



BROADENING HORIZONS

TRANSIT COOPERATIVE RESEARCH PROGRAM INTERNATIONAL TRANSIT STUDIES PROGRAM

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Each year the International Transit Studies Program of the Transit Cooperative Research Program (TCRP) sponsors international study missions to provide U.S. transit managers with an opportunity to observe transit operations abroad and the role public transit plays in other countries. The objective of the program is to expose the next generation of transit leaders to new ideas and to encourage a multimodal "mobility management" approach to transportation.

Carolyn Wylder, assistant general manager of the Metropolitan Atlanta Rapid Transit Authority, who participated in the first study mission in September 1994, commented on the new perspective she gained from the program:

I was struck by the similarity of European problems to those that are faced by transit agencies here in the United States. I believe that many people in the United States look at solutions proposed by European transit agencies and say that they do not apply here because of the difference in political climates, cultures, and availability of cars. What I actually saw was that even in Europe the car has become a major competitor for transit riders and for local and federal funding. People in Europe are moving to the suburbs in record numbers and more suburb-to-suburb trips are being made.... If you understand that the problems are similar, then the solutions can also be similar. Many of the ideas and technologies that we saw are applicable in the United States.

The Intermodal Surface Transportation Efficiency Act authorized TCRP in December 1991, and the program was implemented in May 1992 by a memorandum of agreement among the Federal Transit Administration; the National Academy of Sciences (acting through the

Transportation Research Board); and the Transit Development Corporation, the educational and research arm of the American Public Transit Association. Funds are provided by an annual grant from FTA. The Eno Transportation Foundation, Inc., is administering the International Transit Studies Program (ITSP) under contract to TCRP.

The ITSP has two elements. First, study missions to other countries are organized for 10 to 15 participants. In most years, there will be two study missions. Prospective participants are asked to submit a recommendation letter from an authorized nominator, a curriculum vitae, and a written statement describing the benefit they and their organizations will receive. A committee that includes individuals who took part in the previous study mission selects candidates, who are approved by the project oversight panel. Study missions last approximately two weeks and are preceded by a briefing at which participants receive background information on topics such as demographic patterns; cultural, legal, and political differences between the host countries and the United States; and transit system statistics.

The second element of ITSP is travel awards for individuals who attend conferences outside of North America. As much as two-thirds of travel expenses can be paid through ITSP for qualified candidates who are delivering a paper at an overseas conference. Applications are accepted throughout the year. As of this writing, five awards have been made.

INTERNATIONAL STUDY MISSIONS

The theme of the first ITSP study mission was Enhancing the Attractiveness of Public Transit. The study mission began in September 1994 with a briefing at the Eno Foundation headquarters in Lansdowne, Virginia. From Virginia the group of

12 departed for London, United Kingdom, led by Kenneth M. Gregor, former general manager of MARTA and chairman of TCRP Project J-3, which oversees the ITSP. The cities visited in the intense, 15-day mission were London and Manchester, United Kingdom; Amsterdam, The Netherlands; Paris and Lille, France; and Stuttgart and Karlsruhe, Germany. The cities were selected on the basis of the following criteria: public transportation design, operating innovations, and marketing innovations that could prove relevant for mobility managers in the United States.

The second ITSP study mission, the theme of which was Innovative Roles for Transit in Creating Livable Communities, started in May 1995 with a briefing that included visits to FTA and the Austrian Embassy in Washington, D.C. The study group, representing public transit systems throughout the United States, was led by William W. Millar, executive director of the Port Authority of Allegheny County in Pittsburgh, Pennsylvania, and former chairman of the TCRP Oversight and Project Selection (TOPS) Committee, the governing board of TCRP. The group visited seven cities considered among the most livable in Europe: Vienna and Salzburg, Austria; Zurich, Switzerland; Munich and Freiburg, Germany; and Strasbourg and Paris, France.

Those who attended the study mission gained insight into the political commitment to public transit at all levels of government in Europe, resulting in comprehensive and reliable region-wide systems. The participants were also impressed by the innovations they observed, many of which are being tested or considered for application in the United States. Evidence of full implementation of these techniques in Europe instilled confidence in many of the U.S. transit representatives to move forward with similar innovations at home.

Sherry Burford, who manages the transit services of Frederick County, Maryland, was particularly impressed that "in European communities public transportation is not viewed as a 'social service' for people who are unable to afford private means of transportation. Instead, it is regarded as a solution to protect and preserve the environment, to reduce automobile use and traffic congestion, and to improve mobility for the overall population."

