 presents data on vehicle passenger boardings. The routes vary from only 1.5 nautical miles to 31.9 nautical miles for the Anacortes to Sidney, British Columbia service. In 1977, base fare on the urban routes was 85 cents per passenger and \$2.85 per automobile (including driver). The highest fare was \$2.75 per passenger and \$11.00

for an automobile and driver. By 1979, fares had been raised approximately 13 percent. The base fare on urban routes is currently 95 cents per passenger and \$3.20 per automobile and driver. In addition, a 20 percent summer surcharge has been added during the busy summer recreational travel season. A 40 percent discount is available to passengers without automobiles if they purchase passenger commuter books. A 20 percent discount rate is offered to drivers with vehicles. These discount books became even more valuable when the 20 percent summer surcharge was levied, since the surcharge does not apply to discount commuter books. Elderly and handicapped passengers travel at half fare as passengers, however no discount is applied to their vehicles.

Special fares have been established to encourage the use of transit and vanpooling. A transit permit, costing \$10 annually, allows fare-free passage for a scheduled public transit bus. A vanpool permit, available at a fee of \$10 per quarter, allows fare-free passage for vanpools arranged for work or school travel. The relatively low cost of the bus and vanpool fees is intended to encourage regular use of these modes.

Improvement Project

The improvement project has immediate and long-term elements. The immediate program involves three kinds of actions (see Table 5) which call for acquisition of ferry vehicles, reconstruction of walkways at

Passenger capacity needs were based on two criteria. Vessels should provide: (1) sufficient capacity to meet 95 percent of the 1990 daily peak hour demands for total riders, and (2) sufficient capacity to accommodate the number of riders expected with a full vehicular load.

After an assessment of the needs for each route, it was determined that an 800-passenger capacity would be compatible with a vehicle capacity of 100. All vessels are expected to be in service by 1982. terminals, and construction of bus lane and passenger loading facilities at terminals. The total cost is estimated at nearly \$110 million.

It is anticipated that six 800-passenger, 100-vehicle capacity ferry vessels will be built. A wide range of options for vessel size is available. Minimum requirements dictate the need for a vessel with a vehicle capacity of between 100 and 200. The major factors to be considered in vehicle selection are as follows.

- 1) Capital Cost. Larger vessels have a lower cost per vehicle space.
- 2) Operational Costs. Operating cost for a 200-vehicle ferry is approximately \$5500 per day compared with \$3500 per day for a 100-vehicle vessel. If high

load factors can be maintained one 200-vehicle ferry would be more economical than two 100-vehicle ferries. In periods of light demand, only one of the two 100-vehicle ferries need be put into service.

- 3) Service Frequency. Waiting times are highly dependent upon the number of vessels in service.
- 4) Service Delivery Rate. This rate is a function of the speed, acceleration, length of run, and loading and unloading rates of the ferry. The loading and unloading factors are crucial elements, since the greater capacity of the 200-vehicle ferry is offset by the increased time required to load and unload.
- 5) Flexibility of Assignment. A smaller vessel is more versatile and can be assigned to most routes in the system.
- 6) Terminal Impact. Terminal area requirements such as loading and unloading times, holding area size, and capacity of adjacent street system is a function of vessel size.

Acquisition of two larger vessels is also planned. These ferries will have a vehicle capacity of 200 and provide seating for more than 2000 people. These larger vessels will be required by the late 1980s.

Covered passenger walkways are proposed for five terminals. Four of the 20 terminals currently have such facilities. Covered walkways encourage walk-on passengers by offering protection from the elements and are frequently mentioned as a service improvement need in user surveys. Total cost of these improvements is estimated at \$800,000.

In regard to other terminal facilities, WDOT has prepared a 14-year terminal improvement program based on a needs assessment. Capital and maintenance improvements planned for 1977 to 1981 are estimated to cost \$16.7 million. Upwards of \$28.1 million has been estimated for improvements scheduled for 1981 to 1990.

For the current project, improvements at three terminals are proposed at an estimated total cost of \$1.12 million. At the Vashon terminal, in order to enhance bus service and to encourage carpooling, a preferential loading lane is proposed. The loading and unloading area will be expanded for walk-on passengers. In Bremerton, the existing pedestrian tower has deteriorated and is unsafe; major reconstruction is required. The local transit agency in Point Defiance has agreed to provide

bus service to the terminal. To encourage use of this service, a bus lane will be constructed to bypass terminal congestion. The passenger loading facilities at Bremerton were completed by mid-1979.

The service integration improvement program is intended to demonstrate the importance of efficient and attractive transportation mode transfer at terminal facilities in encouraging ridership growth. These efforts in northwest Washington to coordinate and integrate public transportation operations are applicable to public transportation services nationwide. Effective integration of services reduces passenger travel time and improves system operating efficiency.

The entire improvement program suffered nearly a one-year delay when ferry service had to be substituted for the Hood Canal Bridge. The loss of the bridge had a devastating effect on the entire ferry system, since vessels had to be temporarily "borrowed" or switched around in order to transport passengers and vehicles formerly using the bridge. An extensive series of bus routes has been added to serve both sides of the canal. The integration of bus and ferry service has been quite successful, and the combination has been able to accommodate these additional passengers.

CAPITAL FINANCING

Revenues have not met operating expenses since 1968. Until February 1979, additional funds came from two sources — excess Hood Canal Bridge tolls and state fuel tax revenues. Operating revenues, including the excess bridge tolls, covered by a 3.15 percent allocation of the motor vehicle fund to the Puget Sound Ferry Operations Account. With revenues from the excess bridge tolls no longer coming in, operating deficits are projected. In spite of the improvement program, operating revenues will probably never be a source for capital funding.

Table 6 presents the capital financing schedule proposed for improving the current ferry system. Because of the upheaval caused by the loss of the Hood Canal Bridge, this capital financing schedule for the improvement program has been modified. Currently, the program is nearly a year behind the projected schedule. Revenue for the Puget Sound Capital Construction Account comes from a 3.21 percent allocation of the motor vehicle fuel tax and an allocation of .2 percent of the motor vehicle excise tax. Additional funds are expected as a result of an application to UMTA and from the sale of bonds.

**TABLE 3
WASHINGTON STATE FERRY FLEET**

Vessel	Year Built	Auto Capacity	Passenger Capacity	Status
Walla Walla	1972	206	1305	EXISTING FLEET
Spokane	1972	206	1305	
Elwha	1967	160	1685	
Yakima	1967	160	1685	
Kaleetan	1967	160	1685	
Hyak	1967	160	1685	
Hiyu	1967	40	88	
Tillicum	1959	100	744	
Klahowya	1958	100	744	
Evergreen State	1954	100	744	
Kulshan	1954	65	15	Purchased in 1965
Rhododenron	1947	65	157	Vessels to be retired prior to 1985
Olympic	1938	55	73	
Vashon	1930	50	348	
Quinault	1927	75	358	
Klickitat	1927	75	358	
Nisqually	1927	75	358	
Illahee	1927	75	358	
Skansonia	1929	32		
Kalakala	1927	70		Vessels retired between 1965 - 1975
Enetai	1927	70		
Willapa	1927	70		
Klahanie	1928	50		
Chetzemoka	1927	50	N/A	
Kehlakan	1926	50		
Crosline	1925	30		
San Mateo	1922	50		
Leshi	1913	40		
Shasta	1922	55		
Rosario	1923	33	N/A	
Kitsap	1925	32		Vessels retired prior to 1955
Chippewa	1890	52	N/A	

Source: Adapted from *San Diego Bay Passenger Ferry Feasibility Study, Washington State Ferries System: Capital and Operational Needs Study, and "Washington State's Marine Highway: The State Ferry System."*

TABLE 4 WASHINGTON STATE FERRY SYSTEM ROUTES, FARES, AND VOLUMES

Route	Length (nautical miles)	Fares		1976 Volumes		
		Auto and Driver	Passenger	Vehicles	Persons	Avg. Load Factor (percent)
Anacortes-Sidney	31.9	\$11.00	\$2.75	177	631	56
Anacortes-San Juan	19.3	3.60*	1.20*	874	2208	
Pt. Townsend-Keystone	4.0	2.85	0.85	324	773	36
Mukilteo-Columbia Beach	2.3	0.90	0.55	2867	5912	44
Edmonds-Kingston	4.5	2.85	0.85	2473	5358	43
Seattle-Winslow	7.5	2.85	0.84	3997	11352	40
Seattle-Bremerton	13.5	2.85	0.85	2082	7143	44
Fauntleroy-Vashon- Southworth	4.2	2.20*	0.65*			51
Fauntleroy-Southworth				901	1843	
Fauntleroy-Vashon				2178	4369	
Vashon-Southworth				158	334	
Pt. Defiance-Tahlequah	1.5	1.90	0.55	447	976	31
Total	88.7			16477	40900	44%
*Weighted average for all legs						
Source: UMTA Grant Application.						

**TABLE 5
CAPSULE OF FERRY SERVICE IMPROVEMENT PROJECT**

Item	Description	Cost
Acquisition of Ferries	Purchase six 800-passenger, 100-auto capacity vessels at \$18,000 each	\$108,000
Covered Passenger Walkways	Construct covered walkways at five terminals:	
	Fauntleroy	\$185,000
	Vashon	175,000
	Southworth	160,000
	Kingston	135,000
	Edmonds	145,000
	Total	\$800,000
Bus Lane and Passenger Loading	Construct bus lane and passenger loading area on Vashon Dock	\$770,000
	Construct passenger loading facility at Remerton	\$250,000
	Construct bus lane and pedestrian walkway at Point Defiance	\$100,000
Source: UMTA Grant Application.		

During the eight year program, of the \$322 million scheduled for capital spending, 11.5 percent, 8.1 percent, and 66.8 percent will pay for terminal improvements, vessel refurbishments, and vessel acquisitions, respectively. The remaining 13.6 percent is scheduled for bond servicing.

PUBLIC REACTION

For the most part, the ferry system improvement program has the support of the public, other transit operators, and involved local government agencies. However, citizen opposition has been expressed

by the residents of Vashon Island, who fear that ferry service improvements will induce growth and disturb the island's rural environment.

Employment will not be adversely affected. In fact, a significant number of jobs will be created during construction activities. Public hearings will be conducted to review social, economic and environmental impacts. Provisions for the elderly and handicapped will be incorporated into the design of the new ferries and terminal facilities. The improvement program itself has been included as one element in the U.S. DOT's required Transportation System Management Plan for the Seattle area.

It is fully expected that Washington State's support of its "marine highway" system will reduce the use of private automobiles and increase the use of public transportation.

