

A New Direction in Transit Research

TRB Issues New Report

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The Urban Mass Transportation Administration (UMTA) has been the principal sponsor of transit research for more than 20 years. Since 1981, however, UMTA research spending has been on the decline. Spending levels, which averaged \$60 million a year during the 1970s, have dropped by nearly two thirds to approximately \$22 million today. The orientation of transit research has also shifted. Research funds are limited for solving problems faced by local transit operators as they manage today's services.

UMTA and industry leaders recognized that these changes in program funding and emphasis warranted a critical review of the public transportation research program. At UMTA's request, TRB launched a strategic research study of public transportation in 1986. Chaired by William W. Millar, Executive Director of the Port Authority of Allegheny County, which operates the Pittsburgh transit system, members of the TRB Committee for the Strategic Transportation Research Study for Transit represented a broad cross section of industry interests, including local transit agencies, state departments of transportation, private management companies, equipment suppliers, contractors, and academic researchers.

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The study committee reached consensus on several key recommendations for a new direction in transit research: operator sponsorship of a joint program of problem-solving research focused on high-priority topics of common interest to transit managers; an assured source of funds for problem-solving research from a required set-aside of federal formula grants by local operators; and a dominant role for transit agencies in managing and implementing the research program. These recommendations grew out of a year-long assessment of transit research needs and funding priorities.

Background

Since its inception, the federally sponsored transit research program has frequently changed directions, reflecting the broad and changing mission of transit itself. Initially, when federal support was first provided for transit, the research program emphasized planning and systems studies. Then, motivated by the spectacular successes of the space age, the program took on a technology-oriented perspective. Research was focused on the development of advanced hardware, such as People Mover Systems, during the early 1970s. Responding to criticism of the futuristic orientation of the program, UMTA boosted research spending in the mid-



William W. Millar, Executive Director of the Port Authority of Allegheny County, chaired the Committee for the Strategic Transportation Research Study for Transit, which produced the final report entitled *Research for Public Transit: New Directions*, available as *Special Report 213* from TRB.

to late 1970s on technology-based improvements to existing equipment and on transit operating problems. Most recently, program emphasis has shifted to privatization and management issues designed to reduce transit dependency on federal subsidies.

There have also been numerous shifts in the types of research activities supported by federal funds. During much

of the 1970s, research activities were oriented primarily to achieving revolutionary improvements in transit service through technology development. Later in the decade, greater emphasis was placed on applied research to meet the day-to-day operating and technical problems facing transit managers. Under the current administration, research emphasis has shifted again in support of more strategic policy-oriented research to guide federal transit programs and policies.

A major concern of the TRB study committee was that the current UMTA research program largely neglects problem-solving research, and that transit operators and suppliers undertake little research of this type on their own. Federally sponsored research on technology improvements has also been significantly scaled back, and here, too, operator- and supplier-conducted research has been limited.

Committee members concluded that problem-solving research is the most pressing unmet need, and that transit agencies must take the lead in reestablishing this activity. More research on technological innovations would also be desirable. A technology-oriented research program, however, requires a larger scale of funding and longer lead times to conduct and apply successful research. Members of the committee concurred that problem-solving research promises the most immediate payoff from research spending, but that, ultimately, the transit industry must decide the extent to which both types of research can be supported.

Research Agenda

Research topics were screened to identify the most promising candidates for a problem-solving program. Topics were included if they demonstrated high ex-

The full report of the Committee for the Strategic Transportation Research Study for Transit is entitled *Research for Public Transit: New Directions*, and is available from the Transportation Research Board, 2101 Constitution Avenue, N.W., Washington, D.C. 20418 (202-334-3218)

pected payoffs in cost savings, revenue growth, system reliability, or safety improvements; high potential for overcoming organizational barriers to implementing successful problem-solving approaches; high interest to transit operators; and high likelihood of achieving usable results.