REGIONAL TRANSIT ADMINISTRATION

A consistent feature among urban areas with successful public transportation systems is the ability to solve the administrative, funding, and service delivery problems associated with multiple political jurisdictions. William Millar commented:



All of the areas we visited either have transit systems or planning and financing mechanisms—or both—that cover more than the central city. Often the geographic areas covered equated roughly to the size of many American counties. I was most impressed by the consistency of customer information available at the bus or rail stop—the point of sale—and the overwhelming commitment to maintaining dependable schedules. Transit operators are able to do this through consistent and adequate funding, usually from regional funding and service coordinating agencies, such as the Zurich Transport Association (ZVV)...and the Vienna Regional Transit Association.

The administrative structure that provides the underpinning for integrated transit services and fares is the regional transit association. High transit ridership—more than 300 annual trips per capita—is common⁴ in the livable cities that use this administrative strategy.

The province of Salzburg, Austria, inaugurated its areawide, single-fare system during the week of the team's visit. The new system involves more than a dozen service providers and took years to negotiate. The 10-year-old Eastern Regional Transit Association, with jurisdiction in and

Zurich's "restaurant train" attracts tourists and local residents to its adjoining bar and cafe cars, which travel a 15-minute loop through downtown.



George Wynne, Academy for State and Local Government, operates light-rail Sonderzug (special train) in Karlsruhe, Germany, while Susan Hafner, Riverside Transit Agency, California, and Ron Freeland, Maryland Department of Transportation, observe.

around Vienna, carried 741 million passengers in 1994, a new record representing a gain of nearly 20 percent since 1985.

The most consistent public policy success was encountered in Zurich (population 1.2 million), where annual ridership per capita is estimated at more than

500. The transit mode share in Zurich is more than 50 percent and the farebox recovery rate is between 60 and 70 percent. The canton of Zurich has been served since 1990 by the ZVV, which comprises 43 public and private transit providers.

FARE PAYMENT SYSTEMS

Fare payment systems are an essential technological complement to integrated transit service. Application of "smart cards" to transit fare payment was among the most commonly observed innovations in Europe. "Virtually every system either had or was about to get a card in some form," observed Rodney E. Ghearing, assistant executive director, Capital Area Transportation Authority, Lansing, Michigan. "Smart cards contain a computer chip, so that they can support more passenger-serving functions than other fare media, and are contactless, meaning that no physical contact is needed between the card and the card reader. The reason smart cards are so attractive to transit agencies is that they reduce boarding times, solve the problem of revenue allocation to multiple operators, reduce fare evasion, improve security, and provide extensive ridership data. Smart cards are being tested extensively in the United States too, but European transit systems seem to have made the decision to invest."

In Manchester, United Kingdom, the contactless smart cards will soon replace magnetic strip cards for fare payment on the Metrolink light rail system. London Transport has investigated several card technologies and has settled on the contactless smart card with the passenger's photograph as the most promising. London Transport employees are now testing the new technology, and it will soon be tested with the general public. Both London and Manchester hope to gain greater fare security, fare flexibility, and improved travel pattern data from the use of smart cards.

In France the Paris Regional Transit Authority (RATP) started testing contactless fare cards in 1993, involving 1,000 employees and 130 termi-

nals on Metro Line 11. Card reliability is reported to be 10 times better than the magnetic strip card, and the target cost is about \$4 each. The current cost is \$8 each, or \$12 each for a version with a digital display. RATP plans to implement the system with all 40,000 employees, and full implementation is expected by the year 2000.

Germany's version of this technology is called the *Fahrsmart* and it is currently used in a municipal and regional fleet in Oldenburg as a national demonstration project sponsored by the Federal Research and Technology Ministry. The system automatically calculates the most advantageous fare for the subscriber, sends a statement at the end of the month, and deducts the amount owed from subscribers' bank accounts based on a separate signed agreement concluded in each case between the transit operator and the individual client. Discussions with area banks are under way to add credit-card and automatic-teller functions to the transit chip card.

"European properties have simplified their fare structures and devised ways for patrons to take advantage of local and regional public transportation services," according to Ronald L. Freeland, Maryland Department of Transportation. "My exposure to the fare structures has convinced me that U.S. transit properties must do more to unify their fare structures in spite of the many jurisdictional barriers to unified fares."