TABLE 6
ESTIMATED CAPITAL FINANCING FOR FERRY SYSTEM IMPROVEMENT PROGRAM
(In millions)

REVENUE SOURCE	1977-9	1979-81	1981-3	1983-5	Total
3.21% Motor Vehicle Fuel Tax	\$11	\$12	\$13	\$14	\$50
0.2% Motor Vehicle Excise Tax	14	22	25	28	89
Carryover	13	0	0	0	0
Total Puget Sound Capital Construction Account	38	34	38	42	152
Urban Mass Transportation Administration	2	10	4	24	40
Bond Sale	0	30	95	10	135
Total	\$40	\$74	\$137	\$76	\$327
EXPENSE ITEM					
Terminal Improvements	\$ 9	\$10	\$ 8	\$10	\$37
Vessel Refurbishments	0	7	19	0	26
Vessel Acquisition	13	69	89	44	215
Total Construction	22	86	116	54	278
Bond Debt Service	0	4	19	21	44
Total Expenditures	\$22	\$90	\$135	\$75	\$322
End of Period Balance	\$18	\$ 2	\$ 4	\$ 5	\$ 5
Source: UMTA Grant Application.					

REFERENCES

1. **Cross-Sound Transportation Study**, V.T.N. Inc., for Washington State Highway Commission and Washington State Legislative Transportation Committee, December 1972.
2. "Improving Ferry Service Across Long Island Sound," Michael R. Cohen, Tri-State Regional Planning Commission, New York, in the **Transportation Research Record**, Number 635, Transportation Research Board, 1977.
3. **San Diego Bay Passenger Ferry Feasibility Study**, URS/Coverdale and Colpitts, Inc. and Linscott Associates, for the Comprehensive Planning Organization of the San Diego Region, May 1975.
4. **UMTA Grant Application: Washington State Ferry System**, Part IV, Washington State Department of Transportation, Division of Toll Facilities, December 1977.
5. **Washington State Ferries System: Capital and Operational Needs Study**, Alan M. Voorhees and Associates, Inc., for Washington State Highway Commission, Division of Toll Facilities, February 1977.
6. "Washington State's Marine Highway: The State Ferry System", George H. Andrews, in **American Highway and Transportation Magazine** (now **AASHTO Quarterly**), Volume 54, Number 4, October 1974.



SECTION IV

CHAPTER 8

Iowa Railroad Branch Line Rehabilitation

CHAPTER 9

Los Angeles Freeway Transit

CHAPTER 10

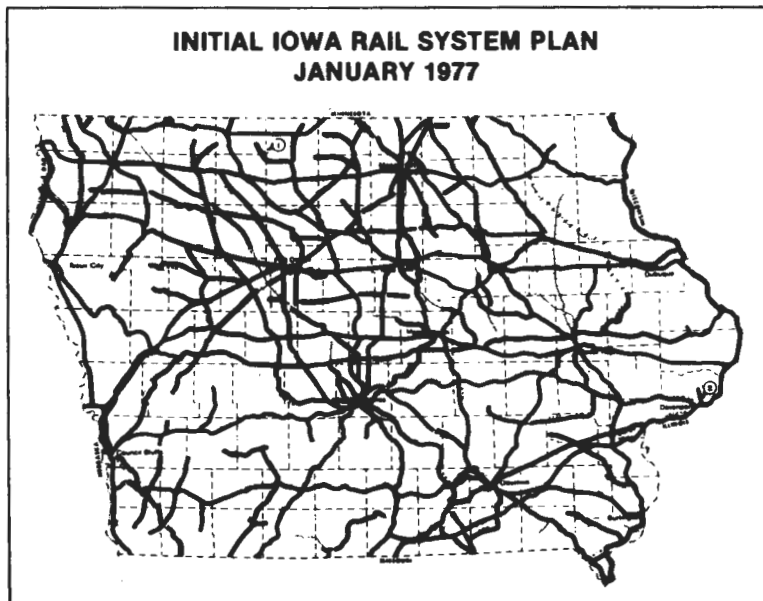
Oregon Bicycle Path Program

Chapter 8

IOWA RAILROAD BRANCH LINE REHABILITATION

The railroad played a crucial role in the history and economic development of this country. However, during recent decades, the railroad industry has fallen on hard times. The Regional Rail Reorganization Act of 1973 (3R Act) was passed by Congress to help improve rail operations in selected portions of the country. Subsequently, federal assistance was provided to all the states with the passage of the Railroad Revitalization and Regulatory Reform Act of 1976 (4R Act). But, even before federal support was extended to Iowa, that state had begun a unique program to revive their railroads.

Many factors have contributed to the depressed state of the railroad industry. These include increasing labor costs and labor rules, deterioration in railroad equipment and track, changes in market locations, shrinking shipments and resources, and, most importantly, competition from the trucking industry.



Financial problems in the railroad industry seriously affect economic conditions throughout the country. This is particularly true for freight services. The assembly of automobiles, shipments to and from steel plants, distribution of food, and the shipment of coal and other heavy raw materials are all influenced by the availability of rail transportation.

FEDERAL INVOLVEMENT IN RAILROAD REHABILITATION

Initially, Congress passed the Regional Rail Reorganization Act of 1973 to resolve the northeastern railroad problems. Between 1967 and 1972, seven carriers in the northeastern United States — Penn Central Transportation Co., Lehigh Valley Railroad Co., Erie Lackawanna Railroad Co., Reading Co., Boston and Maine Corp., Ann Arbor Railroad Co., and Central Railroad Co. of New Jersey — declared bankruptcy. Together, these companies operated more than 29,000 miles of track, over ten percent of the total nationwide rail system. The Interstate Commerce Commission (ICC) estimated that 2.7 million jobs in the northeast alone would be lost if these seven railroads suspended services.

Congress passed the 3R Act when it became apparent that the railroads could not reorganize under existing laws. For example, the Penn Central Transportation Company, the largest operator in the northeast, had unsuccessfully attempted several times to reorganize under Section 77 of the Bankruptcy Act. The purpose of the 3R Act was to maintain a rail service system in the northeast adequate for regional needs as well as the rest of the country. The law allowed railroad companies to reorganize into a more economically viable system. As a result, the seven bankrupt railroads merged to form the Consolidated Rail Corporation (CONRAIL).

In addition to reorganization, the 3R Act posited massive abandonment of unprofitable light density branch lines as the long range solution to railroad problems. To prevent abandonment of lines which might be useful if repaired, the act required the seventeen northeastern states and the District of Columbia (see Figure 1) to develop state railroad plans. These plans examined all aspects of state rail operations and identified the essential rail lines for rehabilitation. Federal assistance was then provided to help states improve those desirable light density lines previously designated for abandonment.

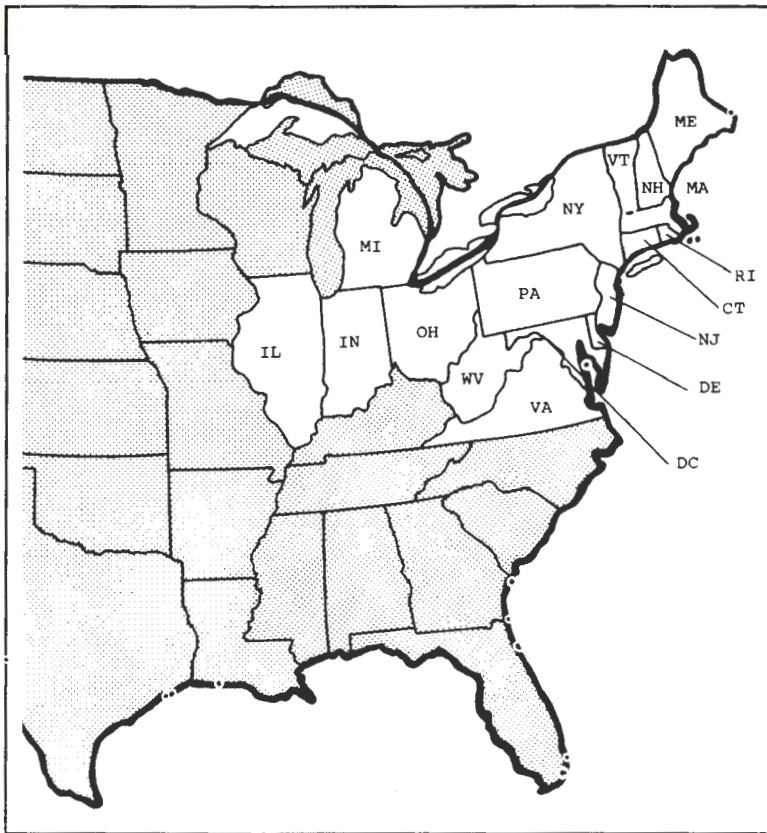


Figure 1 States required to prepare railroad plans under the 3R act

STATE REHABILITATION ACTIVITIES UNDER THE 3R ACT

Historically, the states themselves have used several methods to assist the railroads. They have: 1) purchased railway corporation stocks, 2) provided land grants, 3) used public funds for railroad construction, 4) provided funds as loans and bonds, 5) provided property tax exemptions, and 6) guaranteed railroad bonds.

More recently, the Rail Service Planning Office of the ICC compiled a list of alternative approaches to preserving light density line rail service. Several of these approaches call for the state to assume an indirect or supportive role to existing railroad management. Forms of support may include state assistance in reducing rail user rates, tax relief provisions, provision of special loans or compensation for losses, and promotion of alternate rail services or more efficient transportation combinations (e.g., train/truck coordination). Other approaches recommended by the ICC call for states to intervene more directly to improve rail operations. Generally, these "basic" approaches recommend that states either purchase, lease or contract with a lessee for the complete light density rail properties or the right-of-way to rail properties. Under such arrangements, the states may become directly involved in the management, maintenance, operation, repair, relocation, or abandonment of rail lines.

The state railroad plans resulted in a variety of strategies for preserving branch lines. For example, New Hampshire authorized its Public Utilities Commission to exercise broad powers in rehabilitating railroads. An Advisory Committee on Railroads was created during the program planning phase. A complete shipper survey, an analysis of road bed conditions, and a study of population and employment along the rail lines were conducted. Subsequently, New Hampshire acquired two branch lines, which were, in turn, leased to short line operators. Federal funds under 3R were used for track maintenance and operating subsidies.

In a second example, Ohio created the Ohio Rail Transportation Authority (ORTA) to meet 3R requirements. ORTA was granted powers to "purchase, lease, restore, repair, relocate or upgrade any rail property." ORTA could rehabilitate property it had acquired or property owned by others, as long as the action was necessary for efficient operation of rail services. Figure 2 illustrates the process used by ORTA to analyze subsidy and acquisition needs of abandoned rail lines. Three series of criteria were used. They reflected energy-related issues, potential rail freight, and alternate rail use.

