LARGE CITY TECHNICAL EXCHANGE AND ASSISTANCE PROGRAM

FINAL REPORT

- Inter-jurisdictional Coordination for Traffic Management
- Interagency Fiber Optic Sharing
- Planning for Pedestrians in Large Urban Centers

November 2000

New York University
Robert F. Wagner Graduate School of Public Service

Rudin Center for Transportation Policy and Management

Partnering Institutions
Institute of Public Administration New York University Polytechnic University University Transportation Research Center at City College of New York

Large City Technical Exchange And Assistance Program

FINAL REPORT

- Inter-jurisdictional Coordination for Traffic Management
- Interagency Sharing of Fiber Optic Systems
- Planning for Pedestrians in Large Urban Centers

November 2000

New York University
Robert F. Wagner Graduate School of Public Service
Rudin Center for
Transportation Policy and Management

4 Washington Square North
New York, NY 10003-6671
212 998-7483
rudin.center@nyu.edu
www.nyu.edu/wagner

This project was conducted for the Federal Highway Administration with the cooperation and support of the National Association of City Transportation Officials.

The project manager for the Large Cities Technical Exchange and Assistance Program is Elliot G. Sander, Director of the Rudin Center for Transportation Policy and Management at New York University.

Research for this report was conducted under the direction of Bruce Schaller, a Visiting Scholar at New York University.

Chapters 1 and 2 were researched and written by Bruce Schaller and Henry Peyrebrune, who is also a Visiting Scholar at New York University. Chapter 3 was researched and written by Nancy Bower, Graduate Assistant at the Rudin Center.

The authors wish express their grateful appreciation to the many persons who lent their time, experience and expertise to this project – in particular, members of the National Association of City Transportation Officials (NACTO) and the Transportation Research Board's Committee on Transportation Issues in Major U.S. Cities.

This material is based upon work supported by the Federal Highway Administration under Cooperative Agreement No. DTFH61-99-X-00069. Any opinions, findings, conclusions or recommendations expressed in this publication are those of the Authors and do not necessarily reflect the view of the Federal Highway Administration.

TABLE OF CONTENTS

EXECUTIVE SUMMARY

THE LARGE CITY TECHNICAL EXCHANGE AND ASSISTANCE PROGRAM

Over 25 million Americans live in large American cities. These large cities play a critical role in the economic, environmental, social, and cultural viability of the nation's key metropolitan areas. Transportation is a critical element in the success or failure of these large cities and the health of their surrounding metropolitan areas. Indeed, these cities owe their creation and much of their existing economic vitality to their role as transportation hubs.

The transportation systems of large American cities face enormous challenges ranging from limited financial and technical resources to high levels of congestion, aging infrastructure and highly diverse institutional structures and capabilities. But in spite of the many challenges and constraints faced by transportation professionals operating in large cities, examples of innovation seem to be commonplace. Whether it is Chicago's new program for graffiti proof street signs, Boston's Intelligent Visual Inventory System, Los Angeles' advanced bus priority program, Philadelphia's pedestrian safety program, Houston's incident management center, or Portland, Oregon's shared fiber optic network, innovation and excellence does occur.

The Large City Technical Exchange and Assistance Program facilitates the exchange of information and expertise among central city transportation professionals. The program is funded in FY'00 by the Federal Highway Administration through the Rudin Center for Transportation Policy and Management (CTPM) at New York University's Robert F. Wagner Graduate School of Public Service. The Rudin Center serves as staff to the National Association of City Transportation Officials (NACTO), an organization composed of senior central city transportation officials in the nation's ten largest metropolitan areas: Boston, Philadelphia, New York, Chicago, Baltimore, Detroit, Atlanta, Houston, Los Angeles, and San Francisco.

