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OPERATING MULTI-MODAL URBAN TRANSPORTATION SYSTEMS

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16. Abstract

This project examines the state-of-the-art in multi-modal urban transportation system operations, proposes and assesses eight model institutional arrangements for more efficient and effective urban transportation operations, assesses the influence of Federal policies in this area, and proposes possible changes to enhance coordination of urban transportation services.

The report concludes that some of the more important elements determining the success of efforts to coordinate urban transportation operations are institutional structure, responsibility for coordination, incentives operating on each agency and individual, patterns of personal relationships, and specific mechanisms for coordination. Potential Federal actions and incentives for promoting coordinated urban transportation operations are proposed.

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EXECUTIVE SUMMARY

Purpose of the Report

This report describes the current behavior of individuals and institutions responsible for operating multi-modal urban transportation systems. It proposes eight model institutional arrangements for more efficient and effective urban transport operations, and identifies the strengths and weaknesses of each model. The existing system of federal incentives applied to urban areas is isolated, its effects are described, and changes are recommended to improve urban transport operations.

The General Problem

Urban transportation in the United States is characterized by fragmentation of the responsibility for operation and regulation among different governmental agencies and private operators at the state and local level. Often, there is little or no coordination between the numerous operators and regulators. To improve the efficiency and effectiveness of multimodal urban transportation systems, the U.S. Department of Transportation is interested in ways to improve the coordination among agencies and integration among operators, as well as in alternative organizational arrangements that institutionalize coordination among modes (e.g. auto, transit) and integration of different available services.

Study Approach

Many existing interagency relationships came about through their cooperation on highway or transit capital programs. The increasing concern for more efficient and effective urban transportation systems has led to some modifications of institutional responsibilities and some new mechanisms for coordination. In spite of fragmented institutional responsibility for urban transportation decisions, there have been notable successes in coordinating multi-modal operations improvements.

This research project set out to identify good examples of interagency coordination and integration of services, determine the factors contributing to these successes, and synthesize the lessons that are potentially transferrable to other metropolitan areas. The research and analysis was accomplished through the following steps:

- Identification of current state-of-the-art multi-modal public transportation system operations in the United States and relevant international locations, with emphasis on the evolution of successful urban transport

systems, the management techniques and styles of cooperation between and among government levels and agencies.

- Derivation of model institutional arrangements for the effective and efficient management of multi-modal public transportation systems in the United States, and discussion of each model's advantages and disadvantages.

- Identification and analysis of regulatory and legal problems likely to affect various institutional arrangements.

- Identification of political and institutional problems likely to affect the creation and operation of the various model institutional arrangements, and suggestion of strategies to overcome, ameliorate or prevent such problems.

- Investigation of the means and incentives through which the federal government can intervene to improve the coordination and integration of urban transportation systems.

The state-of-the-art of multi-modal operations coordination was identified primarily through case studies of innovative operations improvements in Chicago, Knoxville, Los Angeles, Madison, Miami, Minneapolis-St. Paul, Portland, San Francisco and Toronto. These in-depth case studies were supplemented with a thorough literature search of innovative approaches tried in Europe and the Far East. The North American case studies provided the framework for analyzing institutional coordination, and served as the basic input to the institutional models developed and analyzed in the later steps of the research.

Summary of Findings

A general conclusion from this research is that no single institutional arrangement is universally applicable to all U.S. metropolitan areas. All metropolitan areas have attributes of one or several model institutional arrangements, and efforts should be made to modify and strengthen existing arrangements, rather than attempt to radically alter them. Well coordinated and integrated urban transportation systems are influenced by many factors in addition to the institutional arrangement -- merely restructuring institutional responsibilities will not ensure coordination.

1. Factors Contributing to Coordination

Five important elements determine the success of efforts to coordinate urban transportation operations:

- institutional structure;
- responsibility for coordination;
- incentives operating on each agency and individual;
- patterns of personal relationships; and
- specific mechanisms for coordination.

Most operators of urban transportation are state and local governments or agencies created by the states. State and local governments have usually created the existing institutional arrangements, and have been the most effective coordinators of multi-modal operations improvements.

Institutional responsibility for urban transportation operations is usually fragmented. Seldom have there been institutional rearrangements to concentrate authority. Most urban areas have never experienced effective political forces interested in the reorganization of institutional responsibilities for transportation. Consequently, major institutional changes must be considered low probability events, although modest movements towards more productive arrangements may occur in many places.

Figure 4 shows eight model institutional arrangements for operating coordinated urban transport systems. Each of these models that concentrates more responsibility in one agency can lead to better coordination of urban transportation operations.

Cities, counties and states, as general purpose governments with political legitimacy, may effectively coordinate operating decisions even without concentrated legal responsibility for operations. However, agencies lacking a political base have less real opportunity to improve operations than would appear from a description of their responsibilities. This is the case for associations of governments, transit agencies, regional financing agencies or other special purpose authorities. In general, an institutional arrangement will be more effective if the agencies with actual political authority also have legal responsibility.

Coordination of operations does not consciously or subconsciously emerge from an institutional structure. In the final analysis, effective coordination is accomplished by an effective individual coordinator who is given the opportunity to coordinate. Coordination is a "role" played by a person in a certain decision context, and it is more than likely that the decision coordinators at a staff level are people with authority and ability to represent or negotiate for the key decisionmakers.

Two systems of incentives can be applied to bring about coordinated operations:

- incentives which influence directly the operators and other institutions making decisions on the delivery of urban transport services; and

FIGURE 4

Alternative Institutional Models For Operating Urban Transportation Systems

Alternatives for Designating Primary Responsibilities	Participants in Operations Decisions	Area of Responsibility (D = Decisionmaking, D/S = Shared or Split Decisionmaking, A = Advisory, – = Minor, if any)										
		1 Regular Route Transit Service Planning and Operations	2 Freeway Operations 2/	3 Surface Street Operations 3/	4 Transit Financing 4/	5 Highway Financing 5/	6 Transit Improvement Scheduling and Budgeting	7 Highway Improvement Scheduling and Budgeting	8 Regulation and Licensing of Private Transit and Paratransit Operators	9 Regulation of Off-Street Parking	10 Terminal and Transfer Point Operation	11 Region Rideshar Progr Manage
1 State Dominant	a. Metro Planning Organization	A	A	A	A	A	A	A	A	–	–	A
	b. State Agency (e.g., DOT or Police)	D	D	D	D	D	D	D	D/S	D/S	D/S	D/S
	c. City or County Government	A	A	A	A	A	A	A	D/S	D/S	D/S	D/S
	d. Metro Transit Authority	–	–	–	–	–	–	–	–	–	–	–
	e. Private Operators 1/	A	–	–	–	–	–	–	A	–	–	A
2 City or County Dominant	a. Metro Planning Organization	A	A	A	A	A	A	A	–	A	A	A
	b. State Agency (e.g., DOT or Police)	–	A	–	D/S	D/S	–	D/S	D/S	–	D/S	–
	c. City or County Government	D	D	D	D/S	D/S	D	D/S	D/S	D	D/S	D
	d. Metro Transit Authority	–	–	–	–	–	–	–	–	–	–	–
	e. Private Operators 1/	–	–	–	–	–	–	–	–	–	–	A
3 Metropolitan DOT (multi-jurisdictional)	a. Metro Planning Organization	A	A	A	A	A	A	A	–	–	–	A
	b. State Agency (e.g., DOT or Police)	–	A	A	D/S	D/S	A	A	A	–	A	A
	c. City or County Government	A	A	A	D/S	D/S	A	A	A	D/S	A	A
	d. Metro Transit Authority	–	–	–	–	–	–	–	–	–	–	–
	e. Private Operators 1/	A	–	–	–	–	A	–	–	–	–	A
	f. Metro DOT	D	D	D	D/S	D/S	D	D	D	D/S	D	D
4 Metro General Purpose Government	a. Metro Government (MPO)	D	D	D	D/S	D/S	D	D	D	D	D	D
	b. State Agency (e.g., DOT or Police)	–	A	–	D/S	D/S	–	A	A	–	A	A
	c. Local Municipalities	A	–	A	–	–	A	A	A	A	A	A
	d. Metro Transit Authority	A	–	A	A	–	A	A	A	–	A	A
	e. Private Operators 1/	–	–	–	–	–	–	–	A	–	–	A
5 Regional Association of Governments	a. Metro Planning Organization	A	A	–	A	A	A	A	A	A	A	A
	b. State Agency (e.g., DOT or Police)	–	D	–	D/S	D/S	D/S	D/S	D/S	–	D/S	D/
	c. City or County Government	D/S	A	D	D/S	D/S	D/S	D/S	D/S	D	D/S	D/
	d. Metro Transit Authority	D/S	A	A	D/S	–	D/S	A	–	–	D/S	–
	Private Operators 1/	–	–	–	–	–	–	–	A	–	–	A
6 Multi-Modal Federation of Operators	a. Metro Planning Organization	A	A	A	A	A	A	A	–	A	–	A
	b. State Agency (e.g., DOT or Police)	D/S	D	–	D/S	D/S	D/S	D/S	D/S	–	A	D/
	c. City or County Government	D/S	A	D/S	D/S	D/S	D/S	D/S	D/S	D/S	A	D/
	d. Metro Transit Authority	D/S	A	D/S	D/S	–	D/S	D/S	D/S	A	A	D/
	e. Private Operators 1/	D/S	–	A	A	–	A	–	A	–	A	D/
	f. Federation of Operators	D/S	A	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D	D/
7 Regional Multi-Modal Funding Agency	a. Metro Planning Organization	A	A	A	A	A	A	A	–	A	A	D/
	b. State Agency (e.g., DOT or Police)	A	D/S	–	D/S	D/S	A	D/S	D/S	–	D/S	A
	c. City or County Government	A	A	D/S	A	A	A	D/S	D/S	D/S	D/S	A
	d. Public Transit Operators	D/S	A	A	A	–	D/S	–	–	–	D/S	A
	e. Private Operators 1/	D/S	–	–	–	–	–	–	A	–	–	A
	f. Regional Funding Agency	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D/S	A	D/
8 Metro/State Government Balanced Power Structure	a. Metro Government	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D/
	b. State Agency (e.g., DOT or Police)	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D/S	–	D/S	D/
	c. City or County Government	A	A	A	A	A	A	A	A	D/S	A	A
	d. Metro Transit Authority	A	A	A	A	–	A	–	–	–	A	A
	e. Private Operators 1/	–	–	–	A	–	–	–	A	–	–	A

1/ Includes bus, taxi and other for-hire vehicle operators.

2/ Including enforcement of vehicle restrictions.

3/ Including on-street parking, pedestrian facilities and enforcement of vehicle restrictions.

4/ Federal aid, state aid, bonding, taxing, fares and service contracts.

5/ Federal aid, state aid, bonding, and tolls.

6/ For example, elderly and handicapped, soci

- incentives which change the ways consumers express demand for urban transportation.

These two systems are not mutually exclusive and can be used in combination.

Incentives between and among institutions are cross-classified according to two attributes:

- kind of incentive (political, financial, psychological, and professional); and

- target of incentive (another agency's policy, performance, process, or institutional arrangements).

Plausible theories about individual and group behavior come from political science, economics, psychology, and professional beliefs and opinion. Thus, a decisionmaking process can be explained through political theory, by analyzing the dynamics of political and institutional self interest over time; through economic theory, by analyzing the dynamics of the financial balance sheets of individuals and institutions; through psychology and psychiatry, by analyzing the psychological relationships between individuals and groups in relation to the psychological history, needs, and roles of each individual involved in the process; and through the professional value systems of each involved actor and institution.

Government agencies who are not operators can affect the structure of choices facing consumers of urban transportation. Tax policies and user subsidies could be used by such agencies to structure consumer choices.

Equally as important as these other elements is the pattern of personal relationships, friendships, and levels of trust or respect, which exist among actors before and during the decision process on operating changes. In order to accomplish anything, each actor in each institution must understand this web of relationships and trust, must work through it, and must build and update further understanding of it as a critical element of success in carrying out any defined set of technical and political tasks.

These mechanisms can improve personal relationships and facilitate coordination, but will not assure or guarantee coordination. The mechanisms contributing to coordination include:

- Committees;
- Professional Societies;
- Social-Professional Functions (luncheons, dinners, parties, picnics);
- Permanent Shared Office Locations;
- Temporary Project Offices;
- Training Seminars; and
- Temporary Assignment of Staff to Another Agency.

2. The Performance of Various Levels of Government as Coordinators of Operations Improvements

States are the most important institutions in defining institutional arrangements, legal responsibilities, and regulatory frameworks within which urban transportation operating decisions are made. Cities, counties and all other agencies are creatures of the state or several states.

Cities, counties and states have been able to exercise influence over other transport operators through the useful political power and legitimacy they derive from being general purpose governments with elected officials as policy makers.

The case studies found that cities have been the most effective coordinators of operations improvements, not only for downtown-oriented improvements, but also for a wide range of regional actions. States have generally taken a leadership role in coordinating multi-modal improvements in major freeway corridors. Los Angeles County and Dade County in Florida have been principal coordinators for operations improvements in their areas.

Many small and some large cities are the transit operators in their metropolitan areas. Central cities also operate the downtown circulation networks and much of the arterial street and highway systems leading to downtown. Thus, the cities are a major institutional focus of political power across multi-modal urban transportation operations.

The Metro Government of Dade County, which contains Miami, is by far the most effective regional institutional arrangement, since a single general purpose government performs most of the transportation operations functions which are fragmented among many jurisdictions in other urban areas. The Metropolitan Council in Minneapolis-St. Paul, although not a general purpose regional government, is also an institutional arrangement which contributes to the possibility of effective coordination.

Regional agencies whose major role is to finance and coordinate transit operators have had success in several urban areas. The Regional Transportation Authority (RTA) in the Chicago area has become an effective coordinator of operations, fares, and transfer arrangements. The Metropolitan Transportation Commission in the San Francisco Bay Area, is another regional transit financing institution in an area with many operators.

Regional associations of governments, if they are the designated metropolitan planning organizations, have the opportunity to provide support for the development of coordinated operations improvements, if they can maintain credibility with the staff managers of the implementing agencies. However, it is important to remember that the regional agency is merely a forum

where local decisionmakers get together -- it is not in itself a decision body.

Virtually all policy makers and professionals concerned with operating improvements stress the need to involve interest groups and the public in developing such actions. However, the public's understanding of capital improvements as a problem solution is currently greater than public understanding of coordinated operations improvements as a solution. Until public perceptions and perceptions of transportation professionals are more similar, it will be difficult to achieve public involvement in regional operating or TSM concepts.

3. The Federal Role in Operations Coordination

Federal laws, regulations, programs, and the subjective interpretations and viewpoints of federal personnel define a small portion of the "rules of the game" under which other institutions must operate. The current system of federal incentives affecting the operation of urban transportation systems is characterized by:

- Policy statements and regulations which declare transportation system management (TSM) actions to be important elements in urban transportation plans and programs;
- Regulations which prescribe professional conduct including careful analysis of operations improvements;
- No funding program specifically for improving operations or TSM initiatives;
- Operating subsidies to urban mass transportation suppliers, but not to consumers;
- Separate funding categories administered by federal agencies who do not always agree on urban transportation priorities;
- Major funding categories in which more federal dollars will accrue to an institution if it gains federal approval of more expensive capital projects;
- A very small federal contribution (2%) to total highway capital and operating expenditures and a significant role (31%) in total urban mass transit capital and operating expenditures;
- Federal income tax policies which treat free parking as a business expense for employers, while no tax break is given to employees using transit;

- Some federal DOT personnel utilizing personal and professional contacts to promote coordination of operations improvements and TSM actions; and

- Strong institutional and personal relationships between federal DOT and state personnel, weaker federal relationships with metropolitan planning agencies, and infrequent contact between the federal DOT and local governments.

In analyzing revisions to current federal initiatives, the federal government has to consider not only the effects of any different overall strategy of incentives, but also the practical limitations on what the federal role could ever be within the pluralistic American public and private political system. Each institution and individual will respond to any federal initiative based upon what that institution or individual wants.

Those responsible at the state and local level for urban transportation operations already have greater incentives for improvement than an outsider telling them that improvements are desirable. To add effective incentives, the federal government has to have something to offer, something that will change if the desired action is taken.

Several principles should govern the selection of a strategy of federal incentives:

- Federal incentives should be consistent, and punishment should not be meted out to states and urban areas for not responding "correctly" to one incentive when other federal incentives provide a push in another direction;

- An incentive should be targeted as directly as possible on the aspect of behavior which the federal government wishes to change; and

- Federal actions should not preclude an urban area from moving towards any of the more desirable institutional arrangements identified in this research, since the potential for coordination due to those arrangements would represent a substantial improvement over the status quo.

Recommended modifications to current federal incentives are summarized in Figure 6. The major recommended changes would tie financial incentives to performance measures, give encouragement and assistance to local governments, who have been the most effective coordinators of urban transportation operations, and alter consumer demand through federal tax policy and support for user subsidies.

FIGURE 6

POTENTIAL FEDERAL INCENTIVES FOR COORDINATED URBAN TRANSPORTATION OPERATIONS

FINANCIAL INCENTIVES

- Influence consumer demand through tax policy
- No financial incentives for big capital projects
- Most major funding fixed and predictable
- Demonstration grants continued
- Some funds tied to performance and to institutional potential for coordination
- Support user subsidy programs

POLITICAL INCENTIVES

- No further granting of paper responsibilities to institutions without a constituency
- Reward areas with efficient institutional arrangements
- Process applications for operations improvements faster
- No political incentives for big capital projects
- Allow any institutional arrangement with more concentrated authority than today's

PSYCHOLOGICAL INCENTIVES

- Develop internal DOT agreement on policy and procedures
- More emphasis on accomplishments of cities and counties
- Closer ties with city and county personnel

PROFESSIONAL INCENTIVES

- Support informal urban area professional gatherings
- Publicize effective mechanisms for coordination
- No further formal procedural requirements
- Structure meetings and conferences so that everyone has the opportunity to speak

CHAPTER ONE

RESEARCH OVERVIEW

A. PROBLEM STATEMENT

The Office of the Secretary of Transportation described the basic problem of concern in this reserach project as follows:

> "One of the characteristics of urban transportation in the United States is that the various elements of the system are operated and regulated by different governmental agencies and private operators at the state and local level. In many instances, there is little coordination among those responsible for the operation of the various elements of the urban transportation system. This has resulted in each agency and operator attempting to improve those elements under its jurisdiction without consideration of the efficiency and effectiveness of the overall urban transportation system and sometimes at the expense of the other elements of the system. It also results in the exclusion of alternatives or modal system options that do not have institutional sponsors.
>
> An example of this is the lack of coordination in many urban areas between agencies responsible for operating the highway and transit systems. This poor coordination makes it difficult to implement traffic management techniques and transit operation improvements such as preferential treatment for buses and automobile restraint schemes. Another example is the general inability of taxicab and transit operators to plan and operate their systems in an integrated manner. They thereby lose many opportunities to mutually improve the operation of both elements of the transportation system.
>
> Another aspect of this problem relates to jurisdictional responsibilities within and across geographic and legal boundaries. In the urban area transportation problems transcend city, county, and state boundaries. These divisions of jurisdictional responsibilities hinder effective approaches to operating the total urban transportation system.
>
> A potentially larger problem is that certain types of urban transportation alternatives are not under the jurisdictions of any agency and consequently may not be considered in the operation of the overall system. Among those are various forms of paratransit, carpooling, subscription transit service, low capital alternatives in general, or any type of pricing strategies.
>
> The Department of Transportation is concerned with improving the efficiency and effectiveness of multi-modal urban transportation systems. To this end, DOT is interested in alternative approaches for improving the coordination and integration among the various agencies and operators responsible for operating the elements in the

urban transportation systems and how to better organize and operate multi-modal systems." (Emphasis added.)

B. BACKGROUND

The federal government has dealt primarily with the states on Federal-aid highway programs, projects, and planning. Since the early 1960's, however, federal urban transportation policies have evolved towards encouraging regional and local involvement and away from state dominance. The 1962 Federal-Aid Highway Act required cooperation of states and local communities in a transportation planning process to be carried out in urban areas. The transportation planning activities of most regional organizations date from the requirements of this Act, and were initially highway-oriented.

The Urban Mass Transportation Administration (UMTA) and its predecessors historically have dealt directly with transit operators. UMTA still has weaker relationships with the states than does the Federal Highway Administration (FHWA), except with those few states (e.g., Maryland) that have principal urban transit responsibilities. However, UMTA and FHWA now jointly administer highway-transit planning regulations for urban areas.

Federal policy and programs pertaining to urban transportation have until recently been concerned with capital facilities. The institutional relationships for coordinating among states and local governments were developed in conjunction with this orientation towards capital projects. Staff coordinating committees were comprised of the various agencies' working managers with capital planning responsibilities. The focus of regional agencies' staff work was exclusively long range capital planning. FHWA's relationships with states were oriented towards short term highway capital programming, while UMTA's relationships with operators were focused on capital grants for projects. Local officials were given a strong role in capital programming of urban system (FAU) projects.

At the same time that the role of regional institutions developed in long term capital planning for highways, the roles of the private sector and of the cities in providing urban public transportation were shifting substantially. Private regular route bus systems in the larger urban areas were taken over by public bodies, usually at the instigation of the city. The most common institutional arrangement for public takeover was a separate single purpose transit authority or transit district. Thereafter, private involvement in urban transportation operations was confined to taxis and limousines, subsidized commuter rail, and minor paratransit services. Local jurisdications, with some exceptions, retained regulatory authority over taxi and paratransit services.