Federal railroad legislation was eventually extended to the 31 remaining states with the passage of the Railroad Revitalization and Regulatory Reform Act of 1976 (4R Act). Those states were also required to prepare state railroad plans. The 4R Act continued the branch line rehabilitation policy of the 3R Act, but on a national scale. However, for three years prior to the passage of the 4R Act, Iowa operated its own railroad rehabilitation program. Once 4R was enacted, Iowa simply incorporated these same program activities into a State Railroad Plan, and used Federal funds to help defray the state's portion of program costs.

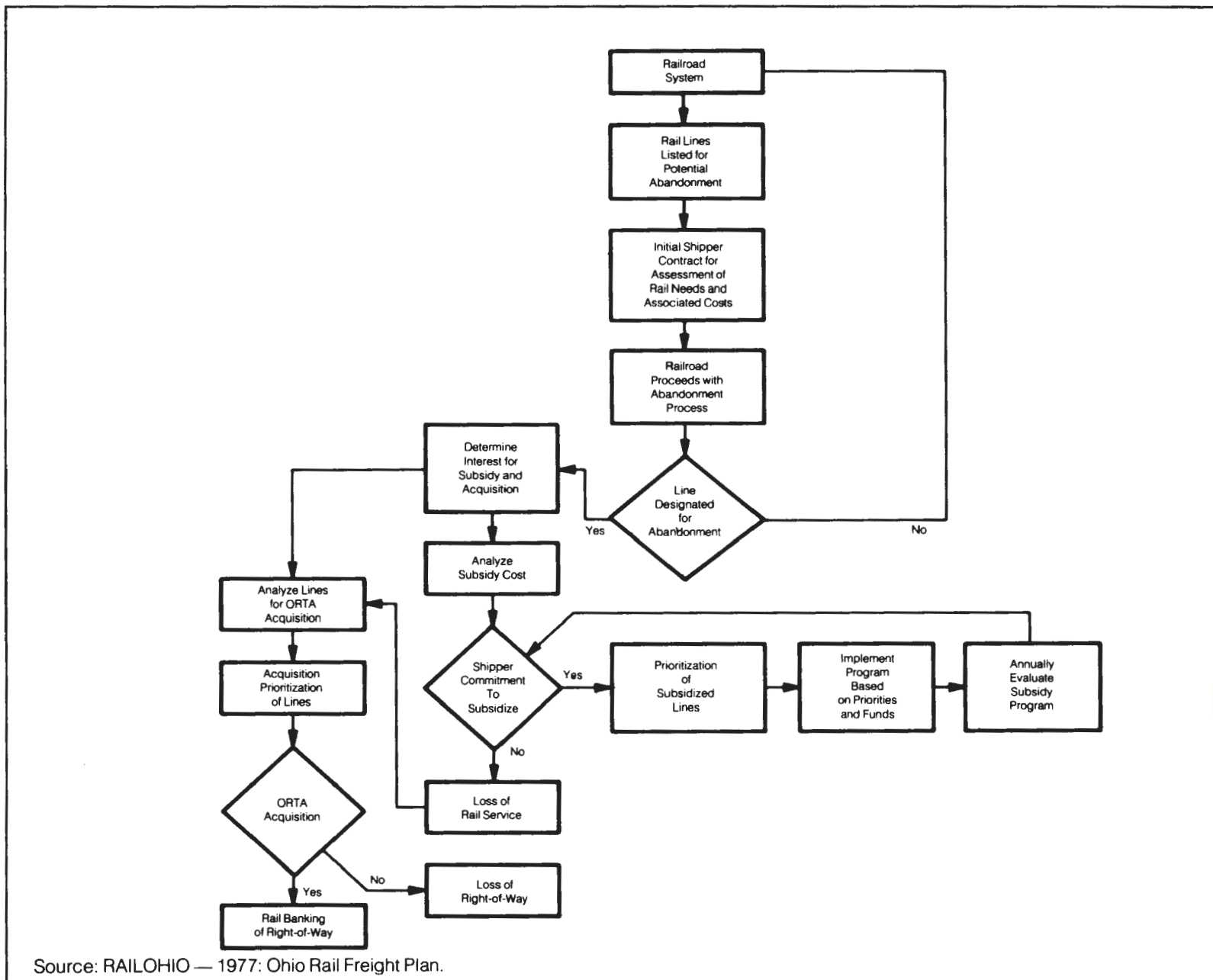


Figure 2 Ohio Rail Transportation Authority's Subsidy and Acquisition Process for Abandoned Rail Lines

IOWA'S BRANCH LINE PROGRAM

At the end of 1973, nearly 1700 miles of Iowa branch lines had been qualified for abandonment under rules adopted by the ICC. At that time, grain production within Iowa had greatly increased, primarily due to foreign demand. The state was unable to meet these demands because of poor rail service and the energy crisis of 1973-1974 which limited truck fuel supplies.

On its own initiative, the state of Iowa instituted a unique rail assistance program to solve its grain shipment problems. Three million dollars per year were initially allocated to support the program. (More recently, with the Federal funding input, state allocations have been reduced to \$1.5 million per year.) Interested parties, including the governor, legislators, and shippers considered several programs to upgrade Iowa's rail system. These ranged from state acquisition of branch lines to state subsidies for shippers, enabling shippers to purchase branch lines. In the program ultimately selected, each of the three parties — the state, the shippers, and the railroad — cooperated in the rehabilitation of branch lines.

There were several concerns with regard to passage of the Iowa Railroad Assistance Act. It was expected to arouse opposition from truckers and other groups, but this opposition did not materialize. There was also some question about the wording of the law, which prompted an investigation on the part of the Attorney General. In his opinion, the law was intended to serve a public benefit rather than the private purposes of the railroads. Secondly, the Attorney General determined that a branch line is distinct from, and feeds, the main operating line of a railroad. Thus, it is not a "short line" or small railroad in itself, and the state may make loans or grants to subsidize branch line repair.

The railroad companies were, at first, reluctant to cooperate. They feared the program would preclude abandonment of unprofitable branch lines, and instead require that these lines be rehabilitated. The railroads preferred to have the freedom to use state funds to upgrade lines of their own choosing. The Governor's office is credited with gaining participation of the railroad companies in a program using state-determined guidelines.

Program Administration

Originally, Iowa's railroad improvement program was included as part of the 1974 legislation, 1222, S.F. to create the Energy Policy Council (EPC). Responsibility for administering the program was given

to the EPC. However, when a state Department of Transportation (DOT) was established the following year, the Railroad Transportation Division within Iowa DOT assumed responsibility for the rehabilitation program. Recently, a Railroad Abandonment Advisory Committee, made up primarily of Iowa DOT officials was created. This committee helps minimize conflicts that can occur between those parties who prefer greater line abandonment and those who prefer more branch line rehabilitation.

Selection of Branch Lines for Rehabilitation

To become a candidate for rehabilitation under the Iowa program, a branch line must be identified by either a shipper (or shipper's association) or by a railroad. A rating system is then used to analyze all proposed projects. Points are assigned to six categories as follows: historical viability, potential viability, track structure, safety, shipper participation, and participation by the railroads.

These criteria have been questioned. Railroad operators believe that projected traffic should be the sole determinant of branch line selection. On the other hand, many people feel that social and environmental factors should be considered. There is agreement, however, that this combination of criteria minimizes political influence and parochial interests.

Moreover, the criteria have not been used as an absolute means of selecting projects. Branch lines that do not score a minimum of 50 points are dropped from further consideration. Thereafter, shipper and railroad interest, specifically in terms of financial support, is a condition for rehabilitation for the remaining projects. Not all projects scoring over 50 points have been selected for rehabilitation.

Contract Negotiations and Repayment Procedures

Separate contractual agreements are negotiated for each branch line that is rehabilitated. Several items must be agreed upon in these contracts. These include: 1) method, amount, and period of repayment; 2) method of purchasing labor and materials; 3) extent of upgrading, and future maintenance; 4) percentage of overall costs contributed by each party; and 5) statement of local interest.

Rehabilitation projects are initially paid for with funds contributed jointly by the particular branch line railroad operator, shippers along the branch line in question, and the state. In most cases, each contributes approximately one-third of the project cost. Occasionally, the state has agreed to pick up the railroad's portion. Eventually, the rehabilitation

cost is assessed fully to the railroad. The initial contributions mentioned above are, in essence, 'loans' by the shippers and the state to assist and encourage the railroads to upgrade branch lines quickly and completely.

Provisions have been established for repayments to the shippers by the railroads. Two different methods have been used: either a flat per/car rebate or a graduated revenue per/car. The flat per/car provision ranges from \$25 to \$50 per car, depending on car size and volume of goods. This system has been preferred by the shippers, railroad, and the state because of its simplicity. With the graduated revenue method, the rebate increases slightly each year during the repayment period. Payments are usually made monthly as specified by a formal contract. Rebates to the shippers cease when the original contribution is returned in full.

The state receives repayments only if traffic on the branch line increases during the following five years. If traffic does not increase, the railroad need not reimburse the state. Methods for recompense are the same as those used for the shippers.

In cases where repayment is required and the state's contribution was one-third or less of the total cost, money is not returned directly to the state. Rather, the money is held by the railroad in a special account set up for future rehabilitation projects. If the state's contribution was greater than one-third, the funds exceeding one-third are returned directly to the state's Railroad Assistance Fund to be used for any future project. As with shipper rebates, the state does not receive repayments in excess of its contribution.

Finally, there are three interesting aspects to the state repayment provision.

- 1) Funds rebated to the state, but held in railroad accounts, can only be used by that railroad for improvements to other branch lines it owns and operates in Iowa.
- 2) Because of this repayment provision, the rail assistance funds are pyramided; that is, funds available in subsequent years are equal to the annual appropriation plus any previous year's accumulated repayments.
- 3) In the case of bankrupt railroads, the contributions are treated as an administrative expense under bankruptcy proceedings. In

other words, such contributions do not have to be repaid in the event of bankruptcy.

IMPACT OF THE IOWA PROGRAM

The Iowa Railroad Assistance Program has been very effective in improving railroad operations within the state. As of October 1979, a total of 832 miles of track had either been repaired or was contracted for repair. This has been accomplished at a total cost of \$35,284; the state, shipper and railroads each paid \$13,452, \$13,458, and \$5,662 respectively. A breakdown of program expenditures and accomplishments is shown in Table 1.

A vital component of the program has been the participation of shippers, who must use the rehabilitated lines in order to recover their investments. In most cases, initial investments have been recovered within a relatively short time. The shippers attribute their continued willingness to support the program to several factors. First, the railroads have improved their services. There have been significant decreases in train derailments. The refurbished track allows use of better equipment, notably, larger freight cars. At the same time, farmers can deal directly with local grain elevator operators and have greater control over distribution of their grain. Transporting grain by rail costs up to 15 cents less per bushel than by truck, depending on specific product and distance to be shipped. Finally, the improvements in train service have forced the trucking industry to maintain its rates at a competitive minimum.