INTELLIGENT TRANSPORTATION SYSTEM APPLICATIONS

"Here at MARTA we are looking at methods to inform the rider of the status of the system," noted Carolyn Wylder. "The experiences of the Countdown project in London and the Stuttgart Transport Operation Regional Management project will help us make decisions for implementation on our project."

Operation Countdown in London provides real-time bus arrival information to passengers using roadside vehicle-location technology. Studies are under way to determine the effect of this information on ridership. The \$60 million Stuttgart Transport Operation Regional Management (STORM) system strives to reduce traffic congestion by providing real-time information about parking availability at the closest parking lot to motorists entering the city. STORM also operates a fleet-management system for private truck fleet operators. This system can improve the use of existing parking facilities and assist tourists and visitors unfamiliar with the area.

With Atlanta heading into the 1996 Olympics, systems such as these could mean the difference between gridlock and a functioning urban arterial

INTERNATIONAL STUDY MISSIONS

FIRST ITSP STUDY TEAM

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Two additional International Transit Studies Program study missions were conducted. In November 1995 a group of 11 transit professionals visited Japan, Hong Kong, and Singapore on a mission entitled High-Tech Solutions to Transit Problems. In May 1996 a fourth study mission brought 13 transit practitioners to Europe to examine Exemplary Urban and Regional Bus Operations in Small and Medium Cities. Insights from the ITSP will be reported in *TR News* from time to time.



Grassy, parklike right of way for light rail in Freiburg, Germany, with pedestrian warning sign.

network. Wylder noted that since her return from the September 1994 trip, "MARTA has researched, developed, solicited, and awarded contracts for an intelligent transportation system. Contacts were made between the MARTA staff and experts in London and Stuttgart. Information from these discussions allowed us to learn from their experience."

According to Ron Freeland, "I was especially impressed with the creative ways in

which European transit properties have integrated state-of-the-art technologies into their transit systems. For example, I was able to observe firsthand the intricate workings of automatic vehicle locator systems (AVL) in several European properties. The Maryland Mass Transit Administration is currently testing AVL, so my faith in this technology was renewed and reinforced when I saw mature AVL systems at work in various European cities."

PRIVATIZATION AND ECONOMIC DEVELOPMENT INITIATIVES

"Except for Paris, virtually every other city visited [by the first study team] is using some form of privatization to operate or manage public transportation," Allan D. Biehler, director of planning, engineering, and construction, Port Authority of Allegheny County, Pennsylvania, found out. "The most radical example can be found in the United Kingdom outside London, where some transit services are being deregulated." Privatization efforts in London have been well publicized. Since 1984, "liberalization of services" resulted in regional bus systems being sold to private operators. Liberalization consists of deregulation, privatization, and competition. Competitive tendering has allowed the private sector to take over bus operations while London Transport maintains the infrastructure. Some of the privatization efforts have resulted in buy-outs of management employees, and renegotiation of work rules have occurred in most cases.

The overall result is increased productivity and reduced operating costs. However, ridership has dropped and service has declined outside of London despite a reported 15 percent increase in

vehicle miles operated. The jury is still out on the success or failure of these new policies.

The Docklands Light Railway (DLR) in London was built partly to promote revitalization of the East London Docklands by improving access to London's Financial District. The Docklands revitalization is a controversial, multi-billion dollar economic development project with public, private, and international participation. The potential economic benefits of the DLR are not yet clear, but the light rail line has received worldwide notice because of its advanced guidance system and other innovative features.

INNOVATIVE VEHICLE AND VEHICLE-CONTROL TECHNOLOGY

The DLR's automated, driverless operation and the recent upgrade to moving-block signal technology have attracted the attention of transit managers around the world. Ridership on the DLR has increased more than anticipated during the past 10 years, requiring additional capacity that is being gained by converting from fixed-block to moving-block train signals.

"I particularly appreciated the opportunity to talk with the manager of the moving-block signal system for the DLR," commented Anne Y. Herzenberg, manager of Blue Line operations for the Massachusetts Bay Transportation Authority in Boston. Implementation took almost three times as long as planned, but it was reportedly worth the wait. The new system dramatically improved the capacity of the railway, and maintenance requirements were about the same as for the conventional system being replaced.

Among the most impressive new hardware seen by the team was Vienna's ultra-low-floor prototype light rail vehicle, the first of a fleet of 100 to be phased in over the next few years. The LRVs are just 15 centimeters (6 inches) off the ground, level throughout, and can be raised hydraulically in case snow blocks the entrance. A similar impression was made by the recently phased-in fleet of 26 double articulated tramways in Freiburg—33.5 meters (110 feet) long each, with a capacity of more than 200 passengers—and the "Streetcar Named Future" in Strasbourg, that went into revenue service earlier this year. The Strasbourg cars are 100 percent low-floor.