Environmental and energy concerns, federal regulations which require transportation system management (TSM) elements as a part of urban area transportation planning, the inflation of construction costs, the time and effort required to achieve agreement on capital projects, and local and state concerns for coordinating operating improvements, have now increased the importance of operating initiatives in comparison to capital construction. Agencies, institutions, and individuals formerly concerned with capital facilities are now addressing themselves to operating decisions; some with real concern, and some with concern only for pacifying the federal Department of Transportation. As in capital planning, various agencies are concerned also over who makes "system" decisions, and who makes "project" decisions.

In one sense, the change that is occurring can be viewed as the beginning of a massive reorganization of a whole "delivery system" for the services provided to society by urban transportation professionals in agencies of government and private industry. One reason that such a reorganization is occurring is that this delivery system now has available many fewer real dollars per year for capital facilities than it had several years ago. Thus, the broadly-defined profession must change its orientation in order to deliver to the public what it is supposed to deliver -- a maintenance of, or enhancement of, mobility levels. The complexity confronting the profession in shifting its focus to management and operations is compounded by the need to deliver their product in the constantly changing context of energy, economic and environmental concerns.

Energy and environmental issues have helped influence the shift of concern to operating efficiency and away from capital projects. If better use is made of existing facilities the high energy requirements of construction of highways and rail lines may be avoided. More efficient operations can also reduce total vehicular traffic, thus improving emission of most pollutants, or lead to smoother flow, cutting down on only some pollutants.

In many urban areas, operations and system management improvements were first developed as part of a transportation control plan to meet air quality standards. Many carpool matching programs were begun in response to the oil embargo of the winter of 1973-74. Federal initiatives were exceptionally important in the planning that took place due to these air quality and energy concerns.

This relative changeover to operating improvements is partly a movement by some individuals and institutions into an area of professional responsibility already occupied by others -- namely, traffic engineers and transit operators. The transit agencies' operating divisions and the local traffic engineers have had little prior relationship with those whose substantive concerns have been with big capital projects. Transit operators had been left alone by the rest of their professional peers, until the level of

subsidy, the preservation of services, and the stabilization of fares became major public issues. The TOPICS program was the beginning of a relationship between the federal part of the "big capital" delivery system and the traffic engineers, whose prior concerns were more oriented to "spot" problems.

In the last several years, federal regulations and state and local concerns about operating decisions have begun to change institutional structures and patterns of relationships in operating urban transportation. A new or revised institutional structure and pattern of relationships has already begun to evolve in almost every urban area in order to deal more effectively with the relative change away from capital investment decisions and towards operating decisions. The reorganized delivery systems for operations will include those who have always been concerned with operations, as well as many policymakers and staff whose substantive concerns have been with big glamorous capital projects. In addition, the transit operators and road operators have begun to coordinate improvements to their respective modes.

At issue now is the question of what the various actors, including the federal government, can do to help foster institutional structures, responsibilities for coordinating incentives, patterns of relationships, and mechanisms which can successfully improve and coordinate the operations of urban transportation systems. To develop answers, information is necessary on the behavior of the people and institutions concerned with operating urban transportation.

This report explains the present relationships and explores practical opportunities for change in the relationships among institutions and individuals concerned with coordinating the operation of urban transportation systems. The conclusions and recommendations are aimed at all levels of government, including local, regional, state, and federal, so that each might take consistent actions to improve the overall delivery system through which the broadly defined professions of urban transportation provide services to the public.

C. OVERALL RESEARCH APPROACH

This research to identify alternative approaches for improving coordination and integration among the various agencies responsible for urban transportation system operations was accommplished through five tasks:

Task 1 - Current State-of-the-Art

The research team investigated and reported the current "state-of-the-art" of multi-modal public [1/] transportation system operations in both the United States and relevant international locations. Particular attention was given to the management of multi-modal public transportation systems from the local, regional and state governmental views.

Task 2 - Institutional Arrangements

The research team investigated effective and efficient model institutional arrangements for the management of multi-modal public transportation systems in the United States, and detailed the advantages or disadvantages of each.

Task 3 - Regulatory and Legal Problems

The researchers explored regulatory and legal problems which affect various institutional arrangements.

Task 4 - Political and Institutional Questions

The researchers explored and discussed the political and institutional problems involved in creating and operating revised institutional arrangements, as well as strategies to overcome, ameliorate, or prevent such problems.

Task 5 - Federally Applied Incentives

The research team investigated the means and incentives by which the coordination and integration of the urban transportation system can be worked out. For each type of incentive or intervention approach, its strengths and weaknesses were evaluated.

The basic premise underlying this research project was the belief that in spite of the numerous obstacles to institutional coordination and service integration, some urban areas are overcoming the barriers and getting good things done. To identify

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1/ Public Transportation System is defined to include highways, arterials and other roadways as well as the more conventional forms of public transportation.

those metropolitan areas that had made the most progress related to efficient and effective management and operation of their multi-modal transportation system, the research team focused on three sources:

- Previous System Design Concepts' project experience, including "Assessment of Community Planning for Mass Transit" in nine American urban areas for the Congressional Office of Technology Assessment;

- An intensive literature review, focused primarily on publications of the Transportation Research Board (TRB) and the National Cooperative Highway Research Program (NCHRP), reports produced by and for U.S. DOT, the APTA Journal and Passenger Transport, and university research projects; and

- The suggestions of numerous transportation experts based in Washington, D.C., including UMTA and FHWA staff, TRB and NCHRP staff, Urban Institute staff, and other consultants.

The literature review and expert interviews identified projects such as priority treatments for high occupancy vehicles, transit and pedestrian malls, public and private ridesharing programs, coordination of transit routes, schedules and transfers, and other system operations projects that required coordination among two or more implementing agencies, transit operators or levels of government. During this search, the research team also attempted to identify metropolitan areas that had taken innovative steps to institutionalize the intermodal coordination function, that had changed regulations to enable more flexible operation of taxicabs, that had attempted to change regulations and insurance practices to facilitate ridesharing, or that, generally speaking, seemed to be doing more than other areas to efficiently manage and operate their transportation systems.

The literature search led to the selection of nine North American metropolitan areas for in-depth case studies. These are:

- Chicago, Illinois
- Knoxville, Tennessee
- Los Angeles, California
- Madison, Wisconsin
- Miami/Dade County, Florida
- Minneapolis-St. Paul, Minnesota
- Portland, Oregon
- San Francisco, California
- Toronto, Ontario.

It is noted that there are no representatives on this list from the Northeast and Mid-Atlantic parts of the country. This omission was not deliberate, but was due to the absence of documentation of noteworthy institutional coordination and

innovation in the cities within these geographic areas. Although the researchers were concerned with obtaining a sample of cities that was representative of the range of institutional settings across the United States, top priority was placed on identifying and investigating those metropolitan areas that had achieved good results in institutional coordination and service integration, regardless of their size and location.

For this project, the research team analyzed only the institutions and their current coordinating arrangements and procedures, and did not independently measure or compare what actually is happening on the streets in any urban areas. Much of the information used in the case studies was the written or verbal representations of other people as to the performance of their institutional arrangements and procedures for coordination. Much of this information is self-serving, if positive in orientation, or stems from current personal or jurisdictional controversies, if negative in orientation. Clearly, although we have tried, we can't be sure of sifting out all subjective and biased representations by others of how well urban transportation operations are being coordinated in their regions. We emphasize the case study cities in this analysis because in those cities we have had more opportunity to cross-check and evaluate all the available information.

Case studies of institutional arrangements in the nine metropolitan areas listed above were prepared with information obtained during: on-site interviews of key personnel in the principal operating agencies in each urban area; review of relevant planning reports, laws and regulations from each metropolitan area; and follow-up telephone conversations.

The Task 1 report presented the nine case studies and, on the basis of those case studies and other relevant professional experience, the research team concluded that general purpose governments (states, metropolitan governments, counties and cities) have been the most effective institutions in coordinating operations improvements. The State-of-the-Art report summarized the roles played by various institutions in coordinating operations and the reasons why they have played such roles.

In the Task 1 report the research team also laid out the analysis structure for all subsequent tasks by identifying the factors which cause institutions and individuals to behave as they do in a particular decision context and describing how these factors can be manipulated by decision participants. That report concluded that four elements determine the possibilities for successful coordination -- the institutional structure; the assignment of responsibility for coordination; patterns of personal relationships; and incentives for coordination.

In Task 2, the research team focused on the range of options realistically available for operating multi-modal urban

transportation systems. The thrust of this effort was on making the dominant agency (e.g., state DOT) in a particular metropolitan area stronger by assigning it responsibility for all key decisions affecting coordinated and integrated multi-modal operations. This led to the identification of eight different models of institutional arrangements that could be used to operate urban transportation systems.

In Task 2, the research team also relied on various theories of human behavior to develop a framework for explaining how incentives (political, financial, psychological and professional) can be used to bring about better operations coordination and the aspects of individual or institutional behavior that can be modified through the use of incentives.

In Task 3, the research team identified the principal legal and regulatory issues affecting urban transportation operations, and discussed the eight institutional models and their contribution to the resolution of these issues. Task 3 led to the identification of regulatory and legal issues whose solution does not depend on a particular institutional arrangement, but whose resolution would contribute to the ability of any institutional arrangement to operate urban transportation efficiently and effectively. The legal and regulatory issues analyzed in Task 3 were identified during the literature review, the case study interviews and from the project monitors at the U.S. Department of Transportation.

Task 4 work centered on institutional and political problems and identified issues affecting the implementation of each model institutional arrangement. General problems of a political and institutional nature likely to confront state and local decision-makers considering institutional change were noted and strategies to overcome opposition were suggested. Fourteen major U.S. metropolitan areas were classified according to which of the eight institutional models they most closely approximate or might approximate in the future.

Task 5 efforts focused on describing and evaluating incentives that the federal government can use to bring about improvements in urban transportation operations. In this task the research team analyzed the effects of current federal policy and focused on the actions that might be taken by the federal government, as one actor among many, to improve the coordination of urban transport operations.

The results of the work under Tasks 1 through 5 are described in five separate reports:

1. Coordination of Multi-Modal Urban Transportation Systems: State-of-the-Art;

2. Conceptual Models of Institutional Arrangements For Operating Urban Transportation Systems;

3. Legal and Regulatory Problems Affecting the Operation of Urban Transportation Systems;

4. Political and Institutional Questions About Model Institutional Arrangements for Operating Urban Transportation Systems;

5. Federally Applied Incentives for Improving Coordination of Urban Transportation System Operations.

D. STRUCTURE OF THIS REPORT

This report summarizes and integrates all the findings of this research project. Chapter Two presents principal findings on the State-of-tbe-Art of coordinating multi-modal urban transportation operations, summarizes the roles and effectiveness of various kinds of agencies, and discusses important elements which determine whether or not successful coordination will take place. These important elements include:

- institutional structure,
- assignment of responsibility for coordination,
- incentives, and
- patterns of personal relationships.

Chapter Two also discusses regulatory and legal problems which currently inhibit operations coordination.

Chapter Three describes incentives which agencies and individuals can offer other agencies and individuals in order to influence the possibility of effective coordination. Four kinds of incentives are identified:

- political,
- financial,
- psychological, and
- professional incentives.

Four targets of these incentives are also identified:

- policy,
- process,
- performance, and
- institutional arrangements.

Chapter Three also discusses specific mechanisms through which patterns of personal relationships can be established or improved. The current system of federal incentives is discussed within the framework listed above.

Chapter Four presents eight alternative institutional models for operating urban transportation systems. Each model is described in terms of the roles of various agencies (cities, states,

transit districts, associations of governments, etc.) in performing twelve important functions. Advantages and disadvantages of each model are summarized, and conclusions are drawn as to each model's potential applicability to U.S. urban areas.

Chapter Five discusses current federal policy and suggests modifications to current policy so as to strengthen current federal incentives for effective coordination of urban transportation operations.

The Appendix contains the case studies of institutional coordination for operations improvements in Chicago, Knoxville, Los Angeles, Madison, Miami, Minneapolis-St. Paul, Portland, San Francisco and Toronto, as well as write-ups of interesting operations innovations in Gothenburg, Hamburg, London, Paris, and Singapore.

CHAPTER TWO

THE STATE-OF-THE-ART OF COORDINATED URBAN TRANSPORTATION OPERATIONS

Nine North American metropolitan areas (Chicago, Knoxville, Los Angeles, Madison, Miami/Dade County, Minneapolis-St. Paul, Portland, San Francisco and Toronto) were the subjects of in-depth case studies of their institutional arrangements for urban transportation operations. These nine areas, in varying degrees, had achieved innovative operations improvements requiring coordination among several institutions. These case studies, which are in the Appendix, contributed many useful insights on the numerous factors that determine how, and to what degree, different institutions cooperate with each other.

This chapter describes:

- four key factors that contribute to successful coordination of urban transportation system operations;
- the performance of various institutions in coordinating operations; and
- unresolved legal and regulatory issues affecting coordinated system operations.

A. FACTORS CONTRIBUTING TO COORDINATION AMONG INSTITUTIONS

No jurisdiction or agency always gets its way in decisions about urban transportation operations. Each urban area has many legal and political checks and balances which prevent one party from totally controlling the decisionmaking process. Successful coordination is, therefore, a necessary aspect of achieving operating improvements.

From the case studies, literature review, and other professional experience, we have identified four important elements which determine the possibility for successful coordination:

- The Institutional Structure, which includes formal legal responsibility and political power, defines who can play which roles in decisionmaking, sets up the opportunities for coordination among agencies and individuals, and formally defines the appropriate substantive concern of each agency;
- Assignment of Responsibility for Coordination, which includes formal and informal assignments of a coordinating role to persons with varying amounts of skill at coordination, who may or may not take advantage of the opportunity;

- Patterns of Personal Relationships, which include previous and evolving friendships, levels of trust or respect, alliances, disputes, and rivalries which affect the decision process on operations changes; and

- Incentives for Coordination, which include various rewards for positive coordination and penalties for poor coordination.

1. INSTITUTIONAL STRUCTURE

Numerous different institutional structures have had success in coordinating aspects of urban transportation operations. A critical factor in their effectiveness is the consistency between the locus of actual political power and the responsibility for coordination.

General purpose governments of the states, counties, and cities have the political power which derives from high visibility and direct election. If the urban region is contiguous with or nearly contiguous with the boundary of a general purpose government, then that jurisdiction is the decision coordinator. Coordination is an internal management problem.

Generally, the history and geography of urban development and institutions have not produced one general purpose jurisdiction responsible for most of the urban population. Coordination must take place among jurisdictions and interest groups. No single decisionmaker can manage all staff actions, and the staffs who need to coordinate have different policy makers and different outside constituencies. Political power is not focused on one manager of staff resources, but many separate political forces bear on several managers in different agencies. The institutional structure then needs mechanisms and procedures for coordinating policy development and staff work.

Institutional structure includes both the currently defined legal responsibility of each agency and the intrinsic political power of the agencies and jurisdictions over each other. There are agencies with strong nominal legal authority to coordinate actions, but with no real political clout. Such unusable legal authority is usually delegated from the federal government or the states to institutions within a particular region. This is almost always done by requiring that one institution must approve something as a condition of financial aid from the higher level of government. In this manner, metropolitan planning organizations (MPO's) were assigned by the federal government to provide a forum for the coordination of long range urban transportation planning and programming. Very few MPO's have had, or have exercised, political power commensurate with the nominal approval authority vested in them.

The most major recent change in the institutional structure for transportation in all urban areas has been this redefinition by the federal government of the appropriate substantive concerns of regional institutions. This change has, however, seldom been accompanied by any change or redistribution of political influence or power over the actual operation of the urban transportation system.

Coordination of operations and operating improvements does not consciously or subconsciously emerge from an institutional structure. The institutional structure merely defines the opportunities for successful coordination.

2. ASSIGNMENT OF RESPONSIBILITY FOR COORDINATION

Effective coordination is accomplished by an effective individual coordinator given the opportunity to coordinate. Coordination is a "role" played by a person in a certain decision context. There are many instances in which an effective coordinator carried out an action requiring coordination between his agency and others, even though the respective agencies were at odds on other issues.

Some coordinators have such a title and position within a single agency, and their job is to keep the various divisions of that agency working together. The Transportation Coordinator who manages the Office of Transportation Administration in Dade County, Florida, is one example.

Any coordinator must have direct access to at least one key decisionmaker (e.g., a mayor or county manager), and should also be able to talk directly with the other key decisionmakers.

Coordination does not have to be formalized through titles, nor performed in accord with a continuing formal institutional structure. Many successful actions have been coordinated through efforts that were ad hoc in the sense that a particular group was brought together to accomplish a particular set of actions. One such ad hoc committee developed the Uniform Traffic Control Program for Los Angeles County in California.

Coordination is accomplished through both written and verbal contacts. The content of written or verbal communication can be substantive, about the merits or impacts of particular decisions, or it can be procedural, about how the decision process is progressing. The coordinator is at the center of this total information flow, and coordination can succeed if enough important information passes through this central point. If it does, the various substantive and procedural aspects of the decision process can be coordinated, dependent upon the skill of the coordinator and the true intent of all parties. There can be, and usually is, more than one coordinator of a particular decision.

3. PATTERNS OF PERSONAL RELATIONSHIPS

Equally as important is the pattern of personal relationships, friendships, and levels of trust or respect, which exist among actors before and during the decision process. Each actor must understand this web of relationships and trust, must work consciously or subconsciously through it, and must build and update further understanding of it as one element of success in carrying out any defined set of technical and political tasks.

This is particularly important in a situation of dynamic change in the responsibility for coordinating operations. A new policy or staff person, or a new institution, must decide how and where to work into the pattern of previously existing and evolving relationships, since successful coordination depends strongly on how the coordinating persons and institutions fit into the web of alliances, friendships, trusts, disputes, mistrusts, and rivalries.

When their personal relationships are solid, people tend to keep each other informed. When people are more like acquaintances or don't know each other at all, specific communications activities are as important to successful coordination as any substantive information. People who are consulted early and personally are more likely to support what emerges from a decision process than those who are left out.

However, institutions and individuals can adopt effective tactics to avoid cooperation. Opponents of particular actions who intend to remain negative often resist others' attempts to interact with them. They can then blast a proposed action, using reasons that the action would be wrong substantively (since it didn't consider information or expertise which only their institution possessed), or that the action was arrived at illegitimately (since their institution was not included in the deliberations).

In such situations, the personal skills of a coordinator and any attempts to establish positive personal relationships will fail. The institutional structure must be altered or the incentives facing the uncooperative institution and individuals must be changed. Consideration should also be given to the validity of any objections, and proposed actions might be altered to provide more incentive for coordination.

4. INCENTIVES FOR COORDINATION

Every institution and actor has some ability to change the rewards and penalties for cooperation and non-cooperation by other institutions and actors. Everyone can show personal approval or disapproval of other people and their actions. Clearly, the importance of anyone's approval or disapproval depends on where they are in the institutional and political structure.

Possible career advancement is an incentive for individuals playing either a political, managerial or technical role in every cooperative effort. Staff level coordinators become highly visible to the managers and policy makers of other agencies. Policy makers have the opportunity to gain credibility as individuals who get things done. In general, coordinated actions are likely to be more newsworthy within the transportation profession and to the general public than are the traditional activities of each jurisdiction.

Financial incentives can be offered by an institution with a revenue base, or by an institution which is charged to distribute funds from other sources such as the federal government. Centralization of transit funding, as with the Regional Transportation Authority in the Chicago area, has sometimes been used in lieu of combining all the operations under one agency. The power to pass through federal or state funds is the only substantial incentive for coordination which can be exercised by most metropolitan planning organizations.

In addition to the federal government, general purpose governments, such as states, counties and cities have the most power to change incentives, since they can abolish or alter the operating institutions which they have created, can alter or abolish the funding sources of operating agencies, can redefine the regulatory structure, and have the most political legitimacy. Basically, no one from another institution takes an idea for coordination very far without having identified a constituency in the state, county, or city. The actual "coordinators" at the staff or the policy level are likely to be from these jurisdictions.

B. THE PERFORMANCE OF VARIOUS LEVELS OF GOVERNMENT AS COORDINATORS OF OPERATIONS IMPROVEMENTS

Various urban transportation agencies have played important roles in the coordination of operations improvements. Among the levels of government and agencies involved are:

- cities,
- states,
- regional associations of governments,
- more powerful regional agencies,
- financing agencies, and
- corridor agencies.

In addition, several other important factors affecting the opportunities for coordinated operations improvements are identified.

1. THE CITIES/COUNTIES

The case studies showed that cities have been the most effective coordinators of operations improvements, particularly for downtown-oriented improvements, but also for a wide range of regional actions.

In several urban areas, the central city mayor is the actual political coordinator and a city staff person is the principal technical level coordinator. Successful implementation of operating improvements often involves coordination among the various city staffs, sometimes with substantial involvement by downtown business interests and good government groups.

Many smaller and some larger central cities are the actual transit operators, but even in the larger cities where this is not the case, the central cities usually have had the most political influence over transit operations. In Los Angeles County and Dade County, Florida, the county has often performed this coordination role.

The central cities also operate the downtown circulation networks and much of the arterial street and highway systems leading to downtown. Thus, the cities are a major institutional focus of political power across multi-modal urban transportation operations.

In Knoxville, Madison and Dade County, the central local government is overwhelmingly dominant on all multi-modal policy and operations decisions. Dade County and some central cities (e.g., Knoxville and Madison), which make up the majority of their own urbanized areas, have organized to perform all functions, including traffic engineering, transit operations planning, regulation of taxis and other operators, parking and promotion of vanpools.