Railroad company officials also appear satisfied with the rail assistance program. They have suggested that similar programs be implemented in neighboring states. State legislators have shown support through continued annual appropriations to help finance the program.

The passage of the 4R Act of 1976, and other recent federal regulations made Iowa eligible for more than \$18.1 million in federal assistance. Most recently, the federal Local Rail Service Act in 1978 continued federal funding assistance and expanded rehabilitation activities to include those light density lines not yet designated for abandonment.

TABLE 1
IOWA BRANCH LINE RAILROAD UPGRADING PROJECTS NEGOTIATED, AS OF OCTOBER 15, 1979

Branch Line	Miles	Total Cost	Federal	State	Shipper	Railroad
		(in thousands)				
1. Ida Grove - Maple River (CNW)	38	\$ 176		\$ 80	80	\$ 16
2. Indianola - Carlisle (RI)	11	600		400	200	0
3. Spencer - Herndon (MILW)	101	3,122		1,598	385	1,139
4. Creston - Orient - Fontanelle (BN)	34	1,041		541	250	250
5. Humboldt - Eagle Grove (CNW)	26	1,800		800	500	500
6. Mona Jct. - Minn. Border (ICG)	83	558		191	176	191
7. Atlantic - Audubon (RI)	26	741		356	385	0
8. Iowa Falls Gateway (RI)	328	14,536	1,786	4,842	6,466	1,442
9. Alden - Eldora (CNW)	20	1,239		826	413	0
10. Milwaukee North Line (MILW)	67	3,448		1,318	1,479	651
11. Kanawha - Belmond - Clarion (CNW)	24	1,073		713	360	0
12. Cedar Falls Jct.-Cedar Falls (CNW)	7	952		623	329	0
13. Ames - Bancroft (CNW)	29	3,641	701	514	1,215	1,211
14. Altoona - Pella (RI)	37	2,002		650	1,090	262
15. Hawarden Switch Connection (MILW)	1	355	225	0	130	0
TOTAL	832	\$35,284	\$2,712	\$13,452	\$13,458	\$5,662
CNW — \$ 8,881,000 RI — 17,879,000 MILW — 6,925,000 ICG — 558,000 BN — 1,041,000						
Source: Railroad Division, Iowa Department of Transportation						

REFERENCES

1. "A Review and Analysis of the Branch Line Policy Established by the Railroad Revitalization and Regulatory Reform Act of 1976," Benjamin J. Allen, presented at the Transportation Research Board Annual Meeting, Washington, D.C., January 1978.
2. "Court Spurs Congressional Action to Save Northeast Rail Service," Michale J. Malbin, in **National Journal Reports**, Washington D.C., February 1974.
3. **Iowa Rail Plan**, Iowa Department of Transportation, Planning and Research Division, Ames, Iowa, October 1977.
4. **New Hampshire Railroad Plan — Phase II**, New Hampshire Transportation Commission, Concord, N.H., December 1975.
5. "Questions Persist in Northeast Rail Reorganization," Michael J. Malbin, in **National Journal Reports**, Washington D.C., January 26, 1974.
6. **RAILOHIO-1977: Ohio Rail Freight Plan**, Ohio Rail Transportation Authority, Columbus Ohio, 1977.
7. "Rail Reform Issue Divides Carriers, Major Shippers," Michael J. Malbin, in **National Journal Reports**, Washington D.C., February 2, 1974.
8. **Railroad Rehabilitation: A Program to Upgrade Selected Branch Lines in Iowa**, The Council of State Governments, Lexington, Ky., January 1976.
9. **Railroad Revitalization and Regulatory Reform Act of 1976**, Public Law 94-210, 90 Stat., 31, February 5, 1976.
10. **Rail Service Continuation Subsidy Decisions**, Rail Service Planning Office, Interstate Commerce Commission, Washington D.C., 40 FR 111 p. 24686-9, June 9, 1975.
11. **Regional Rail Reorganization Act of 1973**, Public Law 93-236, 87 Stat., 985, January 2, 1974.
12. **The State and Rural Rail Preservation: Alternative Strategies**, The Council of State Governments, Lexington, Ky., October 1975.
13. Telephone Interview, Randall Ball, Railroad Assistance Analyst, Railroad Division of Iowa Department of Transportation.
14. Telephone Interview, Norb Zucker, Railroad Transportation Planner, Federal Railroad Administration, U.S. Department of Transportation.

Chapter 9

LOS ANGELES FREEWAY TRANSIT

Federal, state, and municipal governments have developed plans to encourage the use of public transportation and carpools while at the same time making better use of existing roadway systems. Many techniques designed to attract people to public transit have been tried. The most widespread strategy has been to improve service by offering buses and carpools preferential treatment both on major highways and city streets.

Adhering to statewide transportation policy and guidelines, the Los Angeles Regional Transit Development Program planned and is currently developing many preferential treatments for buses and carpools. In addition, by taking advantage of existing and upgraded freeways, Los Angeles will operate fixed-route express buses much as other cities operate fixed-route rail rapid transit systems to relieve commuter problems.



HISTORY OF PRIORITY TREATMENTS NATIONWIDE

A variety of capital-intensive and noncapital-intensive priority treatments for buses and carpools were attempted nationally during the late 1960s and early 1970s. Capital-intensive priority treatments included such projects as Northern Virginia's Shirley Highway exclusive bus and carpool lanes and Los Angeles' El Monte Busway. Noncapital-intensive priority treatments included such projects as the contra- or reverse-flow lanes on I-495 near New York City, the toll plaza by-pass lanes on the Oakland San Francisco Bay Bridge, ramp by-pass lanes for buses in Minneapolis, and exclusive bus lanes on the Banfield Freeway in Portland, Oregon.

Preferential treatments for buses and/or carpools have included the following techniques:

- 1) Reserved freeway lanes (with and without dividers separating bus lanes from the rest of the traffic),
- 2) Contra-flow freeway lanes (against the flow of traffic),
- 3) Metered traffic lights on freeway ramps (to pace the entry of cars onto the freeway),
- 4) Metered freeway ramps with bus lanes to allow buses to avoid waiting in line,
- 5) Exclusive freeway ramps for buses,
- 6) Reserved bus lanes on arterial and downtown streets,
- 7) Bus-priority traffic-light systems on arterial and downtown streets,
- 8) Transit malls (downtown streets open only to buses), and
- 9) Auto-restricted zones served by buses and other transportation modes.

By the mid-1970s, projects developed for buses and carpools tended toward the implementation of low-cost traffic management schemes that used existing facilities more efficiently. Conversely, expensive capital-intensive projects that required extensive new construction were not widely developed.

An example of a relatively inexpensive traffic-management scheme is Boston's attempt, in 1977, to convert one lane of an eight-mile section of the Southeast Expressway (now I-93) to the exclusive use of buses and carpools during the morning and evening rush hours. In this concurrent flow plan, the Massachusetts Department of Public Works needed only \$53,000 and very little time to sign and install plastic lane dividers to implement the reserved lanes. After six months, intense

public criticism over “losing” a travel lane created the political pressure needed to eliminate the reserved lanes.

In 1976, Miami began a relatively inexpensive and effective preferential treatment for buses and carpools. Two lanes were built in the median of I-95 for exclusive rush hour use by buses and carpools. In addition, a new and well-secured park-and-ride lot, 11 miles from the Miami central business district (CBD), was built, and buses travel from this area to four downtown destinations. The success of the program is attributed to the convenient and efficient service from the parking area.

San Juan, Puerto Rico, and Harrisburg, Pennsylvania, are among several other cities that have had very successful contra-flow bus lanes in operation in the downtown area for many years. There have been several other cities that operate contra-flow lanes on highways, the newest of which is a ten-mile busway due to open in mid-1979 in Houston, Texas.

Although permanent contra-flow lanes are inexpensive to establish, they become costly if set up and removed twice daily. Contra-flow lanes are located on what normally would be the “wrong” side of the road. Because they are on the wrong side of the road, that side must be relatively free of traffic. Since the situation of very heavy traffic on one side and very little traffic on the other side is often not available, contra-flow lanes have been slow to develop.

Several cities have built exclusive bus and carpool lanes such as those in operation on Virginia’s 11-mile, \$43-million Shirley Highway. Pittsburgh and San Francisco open separated lanes in 1977. Interstate 66 in Virginia, where rush hour direction will be reserved for exclusive use by buses and four-(or more) person carpools, is scheduled to open in the early 1980s.

Nearly every successful priority treatment for buses on freeways has included the use of a new or expanded express bus service and the opening of a new park-and-ride lot. Express bus service has proven to be popular. However, because of unproductive bus and driver time at the end of a long run, costs are high.

PRIORITY TREATMENTS IN CALIFORNIA

In 1977, the state of California, in line with environmental considerations and transportation needs, developed a statewide transportation plan. Included in this plan are policy directives which call for the development of traffic management strategies for high-occupancy vehicles (HOV), e.g., buses and carpools.

The directives require that actions be taken to make the most efficient use of the existing transportation system before costly additions can be made. Future transportation development must increase the efficiency and effectiveness of the system and/or improve the social, economic, and natural environment.

To reach the required level of efficiency, the plan calls for the use of the Transportation System Management (TSM) concept. TSM attempts to modify current systems for greater efficiency rather than develop new, large-scale, costly projects. An example of the value of using TSM can be made in the environmental benefits and money saved when Los Angeles’ San Bernardino Freeway was redesigned to include an exclusive two-lane busway where a new six-lane freeway would have been needed to move the same number of people by private automobile.

The California Department of Transportation (Caltrans), as both an ongoing activity and an effort to satisfy the wishes of the legislature, initiated many projects throughout the state which offer preferential use of freeways to HOVs. Priority techniques have included head-of-the-line privileges at the San Francisco-Oakland Bay Bridge toll plaza; reserved lanes on San Diego streets and freeway; a reserved median strip on U.S. 101 in Marin County; and contra-flow lanes leading to and from San Francisco’s Golden Gate Bridge.

LOS ANGELES’ REGIONAL TRANSIT DEVELOPMENT PROGRAM

The Los Angeles area has developed the state’s and, perhaps, the nation’s best planned and most extensive use of priority techniques for the HOV. In this comprehensive program, not only are there many individual HOV priority treatments for buses and carpools both on existing freeways and upgraded or newly constructed busways.

Through the study process known as alternatives analysis, it was determined that a high level of bus-on-freeway service, in conjunction with TSM strategies, would best serve the transportation needs of the Los Angeles area. The bus-on-freeway plan, called Freeway Transit, was further refined and developed to serve as the backbone of Los Angeles’ regional transit system.