This report includes the results of case studies on three topics that NACTO members identified as of critical interest. The topic areas are: inter-jurisdictional coordination in traffic management; interagency sharing of fiber optic networks; and facilitating high-volume pedestrian activity. The first two topics address interagency and inter-jurisdictional issues, subjects of growing importance with the mounting awareness among both cities and suburbs of their interdependence in transportation, land use and economic welfare. The third topic, facilitating pedestrian activity, recognizes cities' re-emergence as centers of commerce, leisure activity and particularly tourism, and the growing importance of active downtowns to cities' economic fortunes.

Each case study write-up is intended to advance the understanding and expertise of transportation officials in managing transportation systems in large cities by sharing the successful experience of other large American cities.

INTER-JURISDICTIONAL COORDINATION FOR TRAFFIC MANAGEMENT

City and state transportation and transit officials across the U.S. have set up traffic management centers (TMC) to better plan and manage highways, roads, transit facilities and emergency response operations under their responsibility. TMCs have grown in sophistication and effectiveness, particularly with the advent of computerized traffic controls, traffic sensors, closed-circuit televisions and high-speed communications networks. Because traffic in major metropolitan areas crosses jurisdictional borders, local and state officials have increasingly recognized the benefits of coordinating their traffic, transit and emergency response management efforts.

Inter-jurisdictional coordination raises a host of issues and challenges, however. To assist local officials seeking to coordinate their TMC programs with neighboring and overlapping jurisdictions, the project team reviewed a myriad of reports and publications on this topic, including the extensive literature on Intelligent Transportation System (ITS) implementation. The project team also visited Los Angeles, Houston and New York, three major cities that are leaders in inter-jurisdictional traffic management coordination.

Chapter 1 discusses the major issues with inter-jurisdictional traffic management; reviews the relevant literature; reports on the experience of the three cities visited; and synthesizes findings from the literature and site visits. The chapter includes "lessons learned" and "neat ideas for large cities" culled from the site visits which should be of interest to large city transportation officials. Finally, the chapter also contains an extensive bibliography and contact names in each city.

Findings can be summarized for five major issue areas. Notably, while the literature survey showed a considerable diversity of experience among cities, the three cities visited evidenced remarkable consistency. This presumably owes at least in part to the effects of city and metro area size and complexity.

1. *Types of relationships among agencies, issues of what to share or coordinate and how to build trust.*

Agency relationships can vary from formal structures such a traffic management committee or a senior policy board or other decision-making body or process, to informal arrangements built on staff relationships and project-specific activities. Building of relationships can focus on defining each agency's role and responsibilities or on fostering close relationships between agency staff.

The three sites visited exhibit an interesting combination of characteristics. Formally, the relationships tend to be decentralized rather than centralized. Coordination tends to be directly between agencies in a web-like fashion rather than through a centralized decision-making body. This arrangement allows each agency to focus on accomplishing its own mission. Because each agency remains responsible for its own operations and facilities, issues of control over traffic information and operational responses to traffic problems are avoided. At the same time, peer-to-peer coordination enables the agencies

to take account of what is happening around them in managing their own facilities and thus reap the benefits of inter-jurisdictional coordination.

Despite relatively high organizational autonomy, the most productive inter-jurisdictional relationships usually involve close personal relationships among agency staff. TMC personnel prize face-to-face interaction even though they have the technical ability to communicate across large distances. Face-to-face interaction facilitates close relationships and builds trust and understanding between agency staff as they work on a succession of projects and tasks. Face-to-face interaction is more critical for quickly formulating responses to one-of-a-kind situations such as major accidents, spills and special events than for routine traffic management functions.

Technical expertise is critical to establishing, developing and maintaining all types of inter-jurisdictional relationships. In-house staffing at the TMCs visited proved vital to TMC coordination. Expertise is vital to building trust, and trust builds relationships. Staff in one agency will not trust the information coming from another agency, or trust the other agency to use its information responsibly, unless the staff in that other agency demonstrate knowledge and competence.

2. *Need, funding, costs, benefits and catalysts.*

The literature survey and our site visits produce concurring results. Successful inter-jurisdictional coordination occurs in response to visible public needs, e.g., over high levels of congestion or the need to manage traffic from large special events. The perception of need must be shared across agencies. Likewise, each agency must expect that coordination will further its mission.