Because of their geographical limits, the central cities in large urban areas are usually a smaller fraction of the total urban population. Although they could coordinate operating functions within their own jurisdictions, coordination with the other jurisdictions in the urban area is much more important. A case in point is San Francisco, which operates its own transit system (by far the most important in the Bay Area in terms of passengers carried) and controls its streets, parking and taxi regulation. However, with only a small fraction of the Bay Area's population, the City of San Franciso clearly cannot coordinate among all operators in the region's multi-modal system.

Los Angeles County, rather than the City of Los Angeles, is the political jurisdiction in the Los Angeles area with the best potential for a coordinating role. Chicago has coordinated everything that has happened within its city limits, and its well structured internal organization may have resulted in the city swinging more influence in regional matters than it would if

based purely on population. The City of Portland, which makes up less than 40% of its urban region, plays a coordinating role due to the personality of the Mayor and its chief transportation staff.

2. THE STATES

The states have almost always been the principal coordinators and implementors of projects involving freeway operations, including ramp metering, busways and bus and carpool lanes, and of larger park-and-ride stations financed with highway funds. Most states are not heavily involved in other types of operations decisions, although many now contribute to transit operating deficits and provide capital funds to match UMTA grants. Network assignments and carpool computer matching programs are among the support activities provided by states in coordination with other jurisdictions.

The states have traditionally been and continue to be the most dominant actors in the implementation of road projects. The states also have responsibilities and experience which are critical to institutional arrangements for operations.

- States define the institutional structure, legal responsibilities and regulatory framework within which urban transportation operating decisions are made. Cities, counties, and all other agencies are creatures of one or several states.

- States build and operate highway systems which in most urban areas include the principal freeways, expressways and arterials.

- Many states provide direct financial aid to urban public transportation.

- State governors designate MPO's and UMTA Section 5 fund recipients, and must approve Interstate withdrawals.

- States collect and spend more transportation user taxes than the federal or local governments.

The state role in coordinating transit operations, in comparison to that of other institutions, is substantial in the smaller and denser urban states. New Jersey DOT is the financier of virtually all subsidized rail and regular route bus services in the State, and has responsibility for all traffic control devices. However, the DOT does not operate any transit services, and the regulation of unsubsidized private bus carriers, which provide 25% of bus services, still rests with the State Public Utilities Commission.

The state of Massachusetts dominates long and short term transportation planning in the Boston region, but the Department of Public Works and the Massachusetts Bay Transportation Authority are quite separate. The State of Connecticut is the most important actor for highways and transit in all of its urban areas. Rhode Island is virtually coterminous with the Providence area, but separate State agencies are responsible for highways and transit. Clearly, the institutional coordination problems of operating urban transportation in these places are state problems.

Maryland has gone the farthest in integrating responsibility at the State level. The Maryland DOT has full funding flexibility in the use of its tax funds, and operates the State highway system and the Baltimore transit system (as well as port facilities and an airport). It also funds operating costs for transit services in the Maryland portion of the Washington metropolitan area, and has contributed to the capital costs of constructing the Washington area's rail transit system.

States of small geographic area and high urbanization could not logically be expected to develop viable long term institutional arrangements that were not state dominated.

3. REGIONAL ASSOCIATIONS OF GOVERNMENTS

In most urban areas, the regional agency is a forum where local decisionmakers get together -- it is not in itself a decision body. But it is also a group of technical staff who work for no single political jurisdiction. Usually, each policy maker on the board has his own staff who sit on the appropriate technical committees, who are loyal to him, and whose advice he is more likely to accept than that of the staff of the regional agency on whose policy decisions he swings a fraction of the votes. Thus, an important constituency of the regional agency technical staff is the technical staff from other jurisdictions such as cities, counties and states. If the regional staff can establish credibility at the technical level, they have a channel to assist the decision process.

The revised federal urban transportation planning guidelines placed new responsibilities on MPO's, usually a regional association of governments, to develop transportation system management (TSM) plans. TSM and other operations have always been the prerogative of city, county, regional and state highway or transit implementing agencies. Regional association of governments were more familiar with long range system planning. Thus far, most associations of governments have prepared TSM plans that relied on state and local highway jurisdictions and transit agencies to supply lists of projects, which a committee of technical representatives from those agencies compiled into the TSM element.

Regional associations of governments have responded to the TSM planning requirements by assigning internal staff responsibilities for TSM or creating new staff positions. The TSM coordinator at the Chicago Area Transportation Study (CATS), the MPO for Chicago, is a former traffic engineer with transit experience who intends to provide services to the local jurisdictions in developing TSM projects. This corresponds to CATS' history of strong technical capability, and to the need to establish technical credibility with other staffs for this new TSM work. The TSM staff person at the Columbia Region Association of Governments (CRAG) in Portland is integrating the agency's technical work on long range capital planning with TSM planning, and using this mechanism to build credibility for CRAG.

The TSM staff at the Metro Council in the Twin Cities area is concentrating on policy planning, and the Metro Council's regional transportation plan is basically a TSM-oriented policy plan. The Metro Council's most important constituency is the Minnesota legislature, which is also interested in policy plans.

In addition to the substantive or technical roles being carved out, some regional agencies (e.g., CRAG, CATS) have formed staff committees of the operating agencies. This brings the MPO staff into contact with different people than those who have sat on the staff committees for long range planning. These committees may provide a forum for operators to gain better information on each other's intentions and help people get better acquainted. Such committees open up opportunities for the staffs of many operating agencies to play coordinating roles.

4. MORE POWERFUL REGIONAL AGENCIES

Several regional institutions have considerably more authority than is the norm in the United States. These include Dade County, Florida, which has a centralized county government; Minneapolis-St. Paul, Minnesota, which has a State-appointed regional agency with substantial land use control power; Portland, Oregon, which has a mandatory association of local governments with strong land use control power; and Toronto, in the Province of Ontario, Canada, which has a metropolitan government made up of local officials.

Dade County (Miami, Florida, is a general purpose government responsible for its own urbanized portion of a larger region, and as a general purpose government has far broader authority than any regional agency or association of governments which performs just a few functions. The MPO governing board is the Metro Mayor and the County Commissioners. Although there are other important actors, most of Dade's coordinating issues are handled internally. In the metropolitan areas visited, no MPO except Dade County functioned as a decision coordinator in implementing operating improvements.

While most MPO's are associations of local governments, the Metropolitan Council in the Twin Cities is a State agency whose governing body is appointed by State officials. Apart from the single county governments, such as Dade County, the Metro Council is as close as the U.S. has come to urban regional government, albeit for rather specific functions. The Metro Council must approve local comprehensive plans.

A model for a strong association of local governments is the Columbia Region Association of Governments (CRAG) in Portland, which has a State-mandated membership of the local jurisdictions within the three principal Oregon counties in the urban area. Other contiguous Oregon counties and their cities have voluntary membership in CRAG. Clark County and the City of Vancouver, both in the State of Washington, also voluntarily participate in CRAG. While CRAG must approve local land use plans, it is the local officials themselves who make up most of the board of directors, which has voting weighted by population.

A critical question is whether regional institutions with more authority, such as the Twin Cities' Metro Council, foster more cooperation among those agencies operating transportation, or whether a more powerful regional institution simply adds another layer of government to be coordinated with other governmental agencies. Some lines of argument lead to the latter conclusion.

The principal responsibility for operating the transportation system in the Twin Cities area rests with exactly the same jurisdictions as it does anywhere else. The Minnesota DOT operates state highways; local jurisdictions operate fixed route bus service; and private companies and operators provide for paratransit and vanpooling. The Metro Council itself doesn't operate anything. Its direct relationship with transit operations is as the policy body over the Metro Transit Commission, to the extent that it can enforce its policy control. On highway operations, the Metro Council has only powers of persuasion, which can be applied directly with highway agency personnel or indirectly through other groups or agencies with which the highway agencies deal.

However, the Metro Council does have substantial power in comparison with the associations of local governments. In several other cases, MPO's were on record as favoring a policy of operations improvements instead of massive capital construction. All urban areas professed interest in TSM in their reports to the federal government, usually in addition to capital needs. At least in the Twin Cities area, the Metro Council's rejection of a capital intensive transit system has been an important factor in the politics of preventing a regional commitment to a fixed guideway system. While the Council eschews implementation responsibility, it is effectively precluding any capital projects other than those which serve its policies from being implemented by the operating agencies. Associations of local

governments are never this independent, and they don't have such political clout. Thus, while the Twin Cities institutional arrangement adds complexity by adding another actor, that actor does have a different perspective than the local jurisdictions.

Even if regions achieve policy agreement on operations changes, the translation of policy agreement into actions does not take place at a regional level, but in specific instances at specific locations. TSM and other improvements in the coordination of operations are basically not regional. The change in use of any roadway must be negotiated locally. A transit service change is aimed at a particular market of people. Carpools are site specific, and most experienced people in carpool programs now concentrate on individual employment locations, rather than on regional information programs. The system or regional effects of particular operations actions are usually vastly overestimated.

5. FINANCING AGENCIES

Over time, the federal government has required more and more formal inter-jurisdictional consensus on expenditures of federal capital aid funds for transportation. Today, virtually every agency or jurisdiction in the metropolitan area has at least a nominal opportunity to comment on the proposed financing of everyone else's capital projects. Agencies have learned to live with this incentive for cooperation, even though they will always resent negative comments on their favored actions.

In some urban areas, efforts at creating a single transit operating entity have fallen short of their goal, so the states and urban areas have developed a separate overall transit organization to be a financier of the operators. Chicago's Regional Transportation Authority (RTA), the Toronto Area Transit Operating Authority (TATOA), San Francisco's Metropolitan Transportation Commission (MTC), and the State of New Jersey's Commuter Operating Agency are examples of transit agencies whose principal function is to parcel out the funds to separate operators, while attempting to use their financing clout to foster better coordination of transit services and fares. Such agencies are effective in coordinating fare structures, single ticketing and transfers, since they can simply pick up the tab for inflicting costs on the operators.

Clearly, a financing and operating agency can do as much and more. The Twin Cities Metro Transit Commission (MTC) simply picks up the entire cost of transfers between its operations and those of private bus companies by honoring transfers from private companies and paying the private companies a full fare for every MTC transfer their drivers collect.

A separate institution is not always necessary in order for operators to decide on how to divide up public subsidy funds. The Hamburg Transit Federation is only an agreement among operators as to who gets what, an institutional arrangement somewhat lacking in public accountability. The transit financing agencies have at least been able to enforce some accountability of the separate operators to regional transportation issues.

6. CORRIDOR AGENCIES

In a few areas of the country an agency operates both highway and transit services in a single corridor. The Golden Gate corridor between San Francisco and Marin County is the best such example, in which one institution, the Golden Gate Bridge, Highway and Transportation District, operates the bridge, buses and ferries. In the New York-New Jersey area, the Port Authority of New York and New Jersey operates the bridges and two rail transit tunnels, but bus and commuter rail are provided by other carriers. In the Philadelphia-New Jersey area, the Delaware River Port Authority operates bridges and a rail line, but buses are operated by private carriers. In each of these latter two cases, the State of New Jersey subsidizes some of the other operators.

The single operating jurisdiction in corridors restricted by geography may or may not be a widely applicable arrangement but, where applicable, it would allow toll revenues to support deficit transit operations.

7. THE ROLE OF THE PUBLIC AND OTHER IMPORTANT CONSIDERATIONS

The involvement of interest groups and the public is at least as critical in operations actions as in larger capital projects. People are very sensitive to micro changes in the management of operations. Every practicing traffic engineer and transit operator knows he will hear from people pretty quickly if they aren't consulted about the removal of two parking meters or the shifting of a bus route or stop. On such projects, the cooperating agencies generally work directly with the affected interests.

Virtually all professionals and policy makers concerned with TSM and other operations improvements stress the need for the cooperating agencies to involve interest groups and the public adequately in developing such actions. The notable instances in which this has not occurred, such as the Santa Monica Diamond Lane in Los Angeles, have caused such a trauma for the affected agency that the lesson needs no repeating.

The development of more substantial operations changes, such as a reserved bus and carpool lane, obviously cannot involve each affected individual. For these projects, the

successful cooperating agencies have worked through local governments, formed citizen advisory committees, held open meetings (even when a negative declaration was being filed), and attempted to use the mass media to inform people of the pending actions.

On opening days for many freeway operations innovations, such as in Los Angeles, Minneapolis and Portland, the media's concentration has been on what's not working right. The successful projects were ones which made it through the initial shakedown period to the point that the public's difficulties in adjusting were over, and these difficulties were no longer newsworthy.

Several persons have suggested that the transportation professionals are currently way out in front of the public on understanding and advocating transportation system management actions. The public understands capital construction as a solution to congestion problems, but the changeover of a lane to serve only buses and carpools may be perceived by a user as someone's unwarranted attempt to change his behavior. If there is no prior effort to assist people in understanding the concept of operations changes, each proposed action has to be accompanied by an educational effort.

Some other factors of significant importance in fostering coordinated operations are not dependent on, or reflected in, the current institutional structures and processes for coordination. Factors influencing coordination of operating improvements include:

- Inter-agency and inter-jurisdictional controversies over capital improvements or other non-operating decisions;
- Availability of "capacity" in the urban transportation system, such that particular operations changes have fewer perceived negative effects on other system users;
- Whether an improvement is innovative or has been done before by the coordinating agencies; and
- Political culture or personality factors peculiar to a particular region.

In several metropolitan areas, inter-agency coordination of operations is hampered by past or current battles over capital investments. In some places, there has been controversy over mode of capital investment (e.g., highway vs. transit, or rubber wheeled transit vs. steel wheeled transit, or new technology transit vs. proven technology transit). In other places, the controversy has been explicitly over heavy capital investment vs. TSM or operational improvements.

Los Angeles is one of the few places where operational changes became the subject of publicized controversy, perhaps because few proposals for massive operations changes have been taken seriously. Also, there is little political constituency in favor of operations changes, whereas there are basic economic and financial interests with a clear stake in fostering capital construction. Thus, whether they have merit or not, many proposed operations changes are abandoned at the first sign of vociferous opposition.

Cities with less congestion may have more opportunities to make operating improvements, since no one's interests in the use of capacity are as threatened as in cases where available capacity is heavily utilized. Of course, operating improvements probably have higher benefits in those places where private vehicles are putting the greatest strain on capacity.

The need for coordination on operating improvements is much greater for innovative projects than for actions that have been implemented before and are known to be successful.

The political culture, personalities of leaders, ethos of government, and history of particular urban areas renders each of them unique in some respects. While differences in institutional, legal, or regulatory arrangements cannot fully compensate for any problems in coordination an area might have due to political culture or particular personalities, the institutional, legal, and regulatory arrangements can take account of political culture and personality factors by what they encourage and allow.

C. LEGAL AND REGULATORY PROBLEMS AFFECTING OPERATIONS COORDINATION

Legal and regulatory determinations are functions through which a legislative branch of government or its designees defines the actions in which the executive branch of government and private groups are allowed to engage. Laws and regulations set limits on the ability and effectiveness with which an institution or individual may use incentives of any kind. Laws and regulations can either create or stifle opportunities for desirable coordination of operating decisions.

However, laws and regulations only establish the broad "rules of the game" for the agencies and individuals responsible for operating urban transportation. They cannot guarantee effective inter-agency coordination or efficient system operations. It remains for the responsible agencies to use their legal authority and available incentives to actually bring about improvements.

Some legal and regulatory improvements would be equally valid and desirable under several arrangements of institutional responsibility. Institutional, legal, and regulatory reforms

can be mutually supportive of improved possibilities for coordinated operations.

Specific legal and regulatory problems which affect operations coordination are:

- fragmented regulatory responsibility;
- poor integration of planning, finance and regulation across modes and jurisdictional boundaries;
- lack of user subsidies related to incentives for operating efficiency;
- insurance problems for vanpools, carpools and taxis;
- fare regulations unrelated to system efficiency;
- labor issues, other than those directly related to Section 13(c) of the Urban Mass Transportation Act;
- difficulty of structuring profit incentives for private operators consistent with public goals; and
- inconsistent incentives for ridesharing.

1. FRAGMENTED REGULATORY RESPONSIBILITY

The most common urban transportation regulatory problems are the fragmentation of responsibility for regulating the various kinds of transportation and the separation of regulation from planning and finance. States regulate private bus operations, regional public transit agencies generally regulate themselves, local jurisdictions regulate parking and taxis, and regulation of vanpools usually is ill-defined. Furthermore, regulation, service planning and finance are usually the responsibility of different agencies, making integrated public policy decisions on fares, levels of service, modes and levels of public support difficult to achieve.

In many urban areas, taxis are licensed to pick up passengers only in particular local jurisdictions with the result that opportunities are limited for savings of system mileage by picking up a return passenger. This geographic problem could be resolved by an institutional arrangement in which the licensing and regulation of taxis and paratransit was performed on the basis of the whole urban area.

Perhaps the single most fragmented regulatory responsibility in urban areas is that concerned with parking. Regulation of parking varies by local jurisdiction, with some controlling on-street and off-street parking tightly and some regulating parking supply and location only in a *pro forma* manner. Some

states, such as Oregon, have air quality laws requiring indirect source permits for new developments with more than 50 off-street parking spaces. However, most states play no role in parking regulation.

Parking regulation is potentially a powerful tool for influencing the operation of the urban transportation system. Its potential effectiveness is strongly related to the institutional arrangement. Parking regulation must be consistent throughout the urbanized area, or else any efforts to apply disincentives to the use of single person autos may simply shift development patterns in an undesirable manner. Parking regulation is one of the few practical approaches to applying disincentives to single person auto usage, in combination with other regulatory incentives, to increase ridesharing.

Many of the problems of fragmented regulatory responsibility could be overcome by an institutional arrangement in which regulation of all modes was accomplished by the same agency or jointly by two or more agencies acting together. Regulatory decisions could then help shape consumer choices in a manner which could make the most efficient use of the entire system and all modes. At the minimum, such an arrangement would combine metropolitan-wide regulatory responsibilities for fixed route transit, paratransit, taxis, vanpools and parking.

2. INTEGRATION OF PLANNING, FINANCE AND REGULATION FOR ALL MODES

Regulatory decisions have frequently been the responsibility of city and state agencies which perform no other functions in urban transportation. As a result, regulation has not been coordinated with public policy on planning, finance and operation. Typically, no single agency has had the authority to decide on a level of service and choose a method to supply that service effectively and at least cost to the public.

When regulation was concerned with the rate of return which private transit operators achieved from their exclusive or semi-exclusive rights to operate particular routes, the principal concern of the regulatory body was balancing the operator's interests against that of the users'. The need for subsidy of public transportation introduced a third party of concern, the taxpaying general public. In addition, transit and paratransit have come to be viewed as a necessary public service which provides mobility to those without other available transportation.

In the new context of transit and paratransit regulation, a public policy decision is made as to a level of desired transit or paratransit service and a level of mobility which will be publicly supported. The lines between regulation and other

functions have thus become blurred, and the new concept of regulation considers the users (fares and levels of service), the operators (wages and rate of return), and the taxpayer (levels of support) as equally interested parties.

3. LACK OF USER SUBSIDIES

Another problem is the focus of public policy on subsidizing the suppliers of transit and paratransit service rather than the users of the service. With this approach, the potential user doesn't get to make a market choice of what service he prefers, but must attempt to influence public policy through interaction with the responsible decisionmakers. The market place, however, tends to be more directly under the influence of the potential user than is the governmental decision process.

Most economists would consider an income subsidy available only for urban transportation as less desirable than a more general income subsidy, since with the more general subsidy the consumer could choose to tradeoff transportation and other expenditures (for example, rent) and presumably achieve more satisfaction from the added funds. However, even a user subsidy limited to urban transportation expenditures by specific groups would have some desirable attributes when compared with subsidies to suppliers only.

First, the subsidy could be allocated more directly to those in most need. Transit and paratransit services are often supported by public agencies because of predictions of benefits to disadvantaged groups. If the public policy is to help such groups, then a direct user subsidy could give the intended recipients tokens or tickets good for use on all forms of transit and paratransit. Recipients would then choose their means of travel based on their increased income available for such purposes. If desired, eligibility cards could be issued to recipients so that tickets could not be transferred. Otherwise, recipients could be allowed to sell tickets to anyone who wanted them. The tickets could then only be redeemed by operators. Operators' ridership would be monitored periodically to assure that they were collecting tickets rather than purchasing them.

Second, if a supplier is subsidized, the way to insure that only the intended recipients benefit is to limit the service's use to the target group. However, at a higher level of service, it may be possible to serve other trips (or users) as well, thus increasing overall system efficiency. Non-needy persons could pay full costs to patronize the systems if the users rather than the suppliers received the direct subsidy.

The groups now receiving a special mandated fare subsidy are the elderly and the handicapped, in that federal requirements call for half fares during off-peak periods. However, this requirement applies only to those services supplied by

agencies receiving federal financial assistance, and no income is given directly to the users. The income level of the user is not a determinant of eligibility, and there is no incentive for service innovation in this requirement.

4. INSURANCE PROBLEMS

Insurance costs for all kinds of ridesharing are a problem of some concern. Vanpools have been a recent innovation with which the insurance industry does not yet have enough experience to establish reliable rates, although the recent classification of vanpools by the Insurance Services Office, an actuarial body which classifies and rates particular risks, has been a major step. Insurance for buses, taxis, and carpools is also a problem, but is due purely to cost increases for operators rather than to any lack of experience with these modes.

If insurance rates established for carpools and vanpools are set very high, they can be a significant disincentive to carpool and vanpool use. Insurance rates for taxis and fixed route transit will impact the total costs to be made up by fares and subsidies.