Transportation planning and development activity in the Los Angeles area is carried out by Caltrans, the Southern California Association of Governments (SCAG), and the Southern California Rapid

Transit District (SCRTD). These agencies have the complicated task of organizing a system of public transportation that will not only serve regular transit users, but also attract new transit riders. A study determined that the region's peak period vehicle occupancy rate was only 1.2. Many Southern Californians are obviously used to driving to work alone. Auto and carpool ridership projections are listed in Table 1.

The population of the Los Angeles area is dispersed. The ten million people of Los Angeles, Orange, and Ventura counties, comprising 78 cities, do not, by and large, live in compact areas or work in compact job centers. Establishing a system capable of moving large numbers of people from home to work and vice versa is, therefore, exceptionally difficult. Additional problems, such as the mandate to conserve energy, improve air quality, and reduce expenditures, complicate the task.

A four-element Regional Transit Development Program (RTDP) was designed for the Los Angeles area and has been developed to create a reasonably balanced use of all modes of transportation. An engineering study and preparation of an Environmental Impact Statement for the first two elements of the RTDP were funded by UMTA in late 1976. Feasibility studies of the last two elements were funded by UMTA in 1976 and 1977, respectively. The four elements for the RTDP are as follows.

Element 1: A regional TSM plan will provide low-cost, short-term solutions to help meet the needs of the regional bus systems.

Element 2: An extensive Freeway Transit (bus-on-freeway) service will include, in conjunction with TSM strategies, varied preferential treatment for the HOV, including the construction of exclusive freeway bus lanes.

Element 3: A 2.8-mile Downtown People Mover (DPM) will be constructed in the Los Angeles CBD.

Element 4: An 18-mile rail rapid transit system (subway) will be constructed in the high density Wilshire Boulevard Corridor.

Transportation System Management (TSM)

Transportation System Management, the first element of the RTDP, calls for such short-term and low-cost solutions to regional transportation problems as the use of car and van pools; minor improvements to mass transit services and marketing programs; parking management, including higher parking fees at peak periods; bicycle program development; and others. TSM also includes the development of exclusive lanes and/or preferential treatment for the HOV, e.g., metered freeway ramps and special bus lanes to bypass the meters.

TABLE 1 AUTO AND CARPOOL PROJECTIONS FOR TRAVEL ON FREEWAYS DURING AM PEAK PERIOD

	1977	1990 Without Freeway Transit and Guideways and HOV Programs	1990 With Freeway Transit and Guideways and HOV Programs
Number of Auto Drivers	446,000	536,000	480,000
Number of Carpool Riders	89,000	107,000	144,000
Total People in Autos on Freeways	535,000 (120 People per 100 Autos)	634,000 (120 People per 100 Autos)	624,000 (130 People per 100 Autos)

Source: *Freeway Transit Element of the RTDP: Executive Summary.*

Freeway Transit

Freeway Transit, the second element of the RTDP, calls for extensive use of the bus to provide both local feeder/collector service and regional line-haul express service. Steadily being refined, the bus system proposed in late 1978 will operate on 428 miles of existing or planned freeways, both in mixed traffic and on separated lanes. Exclusive lanes will be developed on freeways where traffic conditions do not allow buses to maintain 35 mph. To decrease bus trip time even further, additional priority techniques will be implemented.

Operating as a feeder/collector service, buses will pick up passengers at local bus stops and drop them off at bus stations. At these stations, passengers will transfer to express buses for long-range destinations or to local buses for short-range destinations. In addition to bus-to-bus transfer stations, the system will be supplemented by a variety of bus stations with kiss-and-ride (drop-off), park-and-ride, and walk-on facilities.

Operation of the express bus is intended to approximate service offered by rail rapid transit. Express buses will operate only on freeway lanes, either in shuttle (back and forth) or loop configurations. Passengers will be discharged or picked up at bus transit stations built immediately adjacent to the freeway.

Two freeways have been identified as the most important and, thereby first candidates for development as freeway transit projects. One, the Harbor Freeway, is to be redesigned to include exclusive bus lanes, mixed-flow traffic lanes, and nine transit stations along its 20-mile length. The project, estimated in 1978 to cost \$125 million, will provide a link between the city of San Pedro and the Los Angeles CBD Convention Center. The other, the Santa Ana Freeway (I-5), will connect the Los Angeles CBD with Interstate 605 on an elevated deck. This nine-mile project will have two transit stations and an exclusive busway. Projected cost is \$350 million.

Of all the bus operation plans possible in the new system, a schedule plan of fifteen routes was selected for detailed study. These fifteen routes were chosen because they offered long-distance express routes crossing the county, required the fewest number of transfers, and, thereby, would draw the greatest patronage.

The 15-route freeway transit system is planned to operate 19 hours on weekdays, 18 hours on Saturdays, and 14 hours on Sundays and holidays. Buses will run at least every 15 to 30 minutes at all times, and as often as needed for all passengers to be seated during peak hours. The

routing system and planned level of service will require 1000 freeway transit buses.

As an aid to efficiency, future equipment may include the use of either the high-capacity double-decked, or the articulated bus which has two sections joined by a flexible coupling that allows the bus to turn corners. In a relatively successful demonstration project, UMTA funded the operation of two double-decked express buses in Los Angeles from 1974 through June 1977. In November 1978, seventeen 60-foot, 125-passenger articulated buses were put into operation on the heavily traveled Wilshire line.

Park-and-ride lots and freeway transit stations were included in the first two elements of the Regional Transit Development Plan. Both programs are considered essential to a workable freeway transit program.

Plans call for the construction of 30,000 parking spaces, most of which will be built at transit stations at least ten miles from the Los Angeles CBD in an effort to attract drivers before they enter the freeway system.

One hundred-and-one transit stations are planned for construction at the park-and-ride lots and along the selected routes. There will be five types of stations, each serving a different travel need, as follows.

- 1) 47 stations, adjacent to mixed-flow freeway lanes, to allow access and egress to the system,
- 2) 27 stations, adjacent to exclusive freeway bus lanes, to allow access and egress to the system,
- 3) 19 transit centers, near freeway ramps, to offer large parking areas and bus transfer facilities,
- 4) 5 freeway-to-freeway stations, located at the junction of two or more freeways, to allow transfer only to other bus routes, and
- 5) 3 intermodal stations to offer parking areas and transfer to other modes of transportation (e.g., passenger rail, rail rapid transit, and/or the Downtown People Mover (DPM)).

A variety of priority treatments for buses as well as carpools have been worked out in order to get the maximum benefit from the freeway transit plan. These priority treatments include a wide range of traffic management strategies such as existing lanes, exclusive lanes, use of existing shoulders; reserved, peak-hour reversible lanes, contra-flow lanes, and bus by-pass lanes on metered ramps. Early components of the system included the El Monte (San Bernardino Freeway) Busway; contra-flow lanes in the Los Angeles CBD; the Santa Monica Freeway Diamond Lanes (reserved lanes which operated for only 21 weeks); and 178 metered ramps, 23 of which have bus lanes bypassing the meters.

Because the elements of the Freeway Transit program are being developed and refined as separate parts of a whole, it may be helpful to understand each component of the emerging system as it is planned, built, evaluated, and refined.

An exclusive busway was developed in 1974 on the San Bernardino Freeway (I-10). The busway runs 11 miles between the city of El Monte and the Los Angeles CBD.

The \$56 million El Monte Busway was the first freeway transit project of its kind to receive Federal Highway Administration funds. The project increased the capacity of the corridor to carry the equivalent number of people as would have been achieved if another six-lane freeway had been built, and at an estimated one-quarter of the cost.

Construction of the busway required a great deal of work. Four miles of the Southern Pacific Railroad had to be moved, 54 railroad and highway bridges had to be modified or built, and four pedestrian overpasses and two highway and pedestrian tunnels had to be constructed at 26 different locations.

In 1973, approximately 2000 passengers used SCRTD buses daily to and from Los Angeles and the El Monte area. As of July 1974, one month after busway service began, the total daily volume, in both directions, was approximately 11,500 passengers — an increase of 600 percent over the 1973 figure.

In addition, commuter trip time was reduced from the former 35 to 45 minutes by automobile to 18 to 20 minutes by Busway Flyer. The commuter's daily cost, with parking, dropped from the \$3.00 to \$3.50 range by car, to 75 cents by bus.

To encourage additional patronage of the transit system, a station and parking area were constructed at the El Monte terminus of the busway. The station, located on a former solid-waste landfill, is at the center of a 1400-car parking lot. The station has two levels and includes concession stands, restrooms, and ticket and dispatch offices. Parking and passenger entrances are on the lower level, with a bus roadway and ten bus loading positions on the upper level.

Another multi-level station, on the busway itself, was opened in late 1974, at California State University. A few months later, the busway's third on-line station was opened at the UCLA Medical Center. Within a few months after these stations opened, average daily ridership on the busway increased to 15,000 passengers.

An evaluation of the busway's performance reported that 80 percent of the busway's riders could drive themselves to work if they so chose. The evaluation also reported that 75 percent of the commuters

using the busway had formerly driven their own automobile to work.

Plans, already approved for funding by UMTA, call for the extension of the busway directly to the Los Angeles Union Station. This extension to the expanding multimodal (passenger rail, rapid rail transit, and DPM) transportation center in downtown Los Angeles will provide the public with a wide range of public transportation opportunities. The busway can potentially carry even more passengers. Should future patronage and environmental conditions warrant it, the lanes can be converted (without the problems of land acquisition, for example) to use by a rapid rail transit system.

In May 1974, a contra-flow bus lane was opened on a pair of one-way streets in the Los Angeles CBD. The lanes were developed by SCRTD and the city, in conjunction with other service improvements and the El Monte Busway, to facilitate the movement of buses between the busway and various downtown destinations. The 1.5 mile-long contra-flow lanes are distinguished from other travel lanes by lane divider strips, signs, and traffic cones. The lanes, used by both express and local buses are reserved 24 hours a day.

Conflicting results were established in two informal studies of the time lost or gained by instituting contra-flow bus lanes. The transit operator, SCRTD, found that there was a slight time savings both for buses and general traffic. The city's research found that there was a slight time loss for both groups.

In any event, most officials agree that the lanes are worthwhile and should remain. Their conclusion was based on the fact that the contra-flow lane has increased transit reliability and safety, and the transit users were found to perceive the lane as a significant transit improvement.

Another project designed to make maximum use of an existing freeway was undertaken on the Santa Monica Freeway. This program of preferential treatment for the HOV was set up to allow the existing left-hand or passing lane to be used exclusively by buses and carpools. Called the Santa Monica Freeway Diamond Lane, this barrier-free, concurrent flow, reserved lane operated between the city of Santa Monica and the Los Angeles CBD.