Funding attracts participants. Bringing new money into a metro area attracts participation from agencies and prevents coordination from being viewed as a source of competition for a limited pot of funds. Conversely, participants attract funding, as when bringing politically influential departments such as the police into a TMC creates a powerful ally in seeking local appropriations.

It is critical to plan for operations and maintenance expenses up-front. While capital funds are often ample, most local and state governments are squeezed for operating funds. A few thousand dollars or even less can make the difference between inter-jurisdictional coordination proceeding or not.

The opportunity to "barter" using complementary agency capabilities also fosters inter-jurisdictional coordination. One agency may have a procurement process that is better suited to a particular procurement, for example, while another agency is suited to being the formal funding recipient and a third agency has vital staff expertise. By coordinating their activities, each agency can benefits from the strengths of the other agencies, thus furthering its core mission.

In many metro areas including the three visited for this project, high-level "champions" played critical roles in setting a vision and persevering until the fruits of inter-jurisdictional cooperation could be harvested.

3. *Role of planning processes.*

Comprehensive planning is sometimes advocated to ensure coordination of individual projects, build a shared vision of goals and project architecture, and ensure compatibility of technology. Experience in the three large cities shows that the importance of a shared vision cannot be underestimated. Their experience in developing inter-jurisdictional coordination, however, comes down firmly on the side of incremental, bottom-up, building block approaches. Particularly in early project development, agencies can more readily agree to a first step than an overall plan. The initial steps are far quicker to show results that can then be built upon.

4. *Technology compatibility.*

It only seems to make sense for neighboring or overlapping jurisdictions to adopt compatible equipment and software to make interconnections simpler, faster and less costly. This is easier said than done, however, given low-bid procurement requirements and rapidly changing technology. Compatibility can be sacrificed when necessary and in fact, technology itself can be the solution to compatibility issues in the form of "translation" software that allows different systems to communicate with each other.

5. *Public-private partnerships.*

Public-private partnerships have long been touted as a way for government to involve the private sector in sharing risks and costs of program development. Attempts at public-private partnerships have met with less success than was hoped for, however. Explanations include diverging missions, resistance to change, different languages spoken by public and private entities, lack of communication and difficulty fixing accountability.

The difficulties of pioneering in this area were evident in some of the site visits. Traffic management remains a public function in these cities, carried out for broad public benefit with a chary eye aimed at efforts to limit dissemination of information for private sector profits.

INTERAGENCY FIBER OPTIC SHARING

The first and second topics are closely linked since one of the most important features of a TMC is the communications network that links management centers with each other and with field equipment. The communications system "puts the intelligence in an intelligent transportation system." While a variety of communications technologies exist, fiber optic networks provide the high bandwidth and high data-transmission rates often needed for traffic management.

Fiber optic systems can be quite costly, however, particularly where new conduit must be laid beneath city streets or strung between poles. Considerable cost-saving opportunities appear to be available if city agencies can develop shared fiber optic systems.

Since there is virtually no literature on this topic, the research team focused on gathering information on the experiences of seven cities of varying size and location: Houston; Portland, Oregon; New York; Austin; Silicon Valley; Denver and Boston.

Chapter 2 discusses the key issues, lessons learned, neat ideas of interest to large city transportation officials, and detailed reports on the case study sites. Contact names are included for each case study.

Key issues and findings are:

1. *What agencies are involved in fiber optic sharing arrangements; whether sharing arrangements span distinct missions or all relate to transportation activities.*

Fiber sharing may occur among transportation agencies that need to communicate to accomplish their missions, or among agencies with diverse missions—e.g., transportation, schools, welfare agencies, etc. In most of the cities studied, fiber sharing is confined to transportation agencies, typically as part of an overall ITS program. Integration with ITS programs facilitates planning and funding of fiber optic networks.