Insurance for all these modes could be subsidized by any level of government which chooses to make such a public policy decision. A higher level government could provide incentives for the use of such modes by reducing insurance payments, either by providing insurance itself or through public support of all health care and other benefits for accident victims.

5. FARE REGULATIONS UNRELATED TO SYSTEM EFFICIENCY

Fares for publicly operated or regulated transit and paratransit systems can be set as a matter of policy. Present fare regulations for taxi, transit and other paratransit services may not, in some jurisdictions, lead to the most efficient utilization of those modes.

For example, similar peak and off-peak fares may discourage taxi drivers from operating during peak hours. A peak hour surcharge in Washington, D.C., allows the compensation to reflect the greater difficulty of covering a given distance during peak hour traffic conditions. In addition, taxi ridesharing, if properly policed to protect the passenger, could reduce costs for passengers while increasing vehicle occupancy and the total fare collected by the operator.

Although the geographical extent of service areas is highly dependent on the institutional arrangement, different means of regulating taxi and paratransit fares can be implemented without changes in institutional responsibilities.

Low off-peak fares for transit, taxi or paratransit services may provide enough incentive for some users to shift out

of the peak period, to shift from one mode to another, or to make more trips within a given income level and thus increase their mobility. No capital investment is necessary to shift trip-making or increase mobility levels through such regulatory and financial decisions.

6. LABOR ISSUES

The balance between desirable wage rates and working conditions and the cost of a service to the user and society is a major public policy decision to which no simple rule can be applied. Basic issues of equity towards workers have to be considered in comparison to costs. Legitimate goals of job security have to be balanced against excessively high compensation or preservation of outmoded work practices.

If there are innovative services or functions to be performed in operating urban transportation systems, the people to perform those functions can come from many different sources. Each source of labor may have a legitimate argument as to why it should undertake the new service or function.

Most state and city employees are covered by civil service procedures. Employees of publicly-owned transit systems are generally not under civil service, but are represented by the same union, if any, which represented them prior to public acquisition of the private operator. Personnel of private transit, taxi, or paratransit companies may or may not belong to a union.

Under any organizational structure, decisions have to be made on who will perform a particular function or provide a particular service. For example, a decision to fund a private operator to provide a special paratransit service may be an alternative to retraining regular transit drivers and providing the service as a division of a regional transit agency. If there were different wage rates, this would imply different operating costs for the similar service. These labor jurisdictional issues of who gets what work are there today and will always exist.

The existence of many transit and paratransit operators may tend to slow the process of equalization of wage rates and working conditions among those operators receiving service subsidies. However, it is not likely that full equalization of wages and working conditions would ever occur, even with a single financing or operating institution. Full equalization has not occurred within the MTA in New York, which is the operator of many services, or within the RTA in Chicago, which is a regional funding agency.

If many current functions are combined into a single agency with integrated policy direction and management, some employees with civil service, union, and non-union affiliation may end up part of, or under contract to, the same agency. Any new comprehensive agency is likely to require complex legislation to continue particular employees under civil service, to exempt some positions from civil service, and to continue or renegotiate labor union representation for some employees. Options on pension programs would have to be granted. If a new agency is not civil service, but might have some employees formerly under a state or city's civil service system, then the former civil servants might be guaranteed (for several years) the right to move back into a civil service job with their previous jurisdiction.

7. DIFFICULTY OF STRUCTURING INCENTIVES FOR PRIVATE OPERATORS CONSISTENT WITH PUBLIC GOALS

It has proven difficult to set up a reasonable and equitable profit mechanism for private operators of the various kinds of services, particularly in a situation where they are subsidized. Many different methods of contracting with private operators are possible. Ideally, any profit incentive should lead to better quality service in the right place at the right time. The regulatory mechanism should be structured so that the incentives for private operators are as consistent as possible with public goals for that service, with the recognition that full consistency is unattainable.

The difficulty of establishing an equitable profit mechanism for subsidized services has probably discouraged contracting with private operators. Negotiation of contracts between government and the private sector can never be entirely free of the potential for real or imagined corruption. For many public bodies, it is easier to avoid the suspicion of corruption or favoritism by simply not contracting with private operators.

From the private operator's point of view, government's concern to hold down profits makes transit or paratransit service an unattractive investment. Similarly, private investment is difficult to attract to service innovations, since services might be curtailed or abandoned at any time. The risk may be perceived as too great by a private operator if he has to count on both a good market response and a continued political commitment to a subsidy. For this reason, private operators' interest in subsidized service innovations will always be limited. However, a long term political commitment to user subsidies may encourage private service innovations.

The means of contracting with private operators need not be the same for all transit and paratransit modes. The State of New Jersey is currently considering legislation which would allow them two means of contracting. First, the State would negotiate contracts with private operators for paratransit

service, allowing the State to get the best price for each unique service. Second, the State would have a standard cost contract for fixed route bus service, in which some elements of the subsidy paid to a private operator, such as for wages, would depend upon individual conditions, but for some other costs (e.g., those related to maintenance, garage fees, etc.) the State would pay a standard price, allowing the operator a profit if he could undertake that function efficiently.

8. INCONSISTENT INCENTIVES FOR RIDESHARING

Ridesharing is the use of a vehicle by more than one person and includes all kinds of vehicles, other than those serving a single person's trip. Ridesharing, therefore, includes all urban area transportation except single person autos or single passenger taxis, or transit services. Increased ridesharing can improve the capacity of the urban transportation system whether the ridesharing vehicle carries forty, ten, or two persons.

Neither the institutions responsible for operating urban transportation nor the users of the system face consistent incentives for increasing urban area vehicle occupancy as a way of increasing system efficiency. The fragmentation of responsibilities results in particular operators having incentives to increase the use of their own vehicles or modes, but no institution faces financial or political incentives for increasing ridesharing regardless of the vehicles used, with the possible exception of Knoxville's Department of Public Transportation Services.

A consumer may have a financial incentive, through a subsidized transit fare or high downtown parking costs, to use transit or to carpool for a downtown oriented work trip. However, a consumer making a suburb to suburb oriented work trip may have no available transit service and may be offered free parking, thus negating all incentive to use transit and lowering the financial incentive for carpooling.

In most urban areas, the various ridesharing opportunities are administered by competing operators or institutions. Transit agencies may fear carpool, vanpool or shared ride taxi programs which serve the downtown area, since the transit agencies' financial performance and political importance might be undermined by such increased opportunities. It is, of course, impossible to target a downtown carpool, vanpool or shared ride taxi program only on users of single person autos, without attracting former users of fixed route transit.

In those places which have set up comprehensive ridesharing brokerage bureaus, such as Knoxville, there is at least an agency with the designated goal of bringing about ridesharing without regard for the type of vehicle operated. However, the

authority to change the choices facing consumers, by changing prices, changing uses of lanes, and controlling parking availability, is critical if the ridesharing agency is to be able to be more than an information service for connecting consumers with transportation operators.

The Minnesota legislature has established a goal of increased ridesharing in the Minneapolis-St. Paul area, and the Metropolitan Council and Metropolitan Transit Commission are examining a wide range of ways to increase ridership. However, neither of these institutions nor any other institution in the country, has the authority and a comprehensive program to change consumer incentives substantially so as to alter the usage of single person autos.

CHAPTER THREE

INCENTIVES FOR OPERATIONS COORDINATION

In order to either change an institutional arrangement for coordinating transportation operations or make a given institutional structure work, incentives for desired behavior can be applied between or among institutions. Incentives also can be combined with new institutional arrangements, can be used to bring about more desirable institutional arrangements, or can by themselves form a strategy for bringing about more coordination of operations.

Two systems of incentives are described in this discussion:

- those intended to influence directly the operations of other institutions making decisions on the delivery of urban transportation services; and

- those which change the ways consumers express demand for urban transportation so that consumer choices themselves create incentives for better coordination of operations.

This second type of incentive is described for non-operating agencies only, since every action by an operator affects consumer choices in some way. These two systems of incentives are not mutually exclusive, and they can be used in combination.

Incentives between and among institutions are cross-classified here according to two attributes: kind of incentive and target of incentive. Kinds of incentives include political, financial, psychological and professional. Targets of incentives include policy, performance, process and institutional arrangement.

A. KINDS OF INCENTIVES

Plausible theories about individual and group behavior come from political science, economics, psychology, and professional beliefs and opinion. These theories all explain how various incentives and disincentives operating on institutions and individuals brought about an observed behavior. Thus, a decision-making process can be explained through political theory, by analyzing the dynamics of political and institutional self interest over time; through economic theory, by analyzing the dynamics of the financial balance sheets of individuals and institutions; through psychology and psychiatry, by analyzing the psychological relationships between individuals and groups in relation to the psychological history, needs, and roles of each individual involved in the process; and through analysis of the professional value systems held by each involved actor and institution.

To fully describe a decision process, it is necessary to trace how each kind of incentive was used by or operated on individuals and institutions, and how important each incentive was to the choices made. The potential to use each type of incentive is an important element of an overall institutional arrangement for coordinating urban transportation operations.

It is important to define what an incentive is intended to accomplish. An incentive can induce another institution to change either:

- its policies;
- its performance;
- its process of decisionmaking or planning; or
- the institutional arrangement of responsibility.

Different incentives can operate more or less directly on each of these targets.

For example, a state government could distribute financial aid to its urban regions in a manner targeted to any of these aspects. The state could distribute funds only to those regions with adopted policies consistent with state guidelines; could distribute funds based on how efficiently and effectively the urban transportation systems are operated; could distribute funds only to those urban areas which followed prescribed planning procedures; or could distribute funds only to those areas with prescribed institutional arrangements.

Figure 1 illustrates incentives of each kind (financial, political, psychological, and professional), aimed at each target (policy, performance, process, and institutional arrangement). A system of coordinated incentives could be applied to one or more targets.

This discussion focuses on incentives created by higher level governments to influence improvements by lower level governments, since incentives are generally applied by higher level governments to those with more direct responsibility for operating services. Each kind of incentive and each target is discussed.

1. POLITICAL INCENTIVES

A political incentive offers to reward an institution or individual with enhanced political prestige or power, or increases the likelihood that an official can be re-elected or achieve a higher office. For many capital projects, the federal or state government distributes funds in a manner designed to enhance the prestige of a state or local official. The official who has been instrumental in securing the grant announces it, participates in a staged media event with representatives of the higher level government, and thereafter reminds his constituents of the economic benefits he has brought to them.

FIGURE 1

EXAMPLES OF INCENTIVES AMONG INSTITUTIONS

Target of Influence	Type of Incentive Applied			
	Political	Financial	Psychological	Professional
Policy	Policy or framework plan developed by parent government	Restricted or preferred funding of operations improvements	Praise for agreeing on desired policy	Peer norms of desired policies
Performance	Reward officials who measurably improve operations	Funding based upon measurable achievements	Praise for effectiveness	Peer judgment of operational results
Process	Oppose actions if interests not represented	Funding based on documentation of desired planning and decision process	Praise for desired procedures	Peer judgment of development and use of procedures
Institutional Arrangements	Guidelines on required arrangements	Funding conditioned on approved arrangements	Praise for desired institutional arrangements	Comparative judgments and studies of arrangements

This political outcome is an incentive for public officials to play a coordinating role in developing an agreement. Political credit can also go to those whose agreement was necessary to put the final pieces together, or as payment (in a perfectly legitimate sense) for other past political favors.

For capital funding, political and financial incentives are well integrated. Most people believe it is desirable to get funds from higher level government, although they will disagree with particular projects. However, coordinated operations improvements and transportation system management do not yet have the visible attributes such as dollars for which political credit can be taken. And compared to the situation in capital construction, the opportunities for side payments to those harmed by operations improvements are more diffuse.

In the metropolitan areas studied, most locally-based political incentives for operations improvements were in jurisdictions and agencies which had recently and succesfully blocked someone else's plans for major capital projects. For example, the Mayor of Portland, Oregon and his staff are interested in TSM actions for both political and technical reasons. The Mayor led a political battle which resulted in cancelling a freeway. While disruption of a neighborhood was avoided, there was a strong political motive created to use TSM actions to ameliorate the transportation problems the freeway was intended to address. Thus, the City's attention to TSM improvements has focused on that neighborhood. In Minneapolis-St. Paul, those who have successfully blocked a major investment in new regional transit guideways include the Metropolitan Council. The Council now has a strong political motivation to achieve success from a TSM approach.

These political incentives led to the high level of attention being given to TSM in Portland and the Twin Cities. Such political incentives cannot be created directly through federal policy, but they have sometimes been the beneficial, if unintended, impacts of federal capital assistance programs.

Political approval and disapproval can be directed from all levels of government to all others. Each key actor in each institution is expected to make maximum use of such political incentives, dependent upon their own skills in political bargaining and negotiation. There is no single direction in which political incentives are always successfully applied, such as from higher level institutions downward.

The outcome of a political process of negotiation can rarely be assured by a single institution's use of political incentives. However, from the point of view of the federal government or a state government, the probability of an acceptable policy decision by an urbanized area can be increased through the consistent use of political incentives for reaching agreement on a set of operations improvements.

2. FINANCIAL INCENTIVES

Financial incentives for public transportation operators can take two forms:

- the operator must satisfy some minimum requirement in order to receive a fixed amount of funds; or
- the funds received by an operator are directly related to how well criteria or performance measures are met.

The current budget crunch in urban transportation makes TSM actions attractive to operators and other government agencies as a means of maximizing benefits per dollar expended. However, the current financial incentives perceived by non-governmental interests do not necessarily favor operations approaches, since most private economic interests in urban transportation revolve around the construction industry or the transit unions. Contractors do not perceive a $1 million program to be the same as a $10 million program, even if each program would accomplish the same travel benefits for the general community. Thus, the governmental agencies and the private interests with the biggest financial stake in urban transportation may not have the mutual financial interests they have in the past.

Private and public interests sometimes overlap for downtown operations improvements. Transit malls, fringe parking, free downtown shuttle buses, free fares in downtown zones, and pedestrian walkways are seen as means of revitalizing downtown economies. Although not all downtown businessmen are convinced of the financial benefits of such operational changes, city planners tend to believe that better transit and pedestrian circulation increase the downtown's commercial attractiveness relative to suburban shopping centers.

The privately financed Minneapolis "skyway" system grew out of a conception of downtown Minneapolis' self interest. It was conceived by city planners, but was financed entirely by the private community. Transit malls in Minneapolis and Portland were achieved through private and public agreement on the expenditure of public funds to alter the downtown business environment. Chicago's proposed State Street transit mall was initiated by the City, but private property owners along the street will provide the local matching funds.

3. PSYCHOLOGICAL INCENTIVES

The psychological aspects of decisionmaking processes include actual or potential changes in relationships between individuals and actions that show approval or disapproval. These psychological factors are communicated by voice, body language, writing, and indirect verbal communications through a third person. Psychological impacts relate to the previous closeness

and importance of a relationship, the status of each party, and the related political, economic, or professional threats or reinforcements which might be inferred.

The psychological rewards and punishments transmitted by one individual to another may depend on economic, political or professional reasons -- the psychological incentives are the important means of expressing satisfaction or dissatisfaction with another's opinions or performance on economic, political, and professional factors.

The involved individuals may have long term relationships which have little to do with the current political, economic, or professional self-interest of themselves or their institutions. A familiar example is the "good old boy" network of national diplomats and political figures who went to the same schools or whose associations date back to childhood. Such networks exist in every professional field and are important factors in every town, whatever its size. In many places, high school, university, law school or engineering college relationships may define allegiances and loyalties no matter what the performance of the friend otherwise happens to be.

Professional judgments may get sacrificed to previous friendships and trusts. Even political and economic realities may be modified or take second place to the preservation of long-standing personal relationships. In these cases, the psychological incentives are the most important determinants of actions. However, there is no a priori reason to believe that such psychological considerations would in a high percentage of cases be counter to professional, political, and economic considerations. The opposite is probably true, with the psychological aspect of interactions being a reinforcement of the other aspects.

The use of psychological incentives by elected officials or staffs of higher level governments usually involves direct meetings or phone contacts. They would distribute praise or approval for favored behavior, or concern or disapproval for behavior considered undesirable, in the hopes of reinforcing the positive and modifying the negative behavior.

4. PROFESSIONAL INCENTIVES

Professional incentives involve the rewards of a job well done in accordance with the standards and values of one's professional peers, and the enhancement of an individual's chances for career advancement. Professional incentives apply to institutions as well as individuals, since people within institutions have a need for esteem and recognition for their institution among peer groups of similar or related institutions. Often these similar institutions and jurisdictions compete not just for esteem, but also for qualified employees.

Professional incentives can be powerful motivating forces. They are a subcategory of political, economic, and psychological incentives, but are singled out for special mention because members of professions are among themselves a separate kind of political constituency, and because a person's financial and psychological incentives to advance within a broad profession may operate differently than the financial and psychological incentives towards a particular decision being made. Politically, economically, and psychologically, the esteem or praise of professional peers has importance beyond the success of coordinating particular improvements.

The promulgation of federal guidelines which define transportation system management as a legitimate professional concern has implicitly redefined the boundaries of professional peer groups, such that long range transportation planners, traffic engineers, and transit operators are now supposed to address similar issues. For regional agency staffs, the TSM guidelines have brought responsibilities in areas in which they may have had no previous experience, so they are learning new professional approaches as well as broadening their peer groups. Traffic engineers and transit operators are also adjusting to a redefinition of professional norms. They are becoming involved with other actors and with a broader concept of transportation system management which they have been told should include their own activities as part of a systemwide application of integrated strategies.

The broader professional peer group concerned with TSM is not as consistent and integrated in its professional norms and value systems as the various groups out of which it originates. However, persons interested in coordinating operations improvements as an approach to urban transportation should also have an interest in solidifying the new professional norms of this broader group. Such a process started several years ago, and has continued through the normal mechanisms of special conferences, presentations and discussions at regularly scheduled conferences, the publication of papers, and the support of research projects to advance the profession's understanding of what to do and how to do it.

B. TARGETS FOR INCENTIVES

1. POLICY

Achievement of coordinated operations improvements requires an effective policy agreement that such actions are desirable. Otherwise, elected officials will not support public expenditures to implement the policy. It is of value that such a policy not only be agreed upon among key decisionmakers, but also be accepted by the public as a legitimate and useful approach to urban transportation problems.

Since policy change is usually a precursor of institutional rearrangement, incentives for the operators to adopt a desired policy should always be a part of efforts to bring about coordination of operations improvements or institutional changes.

A state might provide a policy incentive by developing a framework plan, such as is done in England, France, and Oregon, and requiring lower level jurisdictions to fill in the details of the plan consistent with the state's policies.

Policy statements promulgated by higher level governments must be consistent with the other incentives being provided for target institutions. If not, requirements for adherence to the policy will confuse the target institutions.

2. PERFORMANCE

A performance incentive is a reward, such as increased funding, based on some measurable achievement related to operating urban transportation. A performance incentive should not require burdensome data gathering, and should have safeguards to assure that performance data are reported in an unbiased manner. The U.S. Congress, for example, has in the past considered, but rejected, the notion of transit operating assistance distribution based on data supplied by transit carriers, preferring demographic data instead.

Performance standards have been promulgated for air, noise, and water pollution, and air and noise standards have begun to impact transportation decisions, particularly decisions about whether or not to construct highways. Instead of involving tradeoffs with other impacts, noise and air standards are purportedly absolute.

The application of absolute standards for transport system performance has substantial disadvantages for the nation, a state, or an urban area. Persons or groups have different needs for access, mobility, travel time and cost savings, and judgments about the relative values of such factors and other impacts are most legitimately made by public officials or the individual consumer.

However, performance incentives from the federal government could, for example, tie federal funding to a lack of growth in per capita and per vehicle gasoline consumption, vehicle miles of travel, or person miles of travel. At present, additional gasoline sales benefit the states, since the more gallons sold, the better off they are financially (ignoring the impacts from vehicle usage such as increased highway maintenance expenditures).

3. PROCESS

Process incentives from higher level governments are usually in the form of requirements that documentation be provided to show that particular information has been compiled and analyzed, or that a particular system, programming, operating, or project decision has been agreed upon. The higher level government then approves, disapproves, or gives a qualified or ambiguous response to the documentation submitted. The response may be accompanied by financial reward, penalty, an implied threat of a future financial penalty, or an implied promise of a future financial reward.

Incentives involving a distribution of resources based on process review and approval presuppose that:

- documents or verbal presentations can adequately and objectively convey what is being done;
- all reviewers have a common understanding of what constitutes good operations improvements and place similar value upon such approaches; and
- the allocation process is not distorted by purely political factors.

In urban transportation, the federal government has traditionally been more oriented to prescribing a desired planning process that it hoped would lead to desirable decisions than it has been oriented to setting performance standards or making independent judgments of effectiveness. This has been an appropriate posture for capital planning, and it is even more appropriate for operations planning.

States, regions, and localities have financial incentives to convince federal personnel that the process guidelines are being fulfilled, and their communications focus on doing so. The consequent difficulties involved in judging the quality of a particular planning process are apparent to most federal field personnel.

4. INSTITUTIONAL ARRANGEMENT

The creation of any new institutional arrangement is much more likely if there are incentives to do so.

Over the last sixty years, the federal government's incentives provided for the states were important factors in developing state highway departments with the ability to build and manage state road systems. In order to assure that federal highway aid was well spent, the federal government required that the state highway institutions have certain necessary capabilities.