With Caltrans serving as the prime mover, the Diamond Lane project opened on March 16, 1976, marking the first time preferential lanes had been created by taking busy freeway lanes out of existing service. After 21 weeks of operation (which included tremendous public opposition to the resulting traffic congestion and rise in accident rates), the U.S. District Court halted the project because it lacked the required Environmental Impact Statement.

Although it was not continued long enough for proper evaluation, an analysis of the five-month experience showed that the number of carpools increased by 65 percent, and that riders more than tripled on the expanded feeder and express bus service operating in the Diamond Lane. Ride-sharing matching services were provided free of charge by Commuter Computer, Inc., a private, non-profit company set up after the oil embargo of 1974 and funded from a variety of federal, state, and local sources.

The analysis also showed that energy savings and air quality improvements were insignificant, freeway accidents increased significantly, and non-carpoolers lost far more time than was gained by carpoolers. The public controversy which developed has delayed the implementation of other preferential treatment projects in the entire Los Angeles region. In addition, Caltrans did not appeal the court decision nor undertake the required Environmental Impact Statement.

Traffic signals were installed and in operation both prior to and during the Diamond Lane demonstration on on-ramps to several freeways, including the Santa Monica. Meters control the number and spacing of cars entering the freeway during peak hours. On an average, vehicles spend more than two minutes waiting at ramp meters before entering the freeway. The installation of these ramp meters and the resulting controlled access has led to increased traffic speeds on the freeway. In fact, the two-minute delay at the ramp meters is offset by the time saved traveling with improved traffic conditions on the freeway itself.

At 12 of the 30 metered ramps, preferential access lanes permitted buses and passenger cars with two or more occupants to bypass the meter system. The bypass lanes at selected ramps in use on the Santa Monica Freeway during the Diamond Lane demonstration saved buses and carpools between two and seven minutes per trip.

The ramp meter bypasses which were safer and, surveys showed, less objectionable to the public than the Diamond Lane, actually offered a greater time savings to carpoolers than the Diamond Lane. In addition, the meters themselves improved freeway traffic flow.

Downtown People Mover

The third element of the Regional Transit Development Program calls for the development of a Downtown People Mover (DPM). The DPM, funded by UMTA as a demonstration project, is a small-scale automated transit system that will operate in the downtown Los Angeles business district. The \$148 million system will link the new multimodal

transportation center at Union Station with the Convention Center. The preliminary engineering study was funded by UMTA at \$2.8 million.

The DPM will consist of 2.7 miles of two sets of track with 13 stations approximately one-half mile apart. The initial system, capable of carrying 3500 passengers per hour, will operate 60 automated vehicles at 1.5-to 5-minute headways, depending on the time of day. Service hours are expected to be from 6 am to 12 pm on weekdays, and 8 am to 12 pm on weekends. The fare structure is planned to be low enough to make the system attractive for short, quick trips, such as during the lunch hour. If the program develops as planned, the system will be ready for use in 1983.

Rail Rapid Transit

The fourth element of the Regional Transit Development Program includes the development of the Regional Core Rail System in the Wilshire Boulevard Corridor. Operating as a traditional subway system 60 to 150 feet below the ground, this 18-mile line will include 17 stations, 120 rapid rail cars, and is expected to cost an estimated \$1.2 billion.

The system will operate 24 hours a day, seven days a week, with headways ranging from 3.4 minutes in the peak period to 30 minutes late at night. Equipment in the busiest times will consist of six-car trains capable of carrying up to 1000 passengers. An automobile going from one end of the line to the other would take 35 to 40 minutes; a rapid transit train will take 23 minutes. The system is planned to open in 1986.

Related Transportation Development Activities

Future transportation development may include additional services which can be used in conjunction with the four part Regional Transportation Development Plan. Systems now under discussion include the use of local and highly specialized paratransit services, including such elements as subscription bus, taxis, and jitneys. Also under discussion is the use of another DPM system to link the parking lots, employment centers, and terminals of the Los Angeles International Airport.

ENCOURAGING THE SHIFT TO TRANSIT

After the transit system is upgraded and enlarged, it is important to encourage the public to accept and use the service. This is particularly true in the Los Angeles area where the use of the private automobile is so pervasive.

A certain segment of the population, with no transportation alternative, will always use public transit. On the other hand, those automobile users who could be served by public transit must be encouraged to make the shift.

Transit improvements made either by changing pricing and fare structures and/ or by upgrading the comfort, routing, scheduling, travel time, and, most importantly, reliability are not enough to encourage a large number of people to switch from their cars to public transit. In fact, national experience has indicated that to effect any real shift in travel patterns, harsh auto-use disincentives must be developed together with transit service improvements. Auto-use disincentives include strategies that affect the cost of an auto trip, the time the trip takes, or the availability of parking at the trip's end.

In addition, strong marketing programs must be developed to coordinate the service that is desired with the service that is offered; to inform the public of the new transit services; and to extol the virtues of using the services and transit in general. An added inducement to greater use of public transit will be in the form of disincentives to auto use such as increased congestion on the road, reduced air quality, and shortages in the supply of gasoline.

REFERENCES

1. **Bus Use of Highways**, Herbert Levinson et al., Wilbur Smith Associates, for National Transportation Research Board, Washington, D.C., 1975.
2. "Busway Big Success in L.A.," Ray Hebert, in **Mass Transit**, February 1977.
3. **Carpools Using Busway During Strike**, Caltrans, Transit 7, Los Angeles, January 1975.
4. "Eleven Mile Busway Will Serve Los Angeles Region," John Maloney, in **Public Works**, August 1974.
5. **Energy, the Economy, and Mass Transit**, Office of Technology Assessment, U.S. Congress, Washington, D.C., December 1975.
6. **Energy and Transportation**, Issue Paper Number 12 of the California Transportation Plan, Wayne J. Hoffman, State Transportation Board, Sacramento, June 1976.
7. "Exclusive Bus and Carpool Lanes Installed and Operated by the State of California," J.M. Garcia, Caltrans, presented at a workshop, San Francisco, February 1975.
8. **Experience with Carpool Bypass Lanes in the Los Angeles Area**, Robert Goodell, Caltrans, District 7, Los Angeles, October 1975.
9. **Forum**, Newsletter of Southern California Association of Governments, Volume 8, Number 2, Los Angeles, May-June 1974.
10. **Freeway Transit Element of the RTDP: Executive Summary**, Caltrans, District 7, Los Angeles, August 1978.
11. **Los Angeles People Mover**, Los Angeles Community Redevelopment Agency, Los Angeles, 1977.
12. "Los Angeles Pioneers Exclusive Busway," Richard Gallagher, in **Civil Engineering**, ASCE, New York, January 1975.
13. **A Manual for Planning and Implementing Priority Techniques for High Occupancy Vehicles**, Urban Consortium, for U.S. DOT, Washington, D.C., July 1977.
14. **Preferential Access for Multi-Occupant Vehicles at Metered On-Ramps**, Robert Goodell, Caltrans, District 7, Los Angeles, 1975.
15. **Preferential Lane Treatment for High Occupancy Vehicles on Sacramento Freeways**, J. Standlee, Caltrans, District 3, Sacramento, November 1975.
16. **Priority Treatment for High Occupancy Vehicles in the United States: A Review of Recent and Forthcoming Projects**, Ronald Fisher and Howard Simkowitz, UMTA/TSC, Cambridge, Mass., August 1978.
17. **Ramp Meter Bypass for Carpools**, R.J. Benke, Minnesota Department of Transportation, for U.S. FHWA, St. Paul, Minn., October 1976.
18. **Recommended Statewide Transportation Goals, Policies, and Objectives**, State of California, Sacramento, March 1977.
19. **Regional Transit Development in the Los Angeles Metropolitan Area**, Caltrans, District 7, Los Angeles, October 1975.
20. **Regional Transit Development Program**, Southern California Association of Governments, Los Angeles, November 1978.
21. **Regional Transportation Plan**, San Diego Region Comprehensive Planning Organization, San Diego, September 1975.
22. **Review of Downtown People Mover Proposals: Preliminary Market Implications for Downtown Applications of Automated Guideway Transit**, Nancy Mabee and Barbara Zumwalt, MITRE Corp., for U.S. DOT, Washington, D.C., December 1975.
23. **San Bernardino Freeway Express Busway: Evaluation of Mixed-Mode Operations**, Crain and Associates, for Southern California Association of Governments, Los Angeles, July 1978.

24. **The Santa Monica Freeway Diamond Lane Project After 21 Weeks of Opration**, Caltrans, District 7, Los Angeles, September 1976.
25. **Santa Monica Freeway Diamond Lanes**, Vol. I (Summary) and Vol. II (Technical Report), J.W. Billheimer et al., SYSTAN, Inc., for U.S. DOT/TSC, Los Altos, Calif., September 1977.
26. "State of the Art Bus and Carpool Priorities," Herbert Levinson, Wilbur Smith and Associates, presented at U.S. DOT workshop, Miami, Florida, April 1975.
27. "The Success of the El Monte-Los Angeles Busway," George McDonald, in **Transit Journal**, Volume 1, Number 3, August 1975.
28. **Technical Analysis of Rapid Transit Alternatives for Los Angeles**, Draft Reports 1-3, Southern California Rapid Transit District, Los Angeles, June 1976.
29. "Transit Alternatives Analysis for Los Angeles," Lenwood Howell and Paul Taylor, in **Transportation Engineering Journal**, November, 1977.

Chapter 10

OREGON BICYCLE PATH PROGRAM

A growing concern for physical fitness and the gasoline shortages have contributed to a resurgence in popularity of an old transportation favorite, the bicycle. In recent years, the number of bicycles sold has approximated the number of automobiles sold, and adults have surpassed children as the major bicycle market. Transportation planners are beginning to view the bicycle as an integral element of the transportation system, for both utilitarian and recreational travel.

As a form of transportation, however, the bicycle is not without its problems. In most urban areas today, hazardous riding conditions discourage many riders from frequent bicycle travel. To encourage bicycle use and to make bicycling safer, proper facilities must be provided, bicycle traffic must be separated from motor vehicle traffic on busy streets, and the public must be educated as to safe cycling procedures.

Research, planning, and funding for bicycle pathways are receiving increasing attention within various federal agencies, and among state and local governments. Several organizations, such as American Wheelman and the Bicycle Manufacturers of America, as well as activist environmental groups, have strongly endorsed legislative activities. Among the federal agencies now giving consideration to bicycling in



their programs and policies are the Department of Transportation (DOT), the Environmental Protection Agency, the Department of Interior, the Council on Environmental Quality, and the Consumer Product Safety Commission.