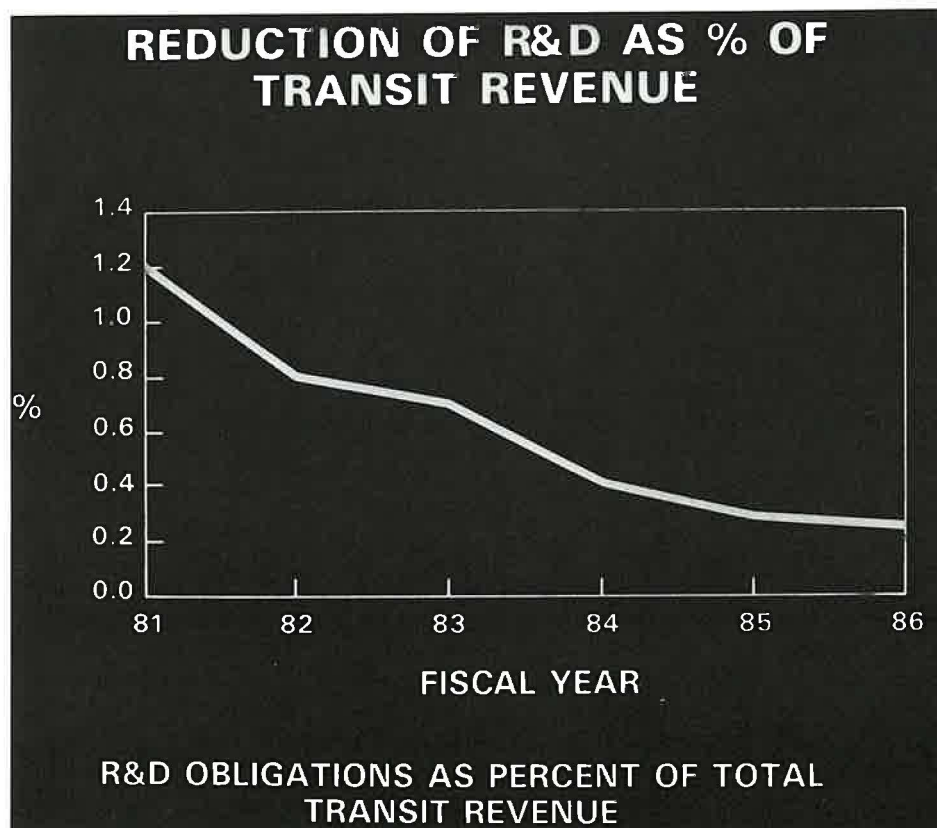
The committee identified seven topics that reflect the research issues uppermost in the minds of today's transit managers:

- Human resources management,
- Service configuration and marketing,
- Service delivery models,
- Internal efficiencies,
- Maintenance,
- Equipment, and
- Innovative financing.

The list emphasizes basic concerns, such as maintenance; and operating concerns, such as human resources management. Although equipment is identified as a research topic, the focus is on near-term technology issues, such as meeting environmental regulations and developing improved vehicle-inspection techniques. The topics are broad in scope and reflect the range of problems faced by a diversity of transit operators. The objective of research is to achieve incremental improvements in all phases of transit operations.

Financing an Operator-Oriented Research Program

Developing an ongoing program of problem-solving research requires sustained long-term funding on a scale suf-



During the 1980s, the share of transit revenues devoted to research dropped by more than four-fifths, from 1.2 percent to 0.2 percent of industry revenues.

A REASSESSMENT

TRANSIT RESEARCH



The recent decline in transit research funds, particularly for problem-solving research, prompted a critical review of the federally sponsored public transportation research program.

HUMAN RESOURCES

(PERSONNEL = 71% OF
OPERATING EXPENSE)



Research on more effective ways to manage transit's largest asset and cost—its human resources—can yield enormous benefits.

ficient to cover fixed costs and support significant projects.

The funding mechanism recommended in the study is modeled after the National Cooperative Highway Research Program (NCHRP), which has drawn significant and stable support from an annual set-aside of federal-aid highway funds to state highway and transportation departments through the Highway Planning and Research (HP&R) program. In similar fashion, transit operators would earmark 0.5 percent of Section 9 and Section 18 grants, on which local matching requirements would be waived, to support a program of joint

research on problems of common interest. Because of the large number of transit providers, however, the set-aside would be mandatory, rather than voluntary, as is the case for the NCHRP program. Through dedicated funds, transit agencies would gain the opportunity to exert meaningful control over an annual program of approximately \$10 million for research on practical day-to-day operating problems.

The set-aside would not be adequate to support the research of individual transit operators on problems of purely local interest or of interest only to a limited number of properties. The com-