With the increasing focus on urban transportation in a society that is now much more urbanized, the federal government has required the involvement of local officials in most urban transportation decisions, and has provided the major push for the development of regional institutions. However, little of the federal incentive structure has been targeted upon the central cities or counties, the jurisdictions which have most often been the effective coordinators of urban transportation operations improvements.

The cities and counties, whose planning divisions and traffic engineering divisions work together well, have implemented many innovative actions. Those who also manage transit themselves and have coordinated all these divisions are generally even more successful as coordinators. However, there has been no federal incentive aimed at the cities' and counties' internal institutional capabilities for urban transportation.

C. POTENTIAL ACTIONS TO INFLUENCE CONSUMER DEMAND

Another approach to achieving more effective urban transport operations is to have government agencies who are not operators restructure the choices facing consumers. These changes would be aimed at enabling consumers themselves to provide additional incentives to operators through their purchases of services. It would then be in the operators' self interest to operate more efficiently. The most effective actions which might be taken by non-operators to influence consumers fall under the categories of subsidies to users and changes in tax policy.

1. USER SIDE SUBSIDIES

Explicit subsidy of urban transportation has so far been aimed at the supplier rather than the consumer. A subsidy to a specific user group would allow recipients to make their own choices on how to spend their resources.

A subsidy might take the form of transit tickets, redeemable only by operators, that could be bought and sold (in a white market) by those who wanted to take more or fewer transit trips than their allotted tickets would cover. Operators would have an incentive to tailor services to demand, and a person being subsidized would have the option of selling his tickets or patronizing a transit service that best met his trip needs, rather than one which a government agency has decided to pay for in order to meet his trip needs.

2. TAX POLICY

Approximately 75% of people making work trips by auto, park free, either in spaces provided by their employer or in spaces provided by local governments on the streets. Thus, a tax on parking charges would add commuting costs only on those who already pay.

However, if free parking were treated as taxable income, it may affect many work trip auto users. Decisions to carpool or use mass transit would then be based on slightly higher costs for a drive alone work trip. Except in places with very high land values, this would have a small effect on work trip auto occupancy and mode split.

The most familiar federal tax is that on gasoline, and increasing the gasoline prices faced by consumers would raise auto trip costs. This creates incentives for higher vehicle occupancy and for foregoing non-essential vehicle use. Once again, the effect on average vehicle occupancy or use of transit is likely to be small.

D. SPECIFIC MECHANISMS FOR COORDINATION

There are several mechanisms by which individuals and institutions can coordinate without making a formal, legal change in the responsibilities of institutions. These mechanisms are ways of building up an informal pattern of personal relationships which will operate to bring about coordination. There are no specific mechanisms that will guarantee coordination; they only increase the opportunities for and the probability of effective coordination.

An important determinant of the possibilities for coordination is whether or not people already know each other and the ease with which people can get to know one another. If people know that others share some of their interests (whether or not professionally based) or are familiar with each other's attributes and beliefs, those with enough similarities will come to trust each other. Personal trust and credibility enables coordination to be done efficiently in terms of time and effectively in terms of the stability of agreements.

Effective and efficient coordination can occur when the important actors already know each other well enough to call and talk forthrightly about the technical and political aspects of potential decisions. All mechanisms are valuable if people can get to know one another in a positive way. It is thus very helpful for the future opportunities for coordination that people's initial contacts not be focused on controversy.

Each of the specific mechanisms listed below should be used in a manner that establishes positive personal relationships before negotiation occurs on specific substantive or political issues.

- Committees;
- Professional Societies;
- Social-Professional Functions (luncheons, dinners, parties, picnics);
- Permanent Shared Office Locations;
- Temporary Project Offices;
- Training Seminars; and
- Temporary Assignments to Other Agencies.

1. COMMITTEES

The usual response of urban areas to the need for coordination has been to form committees. For a long time, urban areas have had policy committees and technical committees to coordinate agencies concerned with transportation capital planning, comprehensive planning, land use planning and planning for other resources and capital developments. Committees range widely in the breadth of their substantive concerns, their size, and in their longevity. Some are a continuing part of the institutional structure and some are temporary groups charged with resolving one issue or coordinating particular actions.

Big committees are not mechanisms for real negotiations and compromises. In successful cooperation, negotiations take place and compromises are made beforehand in a working group or between individuals. The larger committees then ratify the agreement. Such ratification by a policy or staff committee is, however, an important milestone in a decision process.

Membership on a committee often defines who has the opportunity to play a coordinating role. Exclusion means that a person may not receive complete information on either the substantive aspects of an issue or the exact positions of each participant.

Committees can enhance coordination if:

- discussion is properly structured; and
- each member has to do work which contributes to the outcome of the plan or decision.

These factors are influenced by the committee's chairman more than any other individual. If the committee is chaired by an incapable individual, the committee's chances of being important to the decision process are greatly reduced.

As a result of the new concern with operations, committees concerned with operations and TSM have been, and are being, formed in many urban areas. Many of the staff level members of such committees are traffic engineers and transit operators whose previous associations with each other were minimal. In most urban areas, these committees are so new that they have not yet fully defined their role and are still in the process of getting to know one another.

2. PROFESSIONAL SOCIETIES

Professional organizations are both a means of disseminating information about innovative practices and a means of establishing and continuing relationships among persons with similar interests. With the new overlap in activities among planners, traffic engineers, and transit operators, the integration of their respective meetings, if not of their memberships, holds promise as a mechanism for disseminating common values and findings.

Analysis might be done of the current overlap in substantive discussion and membership among ITE, APTA, TRB, AASHTO, NCHRP and other related organizations. An explicit strategy of integration could be developed at the national and local levels, if one does not already exist.

3. SOCIAL-PROFESSIONAL FUNCTIONS

One of the preferred means of fostering business in any field is the luncheon, dinner, party, golf-date or picnic, in which a less formal atmosphere may contribute to the possibilities for fruitful negotiation and agreement. It can also serve as a relaxing form of introductory meeting for many people. Professional conferences also include relaxed social, interaction as an integral part of solidifying the profession's cohesiveness.

An important consideration at such functions is that they be structured so that everybody gets to speak to, or in front of, the other members of the group. This gives people a chance to remember names and feel they know something about the other person. It also assures that shy people are given an opportunity and a reason for expressing themselves.

4. PERMANENT SHARED OFFICE LOCATIONS

Physical proximity may remove the barriers to communication among agencies, although it will not prevent personality clashes and policy battles. Physical proximity increases the opportunities for contacts which develop a positive pattern of

personal relationships. This applies to both the executive administration level and to the staff level of the agencies.

5. TEMPORARY PROJECT OFFICES

Where intensive day-to-day interaction is necessary among the staffs of various agencies, a common work location can be an efficient mechanism to assure that there are maximum opportunities for coordination on the details of all planned actions.

6. TRAINING SERVICES

Common training and information exchange seminars for TSM and operations improvements occur nationally and in many sections of the country. It would also be feasible to hold such seminars in specific urban areas, if policy level agreement is reached that key staff should devote their time to these activities.

7. TEMPORARY ASSIGNMENTS TO OTHER AGENCIES

Temporary assignments of individuals from one agency to another can help each learn about the day-to-day operations of the other, as well as open the opportunity for closer personal relationships to be established. The substantive benefit of added skills also accrues to the agency which receives additional personnel, although clearly this could be accomplished through direct hiring.

These mechanisms can be used within any institutional arrangement and with any system of incentives for better coordination. These are really the means through which individuals and agencies who are initiating coordination activities can broaden a pattern of positive personal relationships so as to include those who should be involved in the decision. While some of these mechanisms are applicable to public participation as well, they are described here as ways of fostering coordination within and among the operating agencies and relevant governmental jurisdictions.

E. CURRENT FEDERAL INCENTIVES

Federal laws, regulations, programs, and the subjective interpretations and viewpoints of federal personnel define a portion of the "rules of the game" under which other institutions must operate. The federal government does not control all, or even most, of the rules of the game. As has been amply demonstrated with many attempts at federal regulation, including EPA-promulgated transportation control plans, other institutions and individuals don't always do exactly what federal regulations prescribe.

The current system of federal incentives affecting the operation of urban transportation systems is characterized by:

- Policy statements and regulations which declare transportation system management (TSM) and multi-modal coordination actions to be important elements in urban transportation plans and programs;
- Regulations which prescribe professional conduct including careful analysis of operations improvements;
- No special funding program aimed specifically at improving operations or TSM initiatives;
- Operating subsidies to urban mass transportation suppliers, but not to consumers;
- Separate funding categories administered by federal agencies who do not always agree on urban transportation priorities;
- Major funding categories in which more federal dollars will accrue to an institution if it gains federal approval of more expensive capital projects;
- A very small federal contribution (2%) to total highway expenditures and a significant one (20%) to total transit funding;
- Federal income tax policies which treat free parking as a business expense, while no tax break is given to employees who use transit;
- Some federal DOT personnel utilizing personal and professional contacts to promote coordination of operations improvements and TSM actions;
- Strong institutional and personal relationships between federal DOT and state personnel, weaker federal relationships with metropolitan planning agencies, and infrequent contact between the federal DOT and local governments.

Each of these current federal incentives is discussed under the categories of financial, political, psychological, and professional. The importance or influence of each kind of incentive is estimated, and conflicts are identified between the directions in which the various incentives tend to influence other institutions or consumers to move.

1. FEDERALLY-APPLIED FINANCIAL INCENTIVES

Federal influence over operations occurs through operating subsidies, capital grants, regulations, and taxation policies. Federal policies contribute explicitly and implicitly to setting transit fares and to other incentives faced by potential travelers.

The federal government provides no funds for operation of the private automobile, but taxes those operations as a means of accruing funds for capital projects. The federal government provides between 18% and 20% of urban transit operating subsidies, but only 9% in metropolitan areas of over one million population, where the greatest needs for operating assistance exist.[1] Thus, the direct effects of federal expenditures on urban transportation operations are small, though important.

All federal transit operating subsidies go to suppliers of urban transit. The federal government does not deal directly with consumers of public mass transportation, of highway transportation, or of taxi and other paratransit services.

All levels of government combined spend only a small portion of total funds spent on urban and other passenger transportation operations. The federal government alone spends an even smaller portion (see Tables 1, 2 and 3). The largest transportation operating expenditures are by consumers and are oriented very heavily to automobile transportation.

Government expenditures for highway transportation comprise less than 11% of total auto and highway expenditures. However, government expenditures for transit, exclusive of taxicabs, are over half of total transit expenditures. Federal funds accounted for only 2% of total highway expenditures in 1974, and 20% of total transit expenditures, including both capital and operations.[2]

The potential impact of federal funding programs or other federal financial incentives on performance is highly related to their impacts on the total level of expenditures by other jurisdictions and consumers. If federal funding changes by a large percentage, but has little impact on total expenditures including consumer expenditures, then there will not be much impact on overall system performance. On the other hand, a change in federal financial incentives which significantly shifts the choices facing consumers could have a very large impact upon performance.

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[1] "Status of Federal Assistance for Public Transportation," prepared by the American Public Transit Association, available from Stanley G. Feinsod, Director of Planning and Policy Analysis.

[2] "U.S. Transportation Systems - Federal Government's Role and Current Policy Issues," United States General Accounting Office, October 22, 1975.

TABLE 1

FEDERAL EXPENDITURES ON TRANSPORTATION MODES, 1974

(millions)

Modal System	Total Federal Expenditures	Total Private & Governmental Expenditures	Federal (percent)
Highway	$ 4,893	$230,232	2
Air	2,471	18,971	13
Rail	664	16,885	4
Water	1,942	12,799	15
Pipeline	86	10,401	1
Transit	1,259	6,410	20
TOTAL	$11,315	$295,698	

COMPARISON OF 1964 AND 1974 FEDERAL EXPENDITURES ON TRANSPORTATION MODES

(billions)

Modal System	1964 Federal Expenditures 1974 Prices	1974 Federal Expenditures	Percent of Change 1964-74
Highway	$6.1	$ 4.9	-20
Air	1.7	2.5	47
Rail	(a)	0.7	-
Water	1.6	1.9	19
Pipeline	(a)	0.1	-
Transit	(a)	1.3	-
TOTAL	$9.4	$11.3 b/	20

a/ Less than $50 million.

b/ Because of rounding, total 1974 expenditures are less than the sum of expenditures by modes.

Source: "U.S. Transportation System - Federal Government's Role and Current Policy Issues," U.S. General Accounting Office, October 22, 1975, page 58.

TABLE 2

1974 HIGHWAY MODE EXPENDITURES

	Expenditures (000,000 omitted)	
PRIVATE EXPENDITURES (note a):		
MOTOR VEHICLE PASSENGER TRANSPORTATION:		
Private use:		
Passenger automobiles and trucks	$144,051	
School buses	1,663	
Commercial motor carriers:		
Intercity buses	1,020	
	146,734	
MOTOR VEHICLE FREIGHT TRANSPORTATION:		
Private use:		
Trucking:		
Intercity	11,331	
Local	16,266	
Commercial motor carriers:		
Trucking:		
Intercity	21,801	
Local	9,340	
	58,738	
Total private		$205,472
GOVERNMENT PROGRAMS:		
STATE AND LOCAL (note b)	19,867	
FEDERAL:		
Council on Environmental Quality	(c)	
Department of Agriculture:		
Forest Service:		
Forest roads and trails	111	
Department of Housing and Urban Development	(c)	
Department of the Interior:		
Bureau of Indian Affairs:		
Reservation roads and trails	63	
Bureau of Land Management:		
Public lands roads and trails	21	
National Park Service:		
Roads, trails, and parkways	35	
Department of Transportation:		
Federal Highway Administration:		
Financial assistance to State highway programs	4,328	
Highway and motor carrier safety	86	
Research and development on highway transportation	33	
Direct highway construction	30	
National Highway Traffic Safety Administration:		
Financial assistance to State safety programs	93	
Motor vehicle and traffic safety	64	
Highway safety research and development	26	
Office of the Secretary:		
Administration	4	
Transportation planning, research, and development	4	
Department of the Treasury	(b)	
Energy Research and Development Administration	2	
Environmental Protection Administration	(c)	
Federal Energy Administration	(c)	
Interstate Commerce Commission	19	
National Transportation Safety Board	(c)	
Total Federal	4,893	
Total Government		24,760
TOTAL		$230,232

a/Includes government expenditures for civilian transportation services. Excludes Federal, State, and local government transportation user taxes.

b/Federal revenue-sharing funds are included in State and local government transportation program expenditures.

c/Expenditures not separable from nontransportation-related agency expenditures or less than $0.5 million.

Source: "U.S. Transportation System - Federal Government's Role and Current Policy Issues," U.S. General Accounting Office, October 22, 1975, page 60.

TABLE 3

1974 TRANSIT MODE EXPENDITURES

	Expenditures (000,000 omitted)	
PRIVATE EXPENDITURES (note a):		
Commuter railroads	$ 200	
Rail rapid transit	498	
Streetcars	37	
Trolley coaches	19	
Motorbus transit	1,258	
Taxicabs	2,302	
Total private		$4,314
GOVERNMENT PROGRAMS:		
STATE AND LOCAL (note b)	837	
FEDERAL:		
Council on Environmental Quality	(c)	
Department of Housing and Urban Development	(c)	
Department of Transportation:		
Federal Highway Administration	(d)	
Federal Railroad Administration	(e)	
National Highway Traffic Safety Administration	(d)	
Urban Mass Transportation Administration:		
Urban Mass Transportation Fund:		
Urban Mass Transportation Act capital grants	870	
Federal-Aid Highway Act capital grants:		
Interstate transfer	61	
Urban substitution	35	
Technical studies grants	38	
Research, development, and demonstrations	67	
Training and university research	3	
Administration	7	
Federal contribution to Washington Metropolitan Area Transit Authority	170	
Office of the Secretary:		
Administration	4	
Transportation planning, research, and development	4	
Department of the Treasury	(b)	
Environmental Protection Agency	(c)	
Federal Energy Administration	(c)	
Interstate Commerce Commission	(c)	
National Transportation Safety Board	(c)	
Total Federal	1,259	
Total Government		2,096
TOTAL		$6,410

a/Includes government expenditures for civilian transportation services. Excludes Federal, State, and local government transportation user taxes.

b/Federal revenue-sharing funds are included in State and local government transportation program expenditures.

c/Expenditures not separable from nontransportation-related agency expenditures or less than $0.5 million.

d/Expenditures not separable from highway mode-related agency expenditures.

e/Expenditures not separable from rail mode-related agency expenditures.

Source: "U.S. Transportation System - Federal Government's Role and Current Policy Issues," U.S. General Accounting Office, October 22, 1975, page 61.

There is currently no special federal funding for actions which qualify as transportation system management or coordinated operations improvements. Some TSM actions can be funded under existing categorical programs, while others are not eligible for federal funds (e.g., staggered work hours). Funding could be made available for TSM under a separate category, or it could continue to be available through all current categories.

However, in the largest federal funding categories, there is a strong financial incentive for states and local institutions to make their capital projects as expensive as possible, since the funds which will come to the recipient from either the UMTA Section 3 or the Federal-Aid Interstate programs depend on the total cost of federally-approved projects. For UMTA Section 3 grants, the amount of dollars received depends upon the amount of costs of the specific approved project. In the Interstate program, a state's yearly share of apportionments depends upon its approved Interstate cost estimate as a percentage of the estimated total cost to complete the system in all states. In each case, the higher the cost of an institution's federally approved projects, the bigger their share of federal dollars. Thus, states and cities continually attempt to influence federal decisions on these programs to achieve such financial benefits.

Fixed formula funding (i.e., dividing the total amount of federal funds for urban transportation among geographic areas in the manner of UMTA Section 5 funds) would remove the incentive towards expensive capital projects. Alternatively, making federal funds available for virtually any kind of urban transportation expense would also eliminate financial incentives for capital projects as opposed to other approaches.

Since capital construction affects the possibilities for operations changes, the relative importance of federal funding of capital projects also has to be considered. Federal capital funds for urban transit are now close to 80% of all capital funds spent, since the possibility of gaining 80% federal funding is a very strong incentive to wait for federal approval rather than to raise funds from local sources, as the San Francisco Bay Area chose to do for their BART system.

Federal funds for highway capital improvements now provide about 30% of the total capital expenditures by all governments for highways in the United States.1/ Significant other expenditures are made by developers who build roads as part of new residential subdivisions or other new land uses. Thus, as with operations, the relative proportion of federal capital funds for transit is much greater than for highways.

1/ U.S. Department of Transportation, Federal Highway Administration, 1975 Highway Statistics. Federal funding probably provided a higher percentage of highway capital expenditures by all levels of government within urban areas.

This tends to imply that the federal government has now actually tilted its expenditures, and its direct financial incentives, much more towards transit than have other governmental jursidictions or consumers.

While the federal government's direct funding incentives are not dominating influences on highway expenditures, federal tax policy implicitly sets the cost of auto transportation. For example, the federal government does not treat free parking spaces as income for the purposes of taxation. The federal government also allows a deduction on federal income tax returns for state gasoline taxes. Thus, an implicit opportunity is missed to apply a financial incentive for increased work trip vehicle occupancy.

2. FEDERALLY-APPLIED POLITICAL INCENTIVES

Federally applied political incentives for operating improvements are weak, and there is little opportunity to make them stronger. Within the American political system, it is unlikely that any set of events would result in the federal government being able to determine urban areas' policy choices of how to coordinate transportation operations. Federal policy has to take account of the limitations on the effectiveness of politically feasible federal initiatives.

First, the federal government is not the most important political actor in urban transportation operations in any urban area. States, cities, and sometimes counties, have far more responsibilities, invest more money in operations, and are more likely to be called to political accountability for urban transportation operating results.

Second, the public does not tend to translate efficiency in multi-modal operations into political credit for state and local officeholders. If the same impact is achieved through a capital project, the public perceives economic benefits, and private contractors continue their financial support of the officeholders who support public works expenditures. Federal praise for an official whose efforts have led to an improvement in multi-modal coordination is only of momentary newsworthiness. There is far less political risk in the status quo.

It is also difficult for the federal government to use negative political incentives by inflicting punishment on an uncooperative agency. In most urban areas no single institution has the responsibility for operating the entire transportation system. Shortcomings in operations and the lack of coordination can therefore always be blamed on someone else. Any judgment among competing claims of innocence would be highly subjective.

3. FEDERALLY-APPLIED PSYCHOLOGICAL INCENTIVES

Federal personnel now give other individuals positive or negative psychological feedback on operating improvements, depending, of course, on the extent that each federal official believes in the particular actions.

Positive or negative personal relations and feedback also influence all other categories of program or action on which federal personnel interact with state or other personnel. Friendships are important factors in federal relationships to other institutions.

Federal personnel help organize or sponsor conferences for professionals to exchange information on experiences, techniques and value systems. The federal government publishes regulations and guidelines which require or describe a process of desired conduct, and other agencies are almost always involved in the development of such rules and guidelines. Personal relationships are important in the development of the rules, as well as in the day-to-day approvals of other institutions' actions.

The only direct control which the federal government has over the development of positive patterns of personal relationships is the control over relationships of their own personnel with those of other agencies. Indirectly, the sponsoring or support of meetings within the transportation profession, either locally, regionally, or nationally can foster positive relationships which contribute to a shared policy concensus and which increase chances of success in coordination.

The regular contacts which exist between federal DOT personnel and others are mostly between FHWA and state highway staffs. Interaction between UMTA, with its limited field staff, and transit agencies or cities, tends to be around specific issues. Interaction by either UMTA or FHWA with city personnel tends to occur only during controversies in which city political leaders have become involved or briefly at conferences.