Congress greatly expanded the federal commitment to bicycling programs by including them in the Federal-Aid Highway Act of 1973. This act allowed the Federal Highway Administration (FHWA) to authorize states to use their Federal-Aid Highway funds for the construction of bike and pedestrian ways parallel to the right-of-way of Federal-Aid highways. The act obligated \$40 million annually for bikeway and walkway purposes during fiscal years 1974 through 1976. The money could be spent on planning, preliminary engineering, inspection, construction, or reconstruction. The addition of bikeway provisions to the State Highway Safety Standards was also mandated. Finally, the act required that bicycle safety information be included in state driver education programs, and that bicycle safety research studies be conducted.

Within the individual states, several campaigns have been initiated to improve local bicycling environments. For the most part, these efforts have been limited to research and planning activities. State financial support for bicycle facility construction has been less frequent. There are notable exceptions, however, and Oregon's Bikeway Program is the first of these. In 1971, Oregon enacted House Bill 1700, through which one percent of the funds received from the state highway fund were allocated for the construction and improvement of bicycle pathways throughout the state. The state of Washington also passed a law in 1972 requiring that a minimum of one-half percent of the state motor vehicle tax funds be expended on such programs. California and Minnesota allocated fixed percentages of gasoline tax revenues for investment in bicycle facilities. Connecticut passed a 1973 State Bike Act, requiring the state DOT to prepare a statewide plan for bicycle trails adjacent to state and local roads with 50 percent matching grants available to local communities for bikeway construction. North Carolina also has undertaken a project to locate and map a bicycling highway network and comprehensive system of bicycling routes for rural bicycle touring.

THE OREGON PROGRAM BACKGROUND AND GOALS

Chapter 366 of the Oregon Laws of 1971, passed as House Bill 1700 and, now codified as Section 366.514 of the State of Oregon Statutes, provides the enabling legislation for the Oregon Bikeway Pro-

gram. This legislation was the first of its kind in the nation and has served as a model for many states. Initially, the bill was not expected to pass. However, local bicycle groups organized a lobby in 1970 to appeal to the state legislature for improved bicycling conditions throughout the state. In early 1971, bicycle legislation was introduced to committee and received an unexpected full endorsement. Support of House Bill 1700 snowballed through the legislative and executive offices to obtain full approval in June 1971.

Essentially, the law calls for one percent of the State Highway Fund to be allocated for development of footpaths and bicycle ways. These facilities are to be built in conjunction with all highway construction, reconstruction, or relocation projects except in cases where evidence indicates an absence of demand or probable use, where costs appear disproportionate to demand or where public safety is compromised.

ADMINISTRATION OF THE PROGRAM

Responsibility for the program has been assigned to the Highway Division of the Oregon Department of Transportation (ODOT) which is charged with providing a safe system of bicycle ways. In addition to administrative functions, the Highway Division is involved with bikeway planning, design, engineering, and construction.

In 1973, Oregon enacted a second bill which established an Advisory Committee on Bicycles. Members of the committee include governor's appointees, environmentalists, planners, bicycle sales personnel, travel or recreational personnel, and youths. Committee members serve for four years and meet four times a year. The Highway Division now consults with the committee in matters concerning bicycle regulations and the establishment of bicycle lanes and paths. In its capacity as liaison between the public and the Highway Division, the committee has become active in bikeway planning and design, coordination with other governmental entities, bicycle registration and licensing, financing, safety education, and legislation.

BIKEWAY PROGRAM ACTIVITIES

The administrators of the Oregon Bikeway Program learned by trial and error, and the program became more effective in its operations as it progressed. With an open mandate to develop pathways throughout the

state, the Highway Division began by focusing its efforts on establishing long-distance touring routes along the Oregon coast, in the Willamette Valley, and connecting routes. However, public feedback and problems with dispersing program funds, soon revealed a need for more thorough planning, and influenced a major shift in the program. Public opinion, obtained primarily through public hearings, showed that Oregon residents greatly preferred development of bikeways that served utilitarian and recreational purposes in the city, rather than long-distance touring routes. At the same time, competing demands for project funds led to the formulation of more stringent criteria for project selection and funding. As a result, the state shifted its primary focus to the development of urban bikeways in 1973.

Measuring Community Needs for Bikeways

At the time that the Oregon program started, there was no data base available for planning which accurately described bicycle use in the state. To compile such a data base, the Highway Division conducted several studies that used various survey techniques, but primarily public attitude questionnaires. In response to the public hearings, some of these studies were done to measure specific needs for urban bikeways. These data led to the identification of two general types of bikeway usage: utility — serving commuters, students, and shoppers; and recreational — serving a long distance touring and leisure time cycling activities.

An analysis of additional research data described other basic characteristics of bicycle use. The typical daily distribution of bikeway use for weekday and weekend traffic was identified. During the week, bicycle traffic peaked around regular commuter hours. On weekends,

bicycle use was greatest during mid-day, indicating recreational use. In addition, a continuous bicycle traffic count program was established at selected sites to identify where high use would warrant facility improvements and to measure program effectiveness.

Formulating Criteria for Funding and Route Priorities

During the first year of the program, spending fell short by more than \$170,000 of the required one percent. In subsequent years, demand for project funds has been much greater than availability. To circumvent problems with project selection and fund disbursement, policy criteria were devised by the Advisory Committee and the Oregon Transportation Commission.

On July 15, 1976, the Advisory Committee outlined a set of standard factors to consider in selecting bikeway routes. As shown in Exhibit 1 these factors served as guidelines for the expenditure of state funds. State funding policy further stipulated that: 1) preference should be given to local commuter or commuter recreation routes; 2) projects should be sanctioned by local government jurisdiction; and 3) projects should be coordinated with anticipated capital improvements in other highway projects.

In addition to the priority criteria developed by the Advisory Committee, a formula for distributing bicycle funds was produced by the Oregon Transportation Commission. In January 1977, the commission adopted a policy that “after necessary expenditures for salaries and other administrative costs, including expenses of the Advisory Committee on Bicycles, the money identified under ORS 366.514 for the footpath and bicycle trail program shall be expended under the following system of

EXHIBIT 1 FACTORS INFLUENCING BIKEWAY DEVELOPMENT PRIORITIES

1. A commitment of local financial participation.
2. Proposal represents part of a locally adopted plan.
3. Level of state bikeway money expended on a specific area in per capita terms.
4. Proposal fosters increased bicycle ridership by connecting routes to employment centers, business districts, shopping centers, industrial areas, schools, parks, recreation centers and libraries.
5. Degree of system linkage completion.
6. Alleviation of hazardous conditions.
7. Cost per mile of bikeway.
8. Population in service area.
9. Other extenuating considerations (special linkage, e.g., bridges).

priorities: 1) first priority shall be given to the construction of bikeway projects in compliance with the provisions of ORS 366.514; 2) second priority shall be given to the adequate maintenance of those existing bikeways for which the state is responsible; 3) third priority shall be given to the construction of independent bikeway projects on state-owned right-of-way; and 4) fourth priority shall be given to the financial assistance of other governmental agency bikeway projects.

Developing a Bikeway Engineering Methodology

Gradually, a bikeway project methodology was formulated as a guide to project development. It was recognized that a useful bike route network could only result from comprehensive planning and engineering. Engineering practices were reviewed after two years of design, construction, and maintenance of bikeways, and a bikeway design manual was produced which reflected the state-of-the-art in design standards. Table 1 shows the standard bikeway configurations developed for the Oregon program and the costs associated with each of these configurations. Once the planning and engineering requirements had been satisfied, project implementation proceeded with greater probability of success and positive public feedback.

ADDITIONAL COOPERATIVE PROGRAM ACTIVITIES

Oregon's bikeway legislation also provided a mechanism enabling the state to take part in programs initiated or sponsored by other re-organizations. Oregon has entered into several cooperative agreements with programs requiring established channels for the commitment of technical or financial resources.

Federal Bikeway Demonstration Program

In January 1976, the Federal Bikeway Demonstration Program was enacted. Established under provisions of the Federal-Aid Highway Act, \$10 million was authorized (final appropriations, however, totaled only \$6 million) to fund projects on an 80/20 federal/state matching basis. In October 1976, the FHWA announced that 41 bikeway projects in 31 states had been approved. These projects are listed in Table 2.

A total of 495 projects nationwide with an estimated cost of \$141 million were submitted to the FHWA. Oregon submitted 21 proposals with a total price tag of \$2.8 million. Of the 21 projects, only the Valley River Bicycle-Pedestrian Bridge in Eugene was approved. The \$360,000

**TABLE 1
BIKEWAY CONFIGURATIONS**

BIKEWAY CLASS	DESCRIPTION	COST PER MILE (1974)
Class I	A facility completely separated from motorized traffic, except at highway crossings or intersections, for bi-directional movement of bicycle and pedestrians.	Varies from \$15,000 to \$35,000 per mile, and sometimes as high as \$50,000 per mile.
Class II	A facility contiguous to the roadway, physically separated from motorized traffic by a barrier or curbing, for bi-directional bicycle and pedestrian usages.	From \$1,000 to \$12,000 per mile, depending on extent of markings.
Class III	A lane established on highway shoulders for bicycles and delineated from lanes for motorized vehicles by painted striping, pavement stenciling or other marks and signs, for one-directional bicycle traffic consistent with motorized traffic flow.	Between \$225 and \$1000 per mile.

Source: *Oregon Footpaths and Bikeways Progress Report.*

TABLE 2 BIKEWAY DEMONSTRATION PROJECTS

State	Project	Mileage	Funding
California	Concord-BART Bikeway Trail	8.0	\$362,000
California	Bay Bridge Bike Commuter Shuttle; San Francisco	—	112,000
California	Santa Cruz Transit Bike Facilities	—	20,320
Colorado	Central City Bike Loop, Colorado Springs	3.5	81,280
Colorado	Columbine Trail Bikeway, Golden	17.5	260,000
Colorado	City of Lakewood Bikepath	1.0	40,000
Florida	Broward County Bikepath, Cocoa Beach	5.2	38,702
Florida	North Main Street Bikeway, Gainesville	4.5	115,180
Indiana	Erie and Wabash Canal Bikepath, Indianapolis	9.32	229,320
Iowa	Pinkbine Commuter Bikeway, Iowa City	1.0	53,200
Kansas	Manhattan Bikeway	16.0	53,200
Kansas	Wichita Bikeway	2.73	73,640
Kentucky	City of Louisville Bikeway	6.6	273,173
Louisiana	Jefferson Parish Bikeway, New Orleans	5.2	244,533
Maine	Orono-Old Town Bike Path, Bangor	4.0	118,600
Maryland	National Institutes of Health Medical Complex Bikeway, Montgomery County	13.3	244,000
Massachusetts	Chicopee-West Springfield Bridge Bikeway	—	280,000
Michigan	Civic Center Drive Bikeway Southfield	2.2	80,000
Mississippi	City of Jackson Bikeway	7.0	72,944
Missouri	Kansas City Bikeway	2.9	126,886
Missouri	City of Springfield Bikeway	20.0	68,886
Montana	Missoula Bikeway	0.6	117,000
Nebraska	Antelope Creek Bikeway, Lincoln	4.0	200,000
New Hampshire	Town of Salem Bikeway	8.7	94,300
New Jersey	Patterson Bikeway System	6.4	146,784
New York	North Bronx Bicycle System	10.0	352,000
North Carolina	Event Ferry Road Bikeway, Raleigh	13.43	145,380
North Dakota and Minnesota	Fargo Moorehead Bicycle Systems		102,000
Ohio	Avon Lake Residential Bike Walkway	19.0	32,000
Ohio	Miami Conservancy District Bikeway, Dayton	14.6	320,000
Oregon	Valley River Bicycle-Pedestrian Bridge, Eugene	—	288,000
Pennsylvania	Philadelphia Commuter Rail Rapid Transit Interface Project	—	145,820
Pennsylvania	Philadelphia Valley Forge Lrail	12.9	73,340
Tennessee	City of Knoxville Bike Trail	1.5	71,600
Texas	City of Austin Bikeway	—	168,000
Texas	City of Fort Worth Bikeways	7.6	217,000
Virginia	Williamsburg Environs Bikeway	38.0	132,590
Washington	Clark County Urban Bikeway	6.3	40,320
Washington	Puget Power Interurban Trail, King County	16.0	320,000
West Virginia	City of New Martinsville	4.0	80,000
Wisconsin	Hales Corners Model Bikeways, Milwaukee Co.	1.8	27,200
Totals		294.78	\$5,999,978