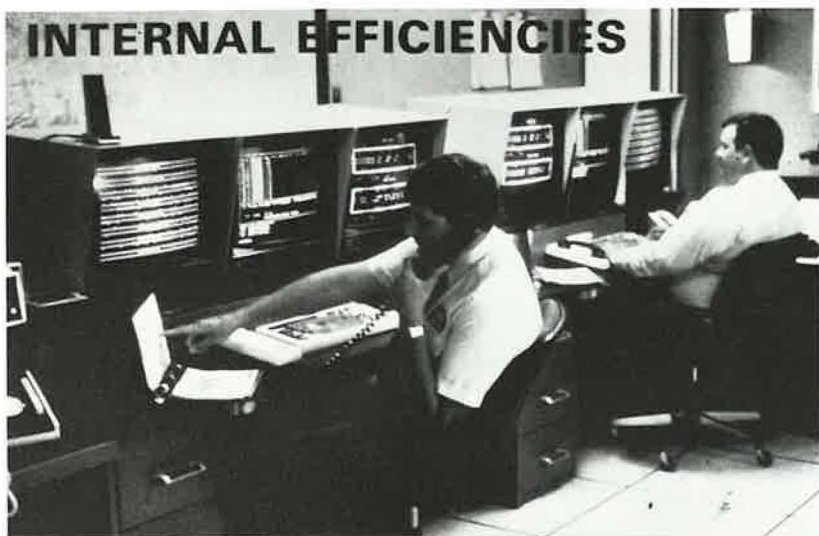
mittee urged that local operators voluntarily devote an additional portion of their Section 9 and Section 18 funds to this purpose and that research be clearly identified as an eligible use of formula grants. Amendment of the Urban Mass Transportation Act would be required to authorize the proposed set-aside and to clarify the use of formula grant funds for research as an eligible program activity.

The proposed program for problem-solving research would complement, not supplant, the current UMTA-sponsored transit research program. Together, these programs should yield approximately a \$23 million annual research effort, or barely more than 0.2 of 1 percent of the industry's gross revenues (farebox plus operating subsidies). In comparison to the private sector, which spends an average of 2.8 percent of gross sales on research, this is a modest investment.

Managing and Administering the Research Program

The success of the recommended research program will depend on the active participation of transit operators in program management and implementation. The study committee recommended creation of a governing board with strong operator representation to set policy for and give direction to the research program. The board would also coordinate the program with parallel transit research activities and take a lead role in developing a plan for disseminating the research results.

In addition, a suitable institution is needed to provide day-to-day program administration. Two alternative arrangements were examined by the committee members. The first would build on an existing structure, such as the Transit Development Corporation, the National Research Council, universities, or the new university centers. The second option would provide a fresh start by creating a new institutional arrangement dedicated to managing the transit research program. Final determination of an appropriate administrative structure was identified as a key task of a follow-up effort.



Research on ways to improve transit's operating efficiencies through application of new technologies and practices offers significant payoffs.

Research on better maintenance practices and programs can have a direct impact on transit's primary mission of providing reliable service.



Next Steps

Establishing the research program will require broad-based support well beyond the confines of the study committee. Recognizing this need, the committee recommended that the transit industry, working through the American Public Transit Association (APTA), take the lead in moving the program forward.

In February of this year, APTA's executive committee established the Transit Research Task Force represent-

ing a broad spectrum of industry interests. The mission of this task force is to broaden awareness of the need and to build consensus for an operator-funded, problem-solving research program; more precisely define the composition and functions of the governing board; select a program administrator; and develop a legislative proposal. The study has laid the groundwork for the structure of a problem-solving research program. It remains for transit operators and the broader transit community to work for its enactment.

Committee for the Strategic Transportation Research Study for Transit

William W. Millar, Port Authority of Allegheny County, Pittsburgh, chaired the TRB Committee for the Strategic Transportation Research Study for Transit. Committee members were: Lawrence D. Dahms, Metropolitan Transportation Commission, Oakland, California; Jo D. Federspiel, Metropolitan Transit Authority, Nashville, Tennessee; Martin Flusberg, Multisystems, Inc., Cambridge, Massachusetts; Jack R. Gilstrap, American Public Transit Association, Washington, D.C.; David G. Hammond, Daniel, Mann, Johnson, & Mendenhall, La Canada, California; Louis L. Heil, McDonald Transit Associates, Inc., Fort Worth, Texas; Alan F. Kiepper, Metropolitan Transit Authority, Houston, Texas; David D. King, North Carolina Department of Transportation, Raleigh; Jack Kinstlinger, Kidde Consultants, Inc., Baltimore, Maryland; Alfred B. LaGasse, III, International Taxicab Association, Kensington, Maryland; Thomas D. Larson, The Pennsylvania State University, University Park; Ernie A. Miller, METRO Regional Transit Authority, Akron, Ohio; Don S. Monroe, Pierce Transit, Tacoma, Washington; William W. Parks, Vapor Corporation, Chicago, Illinois; James E. Reading, Santa Clara County Transit District, San Jose, California; Philip J. Ringo, ATE Management and Service Co., Inc., Cincinnati, Ohio; George M. Smerk, Indiana University School of Business, Bloomington; Roger F. Teal, University of California, Irvine; Carmen E. Turner, Washington Metropolitan Area Transit Authority, Washington, D.C.; Charles H. Weinstein, Garrett AiResearch, Torrance, California; and Nigel H.M. Wilson, Massachusetts Institute of Technology, Cambridge, Massachusetts.