Strasbourg's bus system has been realigned and coordinated with the tramway. The accessibility afforded by the tram and coordinated bus service made it more feasible to ban private cars from the inner city two years ago as part of a new public transit-oriented strategy to overcome the pollution and traffic congestion that has plagued the his-

toric center of the Alsatian region. As a result, Place Kleber, the central square, which once was jammed with approximately 50,000 cars a day, has now been returned entirely to pedestrian and tram use.

London affords a specific example of bus priority. Traffic control at one of London's busiest intersections at Shepherds Bush has been modified to improve bus flow. A set of "presignals" has been installed several meters in advance of the intersection to control general traffic. In effect, the stop bar has been moved back from the intersection. Buses are permitted to leave the adjacent curbside stop before general traffic is released from the presignal, and buses are controlled, in turn, by signals in the normal position. This signal arrangement allows buses to jump ahead of the traffic queue and improve travel time.

One of the best examples of efficient use of infrastructure resources was observed in Karlsruhe, Germany. According to Michael S. Townes, executive director of the Peninsula Transportation District Commission, Hampton, Virginia, Dr. Dieter Ludwig of Karlsruhe "used his passion to persuade the local politicians to expand his budget for light rail and promised to run the system everywhere, spidering out to suburban communities. To do this he wanted to use the rights of way that were already there, old tram tracks and some of the 15.5-kilovolt German national rail intercity commuter lines. So he needed to get equipment that would switch seamlessly on the fly. Well he did it, and we rode that LRT. It worked! You hardly felt the switch. Small, attractive new communities are now springing up around the stations. I thought that things like this just were not possible."

INNOVATIVE TRANSIT MARKETING

European systems go the extra kilometer to cultivate patrons. First, they cover the basics well, providing comfortable seats, clean interiors, and excellent passenger information systems. They also use many strategies for customer convenience. Transit agencies contract with major employers, including the city, for subsidized transit passes; offer discounted "green" passes; accept event and theater tickets as transit passes; provide late-night taxi services to the suburbs; park converted buses at the edge of pedestrian shopping zones to check Christmas shoppers' parcels; offer department-store rebates or reductions in weekend car rentals on presentation of annual transit passes; and even allow passengers to be accompanied by pet dogs for a half-price ticket. In short, transit agencies in Europe continually seek out innovative marketing strategies, some of which

are transferable to the United States.

Karen J. Rae, deputy general manager, Niagara Frontier Transit System in Buffalo, New York, believes that European citizens understand the real costs of transportation choices more than citizens in the United States, and that they support extensive and reliable public transportation. In her view Europe's "efficient and well-used regional transportation networks" result from several factors, among them: "one-stop shopping regional associations that coordinate scheduling, fare structures, and marketing; the inclusion of pedestrian and bikeway enhancements in modal-split discussions and policies; technology improvements that ease traffic flow for public transit, such as signal preemption; and an appropriate and reliable financing mechanism [to support] frequent service."

SUMMARY

According to John R. (Bob) Post, deputy general manager, Tri-County Metropolitan Transit District in Portland, Oregon, "although it might be easy on the surface to dismiss the applicability of the European transit experience to U.S. cities, the study trip underscored the vast opportunities to learn from the accomplishments of the European transit industry. It is true that most American cities do not match the development densities nor the history of transit use...in Europe, [but] the success of these systems is also clearly the result of factors we in the United States can influence."

"Beyond the specific technical and policy issues, the study mission was an excellent opportunity to step back from day-to-day job responsibilities and get to know some peers in the transit industry," Herzenberg observed. Patricia V. McLaughlin, deputy executive officer, Los Angeles County Metropolitan Transportation Authority, agreed: "One of the absolute benefits of the trip was the ability to meet directly with the people in charge of implementation in projects and policies. [Although] transit managers can read about new ideas coming out of foreign countries and listen to presentations at conferences, it is difficult to compare this secondhand information with the ITSP experience." Townes's experience with the study mission gave him confidence that "the tour members clearly have the ability to be the very top leaders in the American transit industry and will prove to be valuable networking contacts for me in the future."

For more information on the TCRP International Transit Studies Program, contact Stephen Andrie at the Transportation Research Board (telephone 202-334-3240).