Successful multipurpose sharing arrangements have been established in Austin and Portland among the cities studied. Even in these cities, however, there were complementary fiber networks devoted to transportation purposes. Transportation uses, particularly video camera feeds, create bandwidth demands that currently tend to exceed the capacity of multipurpose fiber optic networks. Whether this will remain true with opportunities to reduce costs per megabyte via wavelength division multiplexing remains to be seen.

2. *Type of relationship(s) between agencies.*

Relationships can be more formal or less formal, ranging from signing of extensive memorandums of understanding (MOU) to informal coordination among staff at different agencies. The best route seems to depend on the number of agencies involved, purposes of the fiber network, and degree of comprehensiveness of the relationship. While fiber optic systems involving a half dozen agencies necessitate formality, two transportation agencies can readily exchange access to their fiber systems without formal arrangements.

3. *Methods used to build the fiber optic system.*

There is a range of options, from building fiber optic systems based on a comprehensive plan to phased or incremental approaches. The differences relate to the type of planning conducted, sources of funding and timetable for construction. The most comprehensive approaches tend to accompany multipurpose, multi-agency agreements and large ITS projects.

On the other hand, incremental approaches have been quite successful in building conduit capacity by piggybacking on installations of private telecommunications companies and various public sector highway, bridge and transit construction projects. Piggybacking

allows cities to cheaply acquire conduit capacity—normally the most expensive part of building a fiber optic system—and then run fiber through conduit as needed.

4. What is shared.

Sharing can involve at least five types of arrangements: physical facilities, software, expertise, O&M and costs. There are examples of successful arrangements in each of these categories.

A key lesson from the cities examined is that successful sharing arrangements can take a variety of forms and that "more" sharing is not necessarily "better." Relatively "loose" sharing arrangements in which transportation agencies interconnect their fiber optic networks to share data while each agency builds, operates and maintains its own fiber facilities have worked quite well. On the other hand, extensive sharing arrangements can fruitfully encompass operations, maintenance and financing. These more extensive arrangement are particularly fruitful when many agencies, some with modest bandwidth needs, are served.

PLANNING FOR PEDESTRIANS IN LARGE URBAN CENTERS

A distinctive feature of large cities is their high volume of pedestrian activity. The energy and richness experienced in an active and diverse streetscape is a powerful part of the city's attractiveness over suburban and rural environments. Achieving that richness and texture, however, is a challenge given the often intense demand for scarce street and sidewalk space, the need to accommodate both pedestrians and motor vehicles, and safety concerns for both pedestrians and vehicle occupants.

The third chapter is a practical resource for large city transportation officials, detailing the experience of large cities with a broad array of strategies, markings, devices and signage conducive to high-volume pedestrian activity. The chapter discusses strategies for integrating the needs of all users into an organic, attractive environment; challenges involved with this task; and available financing. Throughout, the focus is on addressing the often-unique needs of large U.S. cities.

Based on a review of the extensive literature on pedestrian and traffic issues and interviews with city transportation officials and pedestrian advocates, four overall strategies are highlighted to facilitate high-volume pedestrian activity:

- Reducing vehicle speeds
- Shorten and simplify crossings
- Communicate pedestrian presence
- Expand and enhance the pedestrian domain.

Numerous methods of accomplishing each of these strategies are reviewed. These include simple traffic controls such as stop signs in place of traffic signals, leading pedestrian

intervals, recessed stop lines, neckdowns, wider sidewalks and tighter vehicle turning radii. Big cities' experience with other more controversial measures are discussed such as exclusive vs. concurrently timed signals, mid-block crosswalks, parking restrictions and fluorescent yellow-green pedestrian signs. High-tech solutions are also reviewed—countdown walk signals, sensored crosswalks and video enforcement.

While the best blend of devices depends on the pedestrian and traffic conditions at each location, it is clear from this review of large city experience that a multitude of often-simple steps can enhance the attractiveness of urban centers to pedestrians and thus strengthen the vitality of urban cores.

This page intentionally left blank.