4. FEDERALLY-APPLIED PROFESSIONAL INCENTIVES

The current structure of federal incentives for operations is oriented to giving professional advice on the kinds of actions which might improve transportation operations in a particular area, accompanied by mild threats of cutting off federal funding, if in the professional judgment of DOT personnel, not enough is being done on coordinating operations and implementing TSM or low cost improvements. There are no hard criteria by which the federal government judges an urban area's policy or performance on conducting urban transportation operations.

One possible response to the current system of incentives is simply to deal with federal personnel on a professional basis. If good documents are produced in response to federal paper requirements and the suggestions of federal personnel, and if local and state personnel can discuss operations and low capital improvements intelligently with federal personnel, then the urban area and the state can prevent the current structure of federal incentives from impacting them negatively (e.g., losing the federal funding necessary for their traditional non-TSM activities). In the final analysis, the federal personnel are not likely to use financial punishment if a convincing case has been made that some progress is occurring.

The state and urban area can get positive professional benefits out of responding to the federal professional incentives better than other institutions and individuals have. Individuals and institutions can build their professional reputations and prestige, and be invited to conferences or to give advice to the federal government. These operate as incentives to perform in the manner prescribed as desired institutional and professional behavior.

Conferences have served as important forums for cementing common professional value systems on policy and on understanding of issues. However, many conferences tend to be dominated by those with policy pronouncement responsibilities at various federal and state agencies, and by those with the time and inclination to prepare papers. Opportunities for participation by working level personnel who are unknown to the conference "in-group" may be limited to asking questions or to the social side of the conference.

Since one purpose of a conference is to enhance the status of the conference "in-groups," its use for this purpose will always tend to limit its usefulness for other purposes, such as enabling others to establish the personal credibility and relationships which will be useful in political decisions on operating improvements.

There is only a narrow range of incentives applied directly by the federal government to potential actions of local governments. Thus, professional and psychological incentives cannot operate as strongly on locals as on states and metropolitan planning agencies, since less personal contact takes place between federal and local transportation officials.

CHAPTER FOUR

MODEL INSTITUTIONAL ARRANGEMENTS FOR BETTER MULTI-MODAL OPERATIONS COORDINATION

An important element of this research was the derivation and analysis of institutional models that could facilitate the coordinated operation of multi-modal public transportation systems. The models proposed here represent the range of institutional settings found in urban America and have their roots in several sources:

- the case studies of Chicago, Knoxville, Los Angeles, Madison, Miami/Dade County, Minneapolis-St. Paul, Portland, San Francisco and Toronto;
- project experience of the research team which was drawn on for models not provided by the case studies; and
- earlier research by Professor Frank Colcord of Tufts University and by System Design Concepts and Skidmore, Owings and Merrill for the U.S. Congress Office of Technology Assessment.

The most comprehensive study of transportation decisionmaking in domestic and foreign cities has been done by Professor Frank Colcord.[1] Colcord surveyed the organizational arrangements and evolution of transportation policy in various urban areas, and recommended better institutions for, and approaches to, transportation decisionmaking.

Colcord observed that policy change tends to precede institutional change:

> "There is very little evidence, even, that institutional change has been a necessary precedent to policy change. There is considerable evidence to suggest that institutional changes have been perceived to be needed in order to implement or achieve policy change. In effect the policies were already changed, and the institutions were altered to make these changed policies more feasible of implementation. Thus the steps seem to have been (1) change of policy; (2) alteration of institutions; and (3) implementation of policy." [2]

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[1] Frank C. Colcord, "Urban Transportation Decisionmaking (Summary)," September, 1974, prepared for the Office of the Secretary of Transportation, U.S. DOT.

[2] Ibid., pages 83 and 84.

Colcord concludes that no single model of institutional arrangements should be applied everywhere.1/ In cases where the metropolis contains most of the population of a state, he recommends that the state develop the capacity to operate as an "urban" government, even going so far as to move into the land use planning area.2/ In most states, however, Colcord recommends that the state require transportation and land use planning to be done on a metropolitan basis according to broad goals established by the state.3/ The states' roles would be broader and supervisory, and they would devolve to the metropolitan area the power to plan and program highway capital projects.

In looking to reforms at the metroplitan level, Colcord finds the Dade County, Florida, system of direct election of metropolitan government to be a preferable arrangement because it is elective and is not based on existing jurisdictions. Toronto has also accomplished a great deal with its metropolitan form of government, but Colcord concludes that the Toronto Metro Council's effectiveness is highly dependent on its chairman.4/

Colcord also found the institutional arrangement in Minneaplis-St. Paul, in which the Governor appoints the Metro Council members, to be an appropriate way to provide for a state supervisory role, although the Metro Council's powers are limited in comparison with those of Dade County and Metro Toronto.5/

Consistent with System Design Concepts' case study findings, Colcord states that metropolitan government does not have to be responsible for the whole urban region to be effective, as long as it covers a significant portion of the region. The state, as the parent government, will still need to protect the interests of the fringe communities.6/

1/ Ibid., page 89.

2/ Ibid., pages 90 and 91.

3/ Oregon has implemented this approach through its Land Conservation and Development Commission. In the Portland region, which makes up half the state's population, the Columbia Region Association of Governments prepares the plan to which local plans must conform.

4/ Colcord, op. cit., page 94.

5/ Colcord, op. cit., page 94.

6/ Colcord, op. cit., page 95.

In order to increase the responsiveness of decisionmaking, Colcord would increase the role of elected officials of general purpose government and would channel citizen participation through the normal political procedures of general purpose governments. Colcord recommends that there be no modal dedication of funds, in order to remove a present disincentive to integrated planning. He also recommends that funds be channeled to metropolitan areas which have effective decisionmaking agencies.

Alternative organizational models were developed in an "Assessment of Community Planning for Mass Transit,"1/ and dealt principally with the institutional structure for transit capital planning. The OTA study also concluded that no single institutional model was appropriate for every metropolitan area. Figure 2 from the OTA report shows four alternative organization models for transit decisionmaking, each with nine areas of responsibility.

A. THE COMPONENTS OF A MODEL INSTITUTIONAL ARRANGEMENT

A model institutional arrangement has three components:

- The institutions with decisionmaking responsibilities affecting operations. These institutions include metropolitan planning organization (MPO's), state agencies, city and county general purpose governments, regional transit authorities, private transit, taxi and paratransit operators, funding agencies, and special purpose institutions such as federations of transit operators.

- The responsibilities executed by the operating institutions to provide transportation services. There are twelve areas of responsibility that significantly affect an agency's ability to effectively coordinate the operation of several modes or integrate the transit service provided by several operators. These responsibilities are shown in Figure 3.

- The assignment of decisionmaking responsibility for these twelve functions to the institutions.

1/ Skidmore, Owings and Merrill and System Design Concepts, Inc., "An Assessment of Community Planning for Mass Transit--Summary," United States Congress, Office of Technology Assessment, February, 1976, page 26.

FIGURE 2

Alternative Organizational Models For Transit Decisionmaking

Alternatives for Designating Primary Responsibilities	Agency or Government Unit	Area of Responsibility (D = Decisionmaking, D/S = Shared Decision, A = Advisory, — = Minor, if any)								
		1 Comprehensive/planning	2 Long-range regional transportation planning (multi-modal)	3 Transit system and project planning	4 * Transit project scheduling and budgeting	5 Highway project scheduling and budgeting	6 Transit financing (Federal aid, bonding, taxing and fares)	7 Final transit design, construction, operation and maintenance	8 Final highway design, construction, operation and traffic management	9 Development plan implementation and land use controls
1 Strong Metropolitan Agency Role (could be metro-government)	a. *Metro Planning Agency*	D	D	D	[D]	D/S	D/S	D/S	D/S	D/S
	b. State Agency (e.g., DOT)	A	A	A	A	D/S	D/S	A	D/S	A
	c. Metro Transit Authority	—	A	A	A	A	D/S	D/S	A	—
	d. City & County Governments	A	A	A	A	D/S	D/S	D/S	D/S	D/S
2 Strong State Role (could be state DOT, or state led Ad Hoc Organization)	a. Metro Planning Agency	D/S	D/S	A	A	A	A	A	A	A
	b. *State Agency (e.g., DOT)*	D/S	D/S	D/S	[D]	D/S	D/S	D/S	D/S	D/S
	c. Metro Transit Authority	—	A	D/S	A	A	D/S	D/S	A	A
	d. City & County Governments	D/S	A	A	A	D/S	D/S	A	D/S	D/S
3 Strong Metro Transit Authority Role (if it has a strong political base)	a. Metro Planning Agency	D/S	D/S	A	A	A	—	—	—	A
	b. State Agency (e.g., DOT)	A	A	A	A	D/S	D/S	A	D/S	A
	c. *Metro Transit Authority*	A	D/S	D	[D]	D/S	D/S	D	D/S	D/S
	d. City & County Governments	D/S	A	A	A	D/S	D/S	A	D/S	D/S
4 Strong Local Government Role (strong central city or federation	a. Metro Planning Agency	D/S	D/S	A	A	A	A	—	—	A
	b. State Agency (e.g., DOT)	A	A	A	A	D/S	D/S	A	D/S	A
	c. Metro Transit Authority	—	D/S	D/S	A	A	D/S	D/S	A	—
	d. *City & County Governments*	D/S	D/S	D/S	[D]	D/S	D/S	D/S	D/S	D

This figure originally appeared as "Figure 4" on page 26 of An Assessment of Community Planning for Mass Transit, Volume 1: Summary, United States Congress, Office of Technology Assessment, February, 1976.

*Considered by authors to be key responsibility. See page 20 of this report.

FIGURE 3

KEY RESPONSIBILITIES AFFECTING COORDINATED OPERATIONS

1. PUBLIC TRANSIT SERVICE PLANNING AND OPERATIONS

Covers all services operated by public transit agencies, as well as control of routes, schedules and transfer arrangements and marketing of services.

2. FREEWAY OPERATIONS

Includes lane restrictions and enforcement, access control, maintenance and design.

3. SURFACE OPERATIONS

Includes lane or vehicle restrictions, signals, pavement marking and signing, on-street parking, pedestrian control and facilities, maintenance and design and other traffic engineering measures.

4. TRANSIT FINANCING

Covers the sources of funds (federal and state aid, bonds, taxes, fares, and service contracts) and the means of allocating these funds.

5. HIGHWAY FINANCING

Covers the sources of funds (federal and state aid, local revenues, bonds and tolls) and the means of allocating these funds.

6. TRANSIT IMPROVEMENT SCHEDULING AND BUDGETING

Refers to the programming and expenditure of funds.

7. HIGHWAY IMPROVEMENT SCHEDULING AND BUDGETING

Refers to the programming and expenditure of funds.

8. REGULATION AND LICENSING OF PRIVATE TRANSIT AND PARATRANSIT OPERATORS

Includes the granting of certificates of public convenience and necessity, licensing of drivers, safety inspection, insurance requirements, and definition of allowable services and market areas of private operators, including taxis, limousines, buses and vans.

9. REGULATION OF OFF-STREET PARKING

Includes the granting of licenses to operate carparks, administration of parking taxes, and allotment of parking spaces to residential and commercial buildings.

10. TERMINAL AND TRANSFER POINT OPERATION

Includes park-and-ride lots, multi-modal stations, uni-modal terminals, and other intermodal transfer points.

11. REGIONAL RIDESHARING PROGRAM MANAGEMENT

Covers carpool and vanpool matching services, private subscription bus, and rideshare taxi operations.

12. SPECIAL TRANSPORTATION SERVICES

Includes elderly and handicapped services and services provided by social services agencies.

B. CANDIDATE MODELS OF INSTITUTIONAL ARRANGEMENTS

Eight candidate models are presented here. These models cover the range of situations existing in American urbanized areas at present, as well as variations of innovative uni-modal institutions found in the United States or Western Europe. The eight models shown in Figure 4 are:

1. State Dominant;
2. City or County Dominant;
3. Metropolitan DOT (Multi-Jurisdictional);
4. Metro General Purpose Government;
5. Regional Association of Governments;
6. Multi-Modal Federation of Operators;
7. Regional Multi-Modal Funding Agency; and
8. State/Metro Government Balanced Power Structure.

1. STATE DOMINANT MODEL

In several small Eastern states, including Connecticut, Rhode Island, Massachusetts, New Jersey and Maryland, most key decisions on the financing and operation of urban transportation are made at the state level.

This model builds on state control found in these states, so that the state through its department of transportation, public service commission, police and other agencies has at least a share of all key decisions controlling public transport operations in its urban areas.

Maryland, for example, through its Department of Transportation's Mass Transit Administration (MTA), owns and operates bus public transportation in metropolitan Baltimore, and provides all non-federal operating subsidies. The MTA is building and will operate Baltimore's rapid rail transit system. The State Highway Administration of the DOT operates much of the highway system in the Baltimore area.

In New Jersey, the State DOT has the decisionmaking responsibility for all traffic control devices, regardless of where they are located. New Jersey also provides nearly all subsidy funds for commuter rail and bus transit services in the State, and contracts for service with all private operators requiring a subsidy.

With the basis for state control of transit, freeway and local street operations established, it follows that in this model the state would also control all decisions relating to financing of transit and highway improvements, including sources of funds, allocation of funds, and budgeting and scheduling decisions.

FIGURE 4

Alternative Institutional Models For Operating Urban Transportation Systems

Alternatives for Designating Primary Responsibilities	Participants in Operations Decisions	Area of Responsibility (D = Decisionmaking, D/S = Shared or Split Decisionmaking, A = Advisory, - = Minor, if any)											
		1 Regular Route Transit Service Planning and Operations	2 Freeway Operations 2/	3 Surface Street Operations 3/	4 Transit Financing 4/	5 Highway Financing 5/	6 Transit Improvement Scheduling and Budgeting	7 Highway Improvement Scheduling and Budgeting	8 Regulation and Licensing of Private Transit and Paratransit Operators	9 Regulation of Off-Street Parking	10 Terminal and Transfer Point Operation	11 Regional Ridesharing Program Management	12 Special Transportation Services 6/
1 State Dominant	a. Metro Planning Organization	A	A	A	A	A	A	A	A	-	-	A	-
	b. State Agency (e.g., DOT or Police)	D	D	D	D	D	D	D	D/S	D/S	D/S	D/S	D/S
	c. City or County Government	A	A	A	A	A	A	A	D/S	D/S	D/S	D/S	D/S
	d. Metro Transit Authority	-	-	-	-	-	-	-	-	-	-	-	-
	e. Private Operators 1/	A	-	-	-	-	-	-	A	-	-	A	A
2 City or County Dominant	a. Metro Planning Organization	A	A	A	A	A	A	A	-	A	A	A	A
	b. State Agency (e.g., DOT or Police)	-	A	-	D/S	D/S	-	D/S	D/S	-	D/S	D/S	D/S
	c. City or County Government	D	D	D	D/S	D/S	D	D/S	D/S	D	D/S	D	D/S
	d. Metro Transit Authority	-	-	-	-	-	-	-	-	-	-	-	-
	e. Private Operators 1/	-	-	-	-	-	-	-	-	-	-	A	A
3 Metropolitan DOT (multi-jurisdictional)	a. Metro Planning Organization	A	A	A	A	A	A	A	-	-	-	A	A
	b. State Agency (e.g., DOT or Police)	-	A	A	D/S	D/S	A	A	A	-	A	A	A
	c. City or County Government	A	A	A	D/S	D/S	A	A	A	D/S	A	A	A
	d. Metro Transit Authority	-	-	-	-	-	-	-	-	-	-	-	-
	e. Private Operators 1/	A	-	-	-	-	A	-	-	-	-	A	A
	f. Metro DOT	D	D	D	D/S	D/S	D	D	D	D/S	D	D	D
4 Metro General Purpose Government	a. Metro Government (MPO)	D	D	D	D/S	D/S	D	D	D	D	D	D	D
	b. State Agency (e.g., DOT or Police)	-	A	-	D/S	D/S	-	A	A	-	A	A	A
	c. Local Municipalities	A	-	A	-	-	A	A	A	A	A	A	A
	d. Metro Transit Authority	A	-	A	A	-	A	A	A	-	A	A	A
	e. Private Operators 1/	-	-	-	-	-	-	-	A	-	-	A	A
5 Regional Association of Governments	a. Metro Planning Organization	A	A	-	A	A	A	A	A	A	A	A	A
	b. State Agency (e.g., DOT or Police)	-	D	-	D/S	D/S	D/S	D/S	D/S	-	D/S	D/S	D/S
	c. City or County Government	D/S	A	D	D/S	D/S	D/S	D/S	D/S	D	D/S	D/S	D/S
	d. Metro Transit Authority	D/S	A	A	D/S	-	D/S	A	-	-	D/S	-	D/S
	Private Operators 1/	-	-	-	-	-	-	-	A	-	-	A	A
6 Multi-Modal Federation of Operators	a. Metro Planning Organization	A	A	A	A	A	A	A	-	A	-	A	A
	b. State Agency (e.g., DOT or Police)	D/S	D	-	D/S	D/S	D/S	D/S	D/S	-	A	D/S	A
	c. City or County Government	D/S	A	D/S	D/S	D/S	D/S	D/S	D/S	D/S	A	D/S	A
	d. Metro Transit Authority	D/S	A	D/S	D/S	-	D/S	D/S	D/S	A	A	D/S	D/S
	e. Private Operators 1/	D/S	-	A	A	-	A	-	A	-	A	D/S	D/S
	f. Federation of Operators	D/S	A	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D	D/S	D/S
7 Regional Multi-Modal Funding Agency	a. Metro Planning Organization	A	A	A	A	A	A	A	-	A	A	D/S	A
	b. State Agency (e.g., DOT or Police)	A	D/S	-	D/S	D/S	A	A	D/S	-	D/S	A	A
	c. City or County Government	A	A	D/S	A	A	A	D/S	D/S	D/S	D/S	A	D/S
	d. Public Transit Operators	D/S	A	A	A	-	D/S	-	-	-	D/S	A	D/S
	e. Private Operators 1/	D/S	-	-	-	-	-	-	A	-	-	A	A
	f. Regional Funding Agency	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D/S	A	D/S	D/S
8 Metro/State Government Balanced Power Structure •	a. Metro Government	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D/S
	b. State Agency (e.g., DOT or Police)	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D/S	-	D/S	D/S	D/S
	c. City or County Government	A	A	A	A	A	A	A	A	D/S	A	A	A
	d. Metro Transit Authority	A	A	A	A	-	A	-	-	-	A	A	A
	e. Private Operators 1/	-	-	-	A	-	-	-	A	-	-	A	A

1/ Includes bus, taxi and other for-hire vehicle operators.

2/ Including enforcement of vehicle restrictions.

3/ Including on-street parking, pedestrian facilities and enforcement of vehicle restrictions.

4/ Federal aid, state aid, bonding, taxing, fares and service contracts.

5/ Federal aid, state aid, bonding, and tolls.

6/ For example, elderly and handicapped, social agency, etc.

Intrastate regulation of private bus and van operators is usually the responsibility of state public service or public utilities commissions. This regulatory control includes licensing of drivers, definition of an operator's service area and allowable fares, safety inspection and insurance requirements. This model allows city and county governments to retain some regulatory control over taxis, vans, limousines and jitneys operating within their jurisdictions, but local governments would be required by law to consult with the state before allowing changes in the operating conditions of these modes.

The state could participate in off-street parking regulation through a state parking tax on each parking space, through state-controlled licensing of new off-street carparks, or through state issuance of indirect source permits to control air pollution emissions. Local governments, however, would retain their traditional role in decisions affecting the location and amount of off-street parking.

The basis for a major state role in establishing and operating a regional ridesharing program comes from the CalTrans participation in staffing and managing the Commuter Computer carpool and vanpool matching services in Los Angeles and surrounding counties.

Through their administration of the UMTA 16(b)2 program and through conformance with Section 165B of the Federal-Aid Highway Act of 1973, the states already play an important role in delivering transportation services to the elderly and handicapped.

Thus, in this model the state has sole responsibility for all important decisions in seven of the twelve key operations functions, and a share of the decisionmaking responsibility for the remaining five functions. Coordination of operations changes would be an in-house management task at the state DOT. The principal coordinator for policy level decisions would be the Secretary of the DOT, while technical coordination would be accomplished by the modal administrators or heads of functional units, or their chief technical staff.

2. CITY OR COUNTY DOMINANT MODEL

In the nine case study metropolitan areas, the central cities were the most effective coordinators of operating improvements. Dade County, Florida, which contains the city of Miami, has more control of regional multi-modal operations than any other general purpose government in the United States. Los Angeles County has been the leader in bringing about operations improvements and institutional coordination in Southern California, and recently moved to strengthen its operations decisionmaking role by creating the Los Angeles County Transportation Commission.

The city or county dominant arrangement need not cover the whole SMSA or urbanized area -- only a significant portion of it. This model is potentially applicable to those urban areas where the central city or county has a majority or near majority of urban area population. It is also hard to imagine anything but a city or county dominant or joint city or county-state arrangement for the six U.S. cities of over one million population (New York, Chicago, Detroit, Philadelphia, Los Angeles and Houston).

City or county control of transit operations and service planning is common in the United States. Of the case study metropolitan areas, the cities of Knoxville and Madison and Dade County have virtually total control, while the City of Chicago and Los Angeles County have very sizable roles in transit planning and operations. General purpose local government control of surface street operations is also commonplace.

In this model the dominant local jurisdiction would operate transit service throughout the area, as does Chicago's Transit Authority, and would control a majority of the appointments to the transit authority board of directors. The dominant local government would control freeway operations within its boundaries, with the state's role limited to establishing standards and guidelines and ensuring that they are met. The state would still build freeways.