Source: "FHWA Approves Demo Funds for 41 Projects in 31 States," in *Boom in Bikeways*.

project was provided with \$288,000 in federal funds. The state provided the rest. Its activities began in February 1978 and lasted, as a demonstration project, for approximately one year. Since completion of the demonstration phase, the city of Eugene has assumed full responsibility for the project.

BikeCentennial

Oregon also participated in BikeCentennial '76. Headquartered in Missoula, Montana, this bicentennial year program resulted in a cross-country cycling trail. The route, 4200 miles long, passes through ten states, from Astoria, Oregon, to Yorktown, Virginia. The route traverses some of Oregon's most scenic areas, and these have proven to be the most popular, heavily traveled portions along the ten-state trans-America trail.

The program was undertaken through an agreement reached among the BikeCentennial '76 organization, the Oregon Bicycle Advisory Committee, and ODOT. Several individuals and Oregon bicycle groups helped define the Oregon portion of the trail. For the most part, the Oregon portion passes by historical sites and avoids heavily populated areas, wide deserts, and plains. The Highway Division's Traffic Section designed the trail marker which was used to designate the entire length of the official route. The state and local communities placed a sufficient number of signs to properly delineate the route through Oregon.

State-Local Fund Matching

The third cooperative program is a fund matching program through which the state provides financial assistance to local communities. These projects are typically funded with 80 percent state and 20 percent local monies. This program enables communities to realize larger returns on bikeway funds available to them. Cities which have participated in this program include Beaverton, Lake Oswego, Eugene, Medford, Coos Bay, Klamath Falls, Ashland, and Milwaukie, Oregon.

Federal-State Fund Matching

Finally, in conjunction with the construction of Interstate Route 205 in the Portland area, a parallel Class I bikeway is being built. Because of the highway's interstate status, the federal share of the program is 90 percent of the total cost.

OREGON PROGRAM COSTS

Expenditures are guided by legislation and by legislative appropriation for each biennium. Moneys collected by the State Highway Fund are distributed to the state (68 percent), the counties (20 percent), and the cities (12 percent). Each level of government is expected to expend 1 percent of its net receipts on bicycle and pedestrian facilities. The counties and cities may credit their funds in a special reserve account for up to ten years. The state must expend its allocation yearly.

A proposition brought to a vote of the general public in May 1978 would have increased bikeway funding for the 1979-81 biennium. Measure No. 5, "Highway Repair Priority, Gas Tax Increase," proposed additional revenue for the state's six-year highway improvement plan. Additional revenues would have been produced by a two-cent per gallon increase in the gasoline tax and by increases to the mileage tax and weight fees for motor carriers among other changes. The bicycle program funding would have benefited by an increase from its present \$1 million per year to \$2 million per year, giving added impetus to bike path construction throughout the state. The measure was defeated by a 2-1 margin. At the present time, there are no further plans to seek additional program funding.

EFFECTS OF THE BIKEWAY PROGRAM WITHIN THE STATE

The cities and counties of Oregon have established several hundred miles of bicycle paths either by construction of separated facilities or by dual designation of local streets. Generally, the bikeways were constructed to meet two objectives: 1) to induce greater bicycle usage, and 2) to enhance cyclist safety. Oregon has collected bicycle path traffic data since early 1973. These counts have shown an increase in bicycle volumes on most bikeway facilities. Many bicycle planning studies have also noted rises in local bicycle travel. These usage counts dropped temporarily early in 1978, but have risen again, particularly as gasoline shortages occurred. Also, long distance recreational touring has become increasingly popular. Along with the increase in bikeway usage, accidents have shown a downward trend on both bicycle paths and local streets.

The program has not been without problems, however. The major difficulties during the initial years were due to the need for better planning

and design procedures. Once these problems had been resolved, the bikeway program was well received by both users and nonusers. Nevertheless, on occasion, problems of design still occur and require changes in procedures. For example, a Class II bikeway constructed alongside a four-lane road in Portland interfered with both buses and passengers at certain bus stops. The bikeway had to be modified and the state placed a temporary moratorium on Class II bikeways (especially along the routes used by buses) until feasible alternatives had been investigated.

NATIONAL IMPACT OF OREGON'S BIKEWAY PROGRAM

Several contributions to bicycle programs nationwide can be attributed to the Oregon Bicycle Path Program. Many states have followed with legislative actions similar to House Bill 1700. Since 1973, over 1600 pieces of bicycle-related legislation have been introduced in the states; and much of this legislation took its lead from Oregon. At the national level, Oregon House Bill 1700 provided bicycle lobbyists with added impetus for attaining recognition of bicycles in Federal-Aid Highway legislation and for the eventual passage of the Bicycle Demonstration Act of 1976.

Interest in bicycle travel has focused on the problems of how to provide safe, efficient, and enjoyable mobility to the cyclist. Oregon House Bill 1700 of 1971 and the associated accomplishments of the Oregon Department of Transportation, and cities and counties throughout the state have contributed greatly to the present state-of-the-art in bicycle transportation. The Oregon Highway Division published a guide entitled *Bikeway Design* which was the first comprehensive publication reflecting standards and recommendations on planning, design, and construction of bikeways. The information included in *Bikeway Design* has been incorporated by other states and is referenced in many recent bicycle planning guides.

CONCLUSION

Thanks to programs like Oregon's, the technology for increasing the use and safety of bicycles is available. At this point, the major stumbling block to this goal is the willingness on the part of states to actually allocate state highway funds to match federal aid for bikeway

programs. National support for bikeways continues to be strong. Since the Federal-Aid Highway Act of 1973, Congress has allocated an additional \$90 million to bicycle programs for fiscal years 1976 and 1977, followed by an allocation of \$80 million in state matching funds for 1978 through 1982 as part of the 1978 Surface Transportation Act. Altogether, \$300 million have been made available to the states since 1973. However, the states have actually used only \$30 million or 10 percent of these dollars. It now appears up to the states to become actively committed to making the bicycle a more viable transportation resource. Both the federal aid and technology are available to support this effort.

REFERENCES

1. **Bicycle Path Program: Summary**, Oregon Department of Transportation, February 1977.
2. **Bicycling Transportation**, Nina Dougherty and William Lawrence, Office of Planning and Evaluation, U.S. Environmental Protection Agency, Washington, D.C., December 1974.
3. "Bike Legislation '76" in **Bicycling**, Bicycle Manufacturers Association, Volume XVIII, Number 6, June 1976.
4. "BikeCentennial's 1977 Program in Gear," in **Boom in Bikeways**, Bicycle Manufacturers Association of America, Volume 12, Number 1, May 1977.
5. **Bikeway Design**, Oregon Department of Transportation, January 1974.
6. **Coast Bike Route**, Travel Information Section, Oregon Department of Transportation, 1975.
7. **A Community Guide to Bikeway Planning**, Peter Dimond, Massachusetts Bicentennial Commission, Boston, August 1975.
8. "EPA Gives Biking a Higher Priority," in **Boom in Bikeways**, Bicycle Manufacturers Association of America, Volume 12, Number 3, January 1978.
9. "FHWA Approves Demo Funds for 41 Projects in 31 States," in **Boom in Bikeways**, Bicycle Manufacturers Association of America, Volume 11, Number 3, December 1976.
10. **Measure No. 5 - Highway Repair Priority, Gas Tax Increase**, Official 1978 Primary Voters' Pamphlet, State of Oregon, May 1978.
11. **North Carolina Bicycling Highway: Mountains to Sea**, Curtis Yates et al., North Carolina Department of Transportation, 1977.
12. **Oregon Footpaths and Bikeways Progress Report**, Location Section Highway Division, Oregon Department of Transportation, April 1975.


13. "Oregon's Bike Path Program," **AASHTO Quarterly**, Volume 55, Number 4, October 1976.
14. "Planning and Designing a Demonstration Bikeway," Robert D. Theisen, in **The Bicycle as a Transportation Mode**, Transportation Research Record 570, Transportation Research Board, Washington, D.C., 1976.
15. **Planning for the Bicycle as a Form of Transportation**, James P. Hamill and Peter Wise, Pan-Technology Consulting Corp., Inc., for U.S. Department of Transportation, July 1974.
16. "Problems in Integrating Bicycle Travel into the Urban Transportation Planning Process," in **The Bicycle as a Transportation Mode**, Transportation Research Record 570, Transportation Research Board, Washington, D.C., 1976.
17. Telephone Interview, Philip J. Burke, Deputy Executive Director, Bicycle Manufacturers' Association, Washington, D.C.
18. Telephone Interview, Dick Singer, Assistant Bikeway Engineer, Oregon Bikeway Program, Salem, Ore.



HE 206.2 .S82

06914

State-initiated
transportation programs



SCR TD LIBRARY

425 SOUTH MAIN

LOS ANGELES, CA. 90013

MTA DOROTHY GRAY LIBRARY & ARCHIVE
State-initiated transportation pro
HE206.2 .S82



100000038107

This report is available from:

Mr. Bud Giangrande
Chief, Technology Sharing Office
U.S. Department of Transportation
Research and Special Programs Administration
Transportation Systems Center
Kendall Square — Code 151
Cambridge, MA 02142
(617) 494-2486

S.C.R.T.D. LIBRARY