The state would continue to be a major contributor to transit and highway capital and operations improvements, so that under this model the dominant city or county would share control over transit and highway financing decisions.

As the transit owner and operator, the dominant city or county would control the programming and budgeting of transit improvements. The state would still be the major highway builder and, therefore, would share in decisions on scheduling and budgeting of highway improvements.

The assignment of the remaining responsibilities in Figure 4 reflects a situation common in many cities and counties today. Regulation and licensing of private operators would be shared between the dominant city or county and the state, as would the operation of terminals and transfer points.

The regional ridesharing program would be similar to Knoxville's, in which the City is a broker for ridesharing services throughout the metropolitan area. The provision of special services for elderly, handicapped or social service agencies would also follow the Knoxville experience. There, the City is encouraging social service agencies to contract with private paratransit operators through the Knoxville Department of Public Transportation Services. The need for social service agencies to purchase and operate their own vehicles is then eliminated.

In this model, coordination of operations improvements would primarily be a management responsibility of the dominant city or county. The mayor of the dominant city or the county manager of the dominant county could direct the managers of their operating agencies (e.g., traffic engineering and the transit agency) to take actions to coordinate operations, though such top level direction would usually be of a policy nature. "Nuts and bolts-type" coordination of operations changes would nominally be done by the traffic engineer and transit agency director, although in a well-run organization their technical staff subordinates would be the most likely coordinators. Many dominant cities and counties have created a staff position for a full time operations coordinator -- such is the case in Knoxville, Madison, and Dade County.

3. METROPOLITAN DOT

Most urbanized areas face issues in transportation funding, planning and operations that transcend city, county or state boundaries. The responsibilities that must be discharged in order to resolve these issues are assigned to numerous state, city, county, special purpose district and regional agencies. Hence, it seems logical to create an institutional arrangement which consolidates within a single metropolitan wide agency the many responsibilities and functions related to urban system operations. The Metropolitan Department of Transportation appears as the third model in Figure 4.

Most states have already created state departments of transportation containing the modal administrations (aviation, highways, mass transit) which formerly operated as independent agencies or did not exist at all. Similarly, many cities have multimodal transportation departments (e.g., New York City and Madison, Wisconsin) or the equivalent, with modal administration responsibilities distributed among two or more city agencies under the overall direction of the mayor. The Metropolitan DOT would cover a geographic area approximating the SMSA or the urbanized area.

Creation of a Metropolitan DOT would require state enabling legislation and local voter approval. The state enabling legislation would define the DOT's geographic coverage, powers, responsibilities, and the composition of a Metropolitan Transportation Board to oversee the DOT.

If voter approval was obtained, the state's role would be reduced significantly. All state highway planning, design and operations responsibilities would be transferred to the Metropolitan DOT, and the state would merely assure connectivity of interstate or interregional facilities passing through the metropolitan area.

All public transit operators would be taken over by the Metropolitan DOT and operated in a coordinated and integrated fashion. All surface street planning, design, operating and maintenance responsibilities, previously resting with city or county governments, would be assumed by the Metropolitan DOT, as would aviation, port, ferry or other modal responsibilities of local or regional agencies.

All staff of local, regional, or state agencies whose responsibilities are assumed by the Metropolitan DOT, would be eligible for employment with the new DOT.

The Metropolitan DOT would become the designated recipient of all federal and state aid, and would spend these funds on projects and services according to the Department's priorities and within limitations imposed by federal categorical restrictions. State aid would be spent without restrictions as to mode or project, unless otherwise specified. The DOT would also have a guaranteed local source of income, such as a sales tax, motor vehicle license fees or a property tax. The DOT would have bonding authority and could enter into service contracts with private transit and paratransit operators.

The state would still be an important source of income for the Metropolitan DOT and, therefore, would retain its participation in decisions on highway and transit financing.

The Metropolitan DOT would regulate and license all private transit, taxi, and paratransit operators, in order to protect itself as the public transit operator and financier.

Decisions regarding the supply and price of off-street parking would be shared by the Metropolitan DOT with local jurisdictions.

As with the State Dominant and City Dominant models, operations coordination would be accomplished within the DOT. The potential for coordination problems would be reduced if the DOT were organized along functional lines (e.g., planning, operations) rather than modal lines (e.g., highways, transit).

4. METRO GENERAL PURPOSE GOVERNMENT

This model is based on the metropolitan government of Dade County, Florida, with control over freeway operations based on the Greater London Council. Implementation of this model would probably require state enabling legislation, an amendment to the state constitution, or both. The Florida State Constitution was amended to allow home rule in Dade and other counties that wanted it.

Dade County is governed by eight County Commissioners who run from eight districts but are elected County-wide. A Metro

Mayor, who runs separately and is elected on a County-wide basis, serves as Chairman of the Board of County Commissioners. These nine people are also the voting members of the policy board of the MPO for Dade County. A County Manager administers the delivery of public services, including transportation. A similar arrangement is assumed for this model, although the specifics could be varied.

Possibilities also exist for a metro government (like Seattle's) with less comprehensive powers than Dade County, which could still function effectively from the standpoint of transportation operations.

As shown in Figure 4 the Metro General Purpose Government would have planning and programming responsibilities for all regular route transit service, surface street operations, taxi, limousine and jitney regulation and licensing, special transportation services, and the freeway operations decisionmaking control that usually rests with the state. As in the Metropolitan DOT model, the state role in freeway operations would be advisory, to assure that standards are met and there is continuity of statewide or interstate routes. Since the state would continue to be a major source of transportation funds, it would have the necessary leverage to see that freeway operating standards are maintained.

The precedent for significant control of public off-street parking on a metropolitan scale has been established by the Greater London Council. However, existing private off-street parking would continue to be controlled by its owners, though regulated by the metro government.

The issue of operations coordination would be addressed exclusively within the metro government structure. The need for coordination will depend on whether the transportation responsibilities are organized along modal or functional lines. Dade County's Metro Government created a new position for a Transportation Coordinator to oversee the highway and transit departments, although this step may not have been necessary if the County was organized along functional lines.

5. REGIONAL ASSOCIATION OF GOVERNMENTS

In this model, the agency responsible for coordinating multi-modal operations decisionmaking is a regional association of governments -- either a voluntary association, such as the Southern California Association of Governments (SCAG), which is the MPO for the Los Angeles region, or a state-mandated association, such as the Columbia Region Association of Governments (CRAG), which is the MPO for the Portland, Oregon, metropolitan area. This model could also be called "fragmented" decisionmaking.

This model reflects the decisionmaking environment in many urbanized areas throughout the United States in which a regional association of governments serves as "the forum for cooperative decisionmaking by principal elected officials of general purpose local government." Most MPO's designated by Governors to carry out federal planning requirements have been regional associations of governments.

These MPO's annually endorse the plans and programs which are outputs of a planning process that the "MPO in cooperation with the State, and in cooperation with publicly owned operators of mass transportation services, shall be responsible for carrying out." One element of the required transportation plan is addressed to transportation systems management (TSM) and is to include traffic engineering, regulatory, management and operational improvements to the existing transportation system.

In order to participate in system management planning, most MPO's have had to expand their purview, which had previously been limited to long range planning. Most regional associations of general purpose governments had no prior experience or staff capability to carry out an operations planning mandate. Moreover, since membership in an association of governments is voluntary at worst and legally required by the state at best, individual jurisdictions which sit on an association of governments policy board have little incentive to view TSM from any perspective except that which best represents their own jurisdictional interests and priorities.

The technical staff of the regional association of governments generally depend on highway and transit agencies to supply a list of TSM projects, which committees of technical representatives from those agencies compile into the TSM element. Projects contained in the TSM plan usually reflect the results of a bargaining and negotiation process among local jurisdictions in which each jurisdiction seeks to get its top priority projects into the plan, regardless of the impact on the system as a whole.

This model assumes a continuation of past experience in which the regional association of governments generally advises implementing agencies who share the responsibilities for transit service planning, freeway operations, surface street operations, ridesharing programs, regulation and other key management-related functions.

Operations coordination and integration of services would be a problem under this model, since it would continue an approach that has had only piecemeal successes to date. Many different agency heads or technical staff and local elected officials would have an opportunity to function as coordinators for particular projects or service improvements. These opportunities for coordination would depend, however, on circumstances in which coordination is obviously in the best interest of the involved parties and does not conflict with other interests of the participants.

6. MULTI-MODAL FEDERATION OF OPERATORS

This model is based on the Federation of eight transit operators in Hamburg, Germany, but opens membership to all public and private operators of urban transportation services. Membership would be voluntary; no operator could be forced to join, nor prevented from leaving, the Federation.

The basic function of the Federation would be to achieve coordinated, integrated multi-modal system operation. The most important tasks required to accomplish this goal would be the division of responsibilities between the Federation and its individual members, and the development of mechanisms to share revenues among the individual operators.

The Federation would plan transit networks, routes, transfer points, paratransit routes and services and collect ridership and service data necessary to carry out this function. The Federation would develop coordinated schedules and handle all marketing functions for member operators.

The Federation would establish fares and redistribute farebox revenues among participating operators according to an agreed upon formula. The formula would guarantee that the relative financial position of each operator stayed equal to that before formation of the Federation. The Federation would adjust the distribution formula to reflect entry and exit of operators from the group.

The Federation would receive and distribute federal and state operating assistance according to a method of distribution worked out within the Federation. The Federation would make application for federal and state capital grants on behalf of the individual operators.

All highway and surface street operations decisions for the metropolitan area would be made by the Federation and implemented by the appropriate state, city or county agencies. Capital construction projects, however, would still be carried out by the state, city and county agencies.

The Federation would recommend regulation and licensing requirements to facilitate efficient system operations to the local and state agencies with legal responsibility for regulation and licensing. A similar procedure would be followed on the supply and location of public and private off-street parking.

The Federation would plan and manage the ridesharing programs and the provision of transportation services for the elderly and handicapped.

The Federation's staff could be drawn from the service planning, traffic engineering and freeway operations staffs of the member operators, or new staff could be hired. Federation staff would work in multi-modal teams responsible for geographic zones of the metropolitan area so that operations coordination would be the result of on-going staff work, brought about by decisions made by technically capable operations planners. Coordination would thus be routinized as the major reason for existence of the Federation.

7. REGIONAL MULTI-MODAL FUNDING AGENCY

In this model, which is based on the Regional Transportation Authority in the Chicago area, the state would establish a multi-modal funding agency subject to voter approval in a referendum of the cities and counties comprising the metropolitan area. The Funding Agency would be directed by a board of representatives from the major cities and counties in the region, with representation proportional to population. It would be staffed with transit service planners and traffic engineers.

The Funding Agency would have a guaranteed source of income, taxing authority, and the power to issue bonds up to a specified limit. The Funding Agency could contract for transit services and determine fares, routes, schedules and other operating characterisitcs. It would also receive and dispense UMTA Section 5 operating assistance funds.

The Funding Agency would receive and distribute FAUS funds to cities and counties in the metropolitan area to be expended at local discretion. A certain portion of FAUS funds would have to be spent on projects agreed to by the central city of the metropolitan area. The Funding Agency could, at its discretion, provide the local match for federal highway aid, if a city or county government is unable to do so. The Funding Agency would have no direct control over operations decisions on state freeways, although it could assist the state in matching federal funds and thereby gain a voice in the decisionmaking process.

Through its authority to contract for services and its independent source of revenue, the Funding Agency could undertake demonstration projects to test transit and paratransit services that operators might otherwise be reluctant to undertake.

The Funding Agency would encourage efficient operations by developing service criteria and performance standards to be met by each subsidized operator. Subsidy payments would be reduced for operators failing to meet these standards.

The Funding Agency would ensure that fares are unified and that schedules and transfer arrangements are coordinated among operators. It would prepare comprehensive system maps and

handle promotion of services and information distribution and marketing. The Funding Agency would also develop a mechanism for setting priorities among areas of the region competing for new or improved transit services, and for prioritizing surface street operations improvements.

Under this institutional arrangement, the director of the Funding Agency could be the operations coordinator in both a policy and technical sense. However, in the event of disagreements among Funding Agency board members, policy coordination could be significantly influenced by a particular board member or by an influential local elected official who does not sit on the board.

8. STATE/METRO GOVERNMENT BALANCED POWER STRUCTURE

This model, which loosely incorporates a structure found in several foreign cities (including Toronto, Canada; London, England; and Paris, France), provides for a balanced division of operations decisionmaking responsibilities between the state and a metropolitan government.

In the Toronto case, the Province of Ontario, which contains Toronto and is comparable to a very large American state, has overall responsibility for planning and providing an integrated transportation system within its boundaries. Through its Ministry of Transportation and Communications, the Province does long range planning, construction, maintenance, transportation research, provides financial assistance to local governments for both capital projects and operations, and directly finances commuter transportation services through its Toronto Area Transit Operating Authority (TATOA).

The Ontario Ministry of Transportation and Communications has also done innovative work in developing a methodology to allocate transit operating subsidies in an equitable, constant and predictable manner, while at the same time allowing local municipalities sufficient flexibility to tailor operations to meet their needs. This strategy is based on a theoretical revenue/cost ratio for each of 56 municipally owned and operated transit systems in the Province.

Metropolitan Toronto Government operates subway, trolley, streetcar and bus transit services through its Toronto Transit Commission. The Roads and Traffic Department has traffic operations responsibilities, while the Metro Licensing Commission regulates taxicabs, and some public off-street parking. The chairman of the Metropolitan Toronto Government sits on both the TATOA Board and TTC Board, thus facilitating cooperation between the Provincial and Metropolitan governments.

A similar two-tiered division of transportation planning responsibility exists in England and France. In England, structure plans are prepared for broad geographic areas by local authorities working together within guidelines prepared by the Central Government. After an area'a structure plan is approved by the Secretary of State for the Environment, more detailed local plans are prepared by each local jurisdiction. These local plans contain both public and private development.

The French national government and local officials working together prepare long-range land use plans (covering 20 to 40 year time horizons), and after their approval, collaborate on 15 to 20 year detailed plans. Once this second level plan is approved, local officials are responsible for implementing it.

In this model, the state and the metropolitan government would share transit operations decisions in a manner similar to Toronto. This division of responsibilities is shown in Figure 4.

For freeway and surface street operations, the state would develop operating standards and general service criteria and provide funding support and monitor the system to ensure that its standards are being met. The metropolitan government would set priorities, implement operations changes, and monitor system performance measures within the overall guidelines promulgated by the state.

All highway and transit financing decisions would be shared by the state and metropolitan government, since state funds would be used and state standards and overall guidelines must be met.

This model entails a larger financial commitment to multimodal system operations in an urbanized area than most states have thus far been willing to make. However, in return for its investment, the state gets a major role in all critical transportation decisions that affect the operation of a vital public service in a region that will usually be crucial to the overall stability of the state's economy.

The opportunity to coordinate operations policy decisions would be available to the Secretary of the State Department of Transportation and the Director of Transportation for the Metro government. Technical operations coordination would have to occur between the chief technical staff of the state DOT and the Metro government, as well as in-house between the modal administrators of the Metro government (or within the operations unit of a functional organization).

C. APPLICABILITY OF MODEL INSTITUTIONAL ARRANGEMENTS TO U.S. METROPOLITAN AREAS

None of the models is universally applicable to all American metropolitan areas, since most metropolitan areas already have many of the institutional attributes of one or two particular models. For example, the State Dominant model was based on circumstances found in several small Eastern states. Obviously then, the State Dominant model would be most applicable to the urbanized areas of those states and, perhaps, to some others in which one urban region makes up a significant portion of the state and state government is close to that region.

The State Dominant model is not, however, appropriate for a metropolitan area such as Los Angeles. The home-rule tradition in the Los Angeles area, where local control of decisions is highly valued (witness the weak MPO, the Southern California Association of Governments, created by the six-county Los Angeles metropolitan area), would render implementation of the State Dominant model infeasible. Similar limitations hold true for the other model institutional arrangements.

The interesting institutions found by the research team all came about because there was a strong incentive acting on the state legislature or on local general purpose governments to change. In Dade County rapid growth in the late 1950's and the attendant requirements for public services induced Miami and other local municipalities to seek and obtain legislation from the State of Florida enabling local jurisdictions and unincorporated areas of the County to create a metropolitan government through local referendum. "Municipal distinctions became less important to the economically unified, and interdependent, region." 1/ Hence, the primary incentive for institutional reorganization could be simplistically termed financial, although numerous other social and political factors contributed to passage of the metropolitan charter.

In the Minneapolis-St. Paul area, the presence in St. Paul of the Minnesota State Legislature had a lot to do with creation of the Metrpolitan Council. The Legislature's concern with the economic importance of the Twin Cities to the financial growth of the entire State and the need for orderly planning of regional development led to the creation of the Metro Council in 1967. The Metro Council was created to establish a framework to coordinate regional development in the seven-county Minneapolis-St. Paul metropolitan area. As in Dade County, the primary incentive was financial.

1/ Frank C. Colcord, Jr., and Steven M. Polan, "Urban Transportation Decisionmaking (Miami/Dade County: Case Study)," for the Office of the Secretary, U.S. Department of Transportation, July, 1973, page 4.

The Regional Transportation Authority in the Chicago area came into existence primarily because of concern at the State level over the increasing State contribution to the operating costs of the principal public transit operator in the Chicago region. Following approval of enabling legislation by the Illinois Legislature, the referendum in the Chicago region passed on the strength of the votes of City residents. Since the City owns the principal transit operator in the Region, the incentive for the City's residents to vote for an institution that would obtain solid financial backing for the operator are obvious.

The County Transportation Commission in Los Angeles was created by the State at least partially because of the dissatisfaction with the performance of two regional agencies, the Southern California Rapid Transit District (SCRTD) and the Southern California Association of Governments (SCAG). The former agency is the principal bus transit operator in the region and the latter is the MPO. The intent of the legislation creating the County Trnasportation Commission was to bring the transportation decisionmaking responsibility closer to the local governments -- a political incentive, but one which certainly also has important financial implications as well.

Similarly, local governments require sound incentives before adjusting their internal institutional arrangements. Dade County, for example, created a new Office of Transportation Administration under the County Manager to ensure that development of the Miami area's rail transit system was coordinated with the County's bus transit services and local street and highway systems.

Interest in controlling the operating costs of the local bus system was an incentive for Knoxville, Tennessee to create their Department of Public Transportation Services, which is responsible for both the regular route bus transit system in the City and the regional ridesharing program.

Obviously, creation of new institutions or the restructuring of existing institutional arrangements does not occur by chance. The opportunities to negotiate a rearrangement of the institutional structure for transportation operations will depend on the occupants of key elected offices at the state and local level, and on the interaction of numerous incentives used by these elected officials, and those with access to them, to alter existing institutional policies, performance, process or arrangements. These opportunities will vary significantly from one metropolitan area to another. Moreover, an area's existing institutional structure will pretty much dictate the feasible options for rearrangement of, or addition to, the existing institutions.

Of the 33 largest metropolitan areas (those with a population over one million in 1970), the research team has reasonable knowledge of the political and institutional considerations

likely to affect the choice of an institutional arrangement in New York, Los Angeles, Chicago, San Francisco-Oakland, Washington, Boston, Baltimore, Houston, Newark, Minneapolis-St. Paul, Seattle-Everett, Patterson-Clifton-Passaic, Miami, and Portland. For these 14 metropolitan areas an estimate is made of which model, or several models, that area could most logically evolve towards. The research team is specifically not making an estimate that any area will ever implement such an institutional arrangement. Figure 5 indicates that the potential of existing institutional arrangements covers a broad spectrum of the models considered. Entries occur for City and County Dominant, State Dominant, Metro General Purpose Government, Metropolitan DOT, Regional Funding Agency, and joint Metro (or City or County)-State shared decisionmaking responsibility.

Population can be used as a demographic measure of the potential for a city dominant institutional arrangement. On population criteria for SMSA's in 1970, only 7 cities of the 33 largest SMSA's -- New York, Houston, Dallas, Milwaukee, San Diego, Indianapolis, and New Orleans -- had more than 50% of the population of their defined SMSA's. Central cities between 40 and 50 percent were Los Angeles, Chicago, Philadelphia, Baltimore, Kansas City, Denver, and San Jose. Thus, less than half of the urban areas over one million population have a central city dominant in a population sense.

Political influence does not, of course, depend entirely on a city's proportion of urban area population. In two of the case study cities, Chicago and Portland, the political skills of leaders within the central city were strong enough to make the city the most influential institution in transportation decision-making.

In several metropolitan areas, a county is the logical entity to focus upon as the dominant local institution. Dade County and Los Angeles County from among the case study areas fit this possibility.

Among the large urban areas, Newark and Patterson-Clifton-Passaic in New Jersey, and Baltimore, Maryland fit the State Dominant model, not because of local urban factors, but because of the history of state involvement and the initiatives taken by the state in transportation.

Possibilities for metro general purpose governments or Metro DOT's could evolve out of those places which already have limited purpose metropolitan agencies. Examples would be the Pittsburgh or Seattle areas and the smaller urban area of Nashville, Tennessee. These types of arrangements are less likely in other areas because they depend on someone taking initiative to create a new agency rather than to accrue more power within an existing government.

FIGURE 5

INSTITUTIONAL MODELS APPLICABLE
TO U.S. METROPOLITAN AREAS

Urban Areas	Candidate Model or Models	% Population In Central City[1/]
New York	City Dominant, Joint Metropolitan (City)-State	68%
Los Angeles-Long Beach	County Dominant, Joint Metropolitan (City & County)-State	45%
Chicago	City Dominant, Regional Funding Agency	48%
San Francisco-Oakland	Regional Funding Agency, Limited Metro Government	35%
Washington, D.C.	Joint City-State(s)	27%
Boston	State Dominant, Joint Metro-State	23%
Baltimore	State Dominant	44%
Houston	City Dominant, Joint Metro (City)-State	62%
Newark	State Dominant	21%
Minneapolis-St. Paul	Metro DOT, Metro General Purpose Government, Joint Metro-State	41%
Seattle	Metro Government, Metro DOT, Joint Metro-State	37%
Patterson-Clifton-Passaic	State Dominant	21%
Miami	Metro(County) General Purpose Government, Joint Metro-State	26%
Portland	City Dominant, Joint Metro (City)-State	38%

1/ Source: Urban Transportation Fact Book, American Institute of Planners, Motor Vehicle Manufacturers Association of the U.S., Inc., March, 1974.

Regional multi-modal funding agencies could evolve in some urban areas out of current transit funding agencies. Examples of transit funding agencies today are found in Chicago and San Francisco.

D. SUMMARY EVALUATION OF THE INSTITUTIONAL MODELS

This section presents normative criteria and a summary evaluation of the advantages and disadvantages of each of the eight institutional models in terms of their expected performance measured against the criteria. The criteria postulate what ought to happen in order to bring about better coordinated urban transportation services, and are grouped into three general categories that collectively represent the twelve key operations-related responsibilities presented in Figure 3. The three categories of criteria are:

- transit, freeway and surface street operations;
- transit and highway financing, improvement scheduling and budgeting; and
- regulation and licensing, ridesharing and special transportation services.

1. EVALUATION CRITERIA

The following normative criteria were used to assess the institutional models.

Transit, Freeway and Surface Street Operations

The institutional arrangement ought to:

1. Integrate and/or coordinate transit operations and operations planning across jurisdictional boundaries within the urbanized area;
2. Overcome the traditional uni-modal or uni-agency orientation of operations planning, and stimulate a multi-modal orientation in the initial conception of candidate system improvements;
3. Provide a stable, continuing mechanism for developing and implementing multi-modal or interagency projects and operations improvements;
4. Provide for clear lines of authority and responsibility;
5. Provide for coordinated transit marketing and promotional efforts to present information on the entire system; and

6. Coordinate public and private transportation services.

Transit and Highway Financing, Improvement Scheduling and Budgeting

The institutional arrangement ought to:

1. Facilitate efficient use of federal, state and local funding sources for multi-modal programs and operations;

2. Create incentives for efficient and effective management of operations;

3. Effectively articulate metropolitan area needs to state and federal governments;

4. Provide for clear lines of authority and responsibility; and

5. Enable timely response to new opportunities of a technological, financial or institutional nature.

Regulation and Licensing, Ridesharing and Special Transportation Services

The institutional arrangement ought to:

1. Integrate the functions of regulation, operation, planning, programming and implementation;

2. Provide a regulatory environment that enables private operators to enter the market, and provide flexibility for operators already in the market (e.g., taxi operators) to extend the range of services they can offer (e.g., shared ride taxi operations);

3. Eliminate duplication in the delivery of special transportation services, including services for the elderly, the handicapped and clients of social service agencies; and

4. Provide an environment suited to the conduct of demonstrations and the provision of innovative service.

2. SUMMARY EVALUATION

This section summarizes the general advantages and disadvantages of each of the model institutional arrangements. Each model emphasizes a different approach to assigning primary responsibility for coordinating urban transportation operations. Each model provides different opportunities for particular agencies, policymakers, and individual staff to play the role of coordinator.

The need to use incentives varies across these models and depends on the concentration of legal authority and political power in each of the institutional arrangements. Loose institutional arrangements, such as the regional association of governments and the multi-modal federation of operators, require the involved institutions to have strong, broad incentives for coordination.

If a key decisionmaker possesses highly concentrated legal and political power, then he can direct his staff to implement coordinated operations improvements. In that case, what would otherwise be an institutional coordination issue becomes a management issue. The incentives for staff coordination are then strongly related to protecting individual jobs and careers.

For all of these models, the federal government can apply similar incentives aimed at affecting policy, performance and process. However, different incentives would be applied by the federal government to effectuate the overall institutional arrangements embodied in each of the eight models.

The advantages and disadvantages of each model relative to all other models are listed below. This listing focuses on the differences among the models and does not repeat points that are constant from one model to the next.

State Dominant Model

Advantages

1. Total control over all public transit, surface street and freeway operations decisions is given to a level of government which directly controls its own taxing authority, in comparison with local governments or regional transit authorities which are creatures of the state and need state approval of their funding sources.

2. All operations, financing, programming and budgeting decisions are controlled by one unit of government which could centralize multi-modal operations planning within a single unit of a single agency, leading to a multi-modal approach to identification of alternative system improvements.

3. Interagency and intergovernmental coordination problems are eliminated; operations coordination is an in-house problem and thus the steps to solution are simpler and more administrative in nature, since all staff answer to the same policymakers.

4. Local jurisdicational boundaries are not an impediment to coordination, since the state is both the operator and the financier.

5. Transit marketing responsibilities are concentrated within a single agency.

6. The federal government never has a reason to try to adjudicate among competing jurisdictions.

7. The federal government has a relatively simple task in applying a broad range of incentives, since they will be aimed just at the state with whom the federal DOT has well established linkages.

8. The state, if it also provides financial aid for or regulates welfare, health, education and child care, is in a good position to foster integration of special transportation services and related social services.

Disadvantages

1. The "bigness" of the state responsibility may result in community level transit services being overlooked.

2. For similar reasons, it may be difficult for private operators to participate in planning and operations decisions.

3. The state may tend to inhibit the entry of private operators into the market and limit the kinds of services they can provide so as to avoid competition with state-operated services. The state may also be tempted to provide services that could be more economically provided by the private sector.

4. Most states currently have little or no urban transit operations experience, and little local traffic engineering experience.

5. Except in a few states, the state itself is much more extensive than its metropolitan regions, and state government is therefore somewhat less representative of local concerns. This renders this model of limited applicability in terms of representativeness.

6. Many state capitals are located miles from the major urbanized areas of the state, with the result that key state personnel may be biased by their previous small town or intercity transportation experience.

City or County Dominant Model

Advantages

1. All operations decisionmaking responsibility is concentrated in a representative general purpose local government that must be responsible to the articulated needs of the system's users, since they are also voters. Local elected officials are visible and accountable to the affected voters and to no one else in the rest of the state or nation.

2. Cities and counties have been regulating and licensing many private operators (e.g., taxis and limousines) for years and are familiar with the individuals involved and the services they can provide. Hence, there may be a greater chance that the private operators will have a broad opportunity to provide services which supplement the regular public transit system.

3. Many cities and counties have considerable transit and highway operations experience, which this model builds on by adding freeway operations responsibilities.

4. A city or county agency may be more sensitive to community level service needs than would a state agency.

5. Many city and county policymakers and staffs have made tradeoffs among transit and highway improvements for several years, and are used to conceptualizing multimodal alternatives.

6. This model offers the opportunity for good institutional integration of the regulatory function with operations planning.

7. Responsibility for regulating on-street and off-street parking increases the operator's chances to affect land use decisions and thereby manage system demand in particular parts of the metropolitan area.

8. The city or county will continue to have principal responsibility for land use decisions, and these can be integrated with transportation operations decisions.

Disadvantages

1. The dominant city or county must rely on the state for financial assistance and for programming of highways on the state system. Both factors could undermine the city or county's operations decisionmaking autonomy.

2. The dominant city or county may have difficulty integrating or coordinating operations across jurisdictional boundaries.

3. Fragmentation between the dominant local government and surrounding jurisdictions may lead to ineffective articulation of the metropolitan area's needs to state and federal decisionmakers. The state must still act to protect the interests of minor jurisdictions.

4. Because many city and county governments are "underfunded" today, this model may lead to inefficient use of state and federal funds if the local government is unable to provide the required match.

5. For similar reasons, the dominant local government is unlikely to be a technological or service innovator. Demonstration projects would severely tax already strained budgets.

Metropolitan DOT

Advantages

1. This model would place multi-modal urban transportation operations planning, implementation and regulation responsibilities under the control of an agency whose geographic boundaries approximate the entire area requiring urban transportation services, thereby eliminating the jurisdictional disputes that frequently plague urban transportation operators.

2. The DOT would have a stable, continuing source of federal, state, and regional funds to allocate to multi-modal operations improvements that reflect the priorities of the entire metropolitan area.

3. The DOT could centralize marketing and promotion of transit usage, ridesharing, staggered hours and employer participation in such programs throughout the entire urbanized area.

4. The DOT is an integrated forum from which to articulate metropolitan area transportation needs to the state and federal governments.

5. The DOT, with its multi-modal responsibilities and broad geographic coverage could reduce the need for federal intervention in metropolitan transportation decisionmaking.

Disadvantages

1. The institution will be single purpose and may tend to diminish the ability of general purpose governments to make coordinated decisions on urban policies.

2. The regional coverage of the agency may cause community level transportation services to get lost in the shuffle.

3. The DOT must depend on the state for a continuation of financial assistance, and its ability to implement operations changes may be limited by this financial dependency.

4. DOT Board members will most likely represent specific jurisdictions in the metropolitan area, creating the potential for parochialism to affect regional decisions.

Metro General Purpose Government

Advantages

1. This model encompasses all the multi-modal operations coordination and service integration attributes found in the other models, and has the advantage of placing decisionmaking responsibilities with an elected Metro council or commission that directly represents the entire urbanized area. Since this elected body must make investment decisions on numerous public services, it will be able to make more realistic evaluations of the amount of local revenue available for transportation expenditures. Transportation can thus be related to other items in the budget-making process, and transportation and other policies can be fully integrated.

2. The fact that the Metro commissioners are elected by a metropolitan-wide vote increases the chances that they will take a regional perspective in making decisions.

3. Because decisionmakers are directly elected, there is apt to be better two-way communication with the public and responsiveness to operations changes suggested by the public.

4. Federal incentives could be coordinated on a broad range of programs whose implementation was the responsibility of a single agency. From the federal perspective, there should be no ambiguity as to who speaks for the region.

Disadvantages

1. Interregional services still must be coordinated with agencies or jurisdictions outside the boundaries of the metropolitan government.

2. The regional focus may tend to diminish attention to community level transportation.

Regional Association of Governments

Advantages

1. Decisionmaking in this model tends to protect the status quo, and undesirable or inequitable change is made less likely.

2. Many different jurisdictions have an opportunity to play a coordinating role if their policymakers and staff have the necessary skills.

Disadvantages

1. Responsibility for operating the various elements of the urban transportation system is scattered among numerous agencies and operators. Coordination occurs on a voluntary, ad hoc basis.

2. Decisions affecting the financing of highways and transit, and the scheduling and budgeting of improvements can become bogged down in controversy among state, regional and local governments.

3. Operating agency staff may continue to maintain a generally uni-modal orientation in their work.

4. Agreement among numerous agencies and operators is required in order to make efficient use of available federal, state and local funds, and no single agency is likely to have sufficient authority or political power to enforce coordination and efficiency in multimodal operations.

5. No single agency can effectively articulate regional needs to state and federal governments, and the application of incentives by such higher level governments will have to be more intense and comprehensive if coordination is to occur.

6. Regulation and licensing are not likely to be integrated with operations, planning and programming decisions.

7. There is no guarantee that an agency which contracts with a private operator will make sure of integration with other agencies.

Multi-Modal Federation of Operators

Advantages

1. A federation could provide a framework in which all urban transportation operators, both public and private, can participate in operations planning and decision-making.

2. The revenue redistribution formulas (one for transit, one for highways) may encourage efficiency among the operators by increasing their "profits" if they cut operating costs or increase revenues.

3. Avoidance of the involvement of others in their decisions provides an incentive for the operators to maintain public satisfaction with their services.

Disadvantages

1. The federation is a voluntary grouping of operators. Consequently, individual operators can do as they please if they disagree with some kinds of decisions made by the federation. Moreover, the only incentive strong enough to get everybody to join and give up meaningful autonomy is probably to guarantee each operator a healthy profit at a high cost to the public and to future flexibility. In addition, the long-term stability of this kind of arrangement is questionable.

2. Decisions on financing of capital improvements are shared among numerous agencies and levels of government. Programming responsibilities are similarly fragmented. Agreements made within the federation could be undermined by this fragmentation.

3. Timely response to new opportunities of a technological or financial nature must depend on decisions made outside the federation of operators, since that is where financing and programming decisions are made.

4. The federation is not representative of the people in a political sense, but is a business entity.

Regional Multi-Modal Funding Agency

Advantages

1. The Funding Agency can use its funding responsibilities and contracting authority to select what it believes to be an efficient distribution of services between public and private operators, and to bring about coordination between all operators, both public and private.

2. The Funding Agency provides an opportunity to integrate the use of available state, federal and local funding sources for multi-modal operations.

3. The Funding Agency is in a position to formalize operations efficiency requirements such as coordination of fares, transfers, single-ticketing and elimination of duplicative services.

4. The Funding Agency can build incentives into its service contracts to attempt to encourage efficient management by individual operators.

5. The Funding Agency has the financial capability to make timely responses to technological innovations, and to undertake demonstration projects and service innovations.

Disadvantages

1. The Funding Agency does not control freeway operations.

2. The Funding Agency is one step removed from representative governments (i.e., state, city or county).

3. The information that is vital to making good operations decisions is in the hands of the operators so the Funding Agency is in a weak or sometimes conflicting position vis-a-vis the operators.

State/Metro Government Balanced Power Structure

Advantages

1. This model attempts to bring about a closer and more cooperative decisionmaking relationship between the parent state and the metropolitan area than exists in most places at the present time.

2. This model would enable the state to coordinate interregional transit services across regional boundaries.

3. This model would lead to a more active state involvement in financing urban transportation operations, particularly transit, than has previously been the case. This state/metropolitan government partnership may increase the metropolitan area's chances of garnering federal financial aid and project approval.

Disadvantages

1. The basic disadvantage of this model is the fact that decisionmaking is always shared between two levels of government, thereby requiring agreement between the two in order to get much done. Also, accountability for decisions is split between the two levels of government, creating a situation in which impasse could continue.

2. Incentives for coordination have to be relatively stronger than in a decisionmaking structure with a more concentrated focus.

E. RESOLUTION OF LEGAL AND REGULATORY PROBLEMS

The solution of most legal and regulatory problems is either fairly independent of the institutional arrangements or is related to the broad characteristics of several arrangements.

The following general conclusions are drawn about the legal and regulatory problems identified and discussed in Chapter Two:

1. Concentration in one agency of the institutional responsibility for regulating the various modes, along with institutional responsibility for planning, finance, and operations, would enable integrated and consistent public policy decisions to be made on how to provide and how to pay for urban transportation.

2. Improved institutional arrangements must be accompanied by consistent funding rules which allow the assignment of resources to those actions with the best opportunities for effective and efficient operations improvements.

3. Changing laws to allow subsidies to both users and suppliers of urban transportation would likely increase the travel choices available to the public and encourage service quality consistent with the cost to society.

4. Concentrating authority in a single agency makes innovation easier to achieve, but does not guarantee it. Enlightened policy direction and quality management are also necessary ingredients. Since it is easier to say no to things that are not tried and true, complex

institutional arrangements, which increase the number of people in a position to say no, will tend to stifle innovation.

5. A public agency which owned all transportation facilities would probably treat all modes similarly in terms of taxation of their rights-of-way. Decisions could be made on the basis of operating efficient service at least societal cost.

6. Some regulatory issues, such as excessive insurance costs for taxis, vanpools and other kinds of paratransit must be resolved by joint private and public action at the state or national level.

7. The policy and attitudes of the dominant agency or agencies are much more important than the institutional arrangement itself in providing a regulatory environment that enables private operators to enter the paratransit market and provides flexibility to extend the range of services private operators can provide. Shared ride taxi operations can be allowed in any state and city which chooses to do so. States and cities could also rewrite their laws and ordinances to allow freer entry to the paratransit market. There is no reason to believe that changing a metropolitan area's institutional arrangement would result in different policy decisions about taxis and paratransit than occur today. However, different institutional arrangements could lead to more efficient operations across an entire metropolitan area, thereby making paratransit improvments more economically attractive to potential operators.

8. Special transportation services are often funded by non-transportation agencies (e.g., the Housing and Urban Development or Health, Education and Welfare Departments at the federal level). Since the general purpose state, city or county, or metro governments also control the social service agencies receiving these funds, then these institutional arrangements have the greatest promise for reducing service duplication and increasing efficiency. Social service agencies would then be able to spend their funds to serve the unique needs of their clients and could get out of the transportation business.

9. The technical aspects of shifting whole bodies of regulatory law among jurisdications and of reframing that law will require substantial staff legal efforts for the states and cities seeking regulatory reorganization and reform. Careful drafting of legislation will also be necessary for arrangements which combine current civil service, union, and non-union labor into one agency.

F. EFFECTS OF THE MODELS ON UNION RULES

The union rules governing transit operations in any metropolitan area are the product of numerous bargaining sessions between management and labor over a period of many years. Many of these bargaining sessions occurred between several different unions and several different private transit operators.

A recent report notes that the shift from private to public ownership had little impact on the collective bargaining process. "One possible reason . . . is that most or all of the labor agreement provisions, e.g., arbitration, the right to strike, etc., were negotiated when the agency was privately owned and included in the transition to public ownership to facilitiate application for federal funding." 1/

What can have an effect on union rules, however, are the powers and authority legislatively assigned to urban transportation agencies. The authority to contract for services with any carrier can eliminate the need to use a public operator or no one at all to deliver certain paratransit services. Of course, any decision to use union versus non-union or part time or volunteer labor, must consider the overall public interest, the interests of client groups receiving paratransit services, the quality of service that can be provided by competing operators, and the need for transit employees to receive equitable compensation for their work.

The Knoxville Department of Public Transportation Services (DPTS) has the authority to contract with taxi and limousine operators as well as with private bus operators. Since it also has the responsibility for regulating taxis and limousine operators, the DPTS can allow these operators to perform a variety of services that come under the paratransit classification. The DPTS also acts as a broker to connect public service agencies needing paratransit services with van operators who can provide the service.

The Dade County Office of Transportation Administration, a unit of the Metro Government, contracts with private taxi and van operators to provide services for the elderly and handicapped in the County. Licensing and regulation of taxis, jitneys, limousines and rental cars are also the responsibility of the Metro Government.

The RTA in Chicago has the power to contract for transit services throughout its service area and to determine fares, routes,

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1/ Kenneth M. Jennings, Jay A. Smith and Earle C. Traynham. "Collective Bargaining in Mass Transit: The Southeast," U.S. Department of Transportation, Office of University Reserach Washington, D.C., August, 1976, p. 20.

schedules and other operating characteristics. The RTA is currently planning to conduct a paratransit demonstration program involving taxis and a variety of social service organizations, with RTA serving the brokerage function by purchasing services.

Knoxville, Dade County and the Regional Transportation Authority all fit different models of institutional arrangements, yet all are attempting to serve the need for paratransit in their communities. The key to their success is not the institutional arrangement, necessarily, but their legal powers.

CHAPTER FIVE

POTENTIAL FEDERAL INCENTIVES

This Chapter considers actions that might be taken by the Congress and the U.S. Department of Transportation to improve the coordination of urban transportation. Potential federal initiatives are evaluated on their effect on the entire delivery system (federal, state, regional and local) through which the transportation profession, broadly defined, provides services within urban areas.

Because of its inconsistency with prevailing political philosophy, direct federal responsibility for operations is not considered as an alternative federal policy. The federal government must influence the coordination of operations in a less direct way, through the use of incentives upon the more directly responsible institutions, operators, coordinators and users of urban transportation.

An indirect role limits federal control over whether improvements in coordination actually occur. Federal policy and federal actions will never be deterministic in the sense that every federally desired action can be directly implemented through federal initiative. However, federal initiatives can provide the incentives for other members of the urban transportation delivery system to modify their behavior in the direction desired by the federal government.

Before revising its current incentives, the federal government has to consider both the effects of any different overall strategy of incentives, and the practical limitations on the federal role within the pluralistic American public and private political system. Other institutions and individuals will respond to any federal initiative based on what those institutions or individuals want. If they want to do what the federal government wants them to do, then they'll do it, unless there are other constraints on their behavior. If they don't want to do what the federal government wants them to do, but have to comply in order to get something else they desire, then they will attempt to demonstrate sufficient compliance with the federal requirements to get what they want.

Those responsible at the state and local level for urban transportation operations already have greater incentives for improvement than an outsider telling them that improvements are desirable. To add effective incentives, the outsider has to have something to offer, something that will change if the desired action is taken.

The target of any incentive is of dominant importance. If an incentive is aimed at one target, it should be no surprise that the indirect impact of that incentive on another desired

target may be minor. In the coordination of urban transportation operations, the most obvious example of an area that has never been targeted is performance. No one keeps information on or rewards any urban area on the basis of changes in total vehicle occupancy, an obvious measure of the efficiency of use of an overall urban transportation system.

In developing a new strategy of incentives, the federal government could take account of several practical considerations:

- the federal government is not and will never be a major operator of urban transportation;
- the federal government will not act as either formal or informal coordinator of state and local actions;
- the federal government provides a minuscule percentage of the total funds for operating urban transportation;
- federal personnel are unlikely to be more wise in judging operations improvements than state and local personnel, so there is no particular substantive reason for forcing their judgments on others;
- the federal government has enormous potential power to structure private consumer demand, although this power is limited by the same practical political considerations which will affect state and local actions to structure consumer demand;
- the federal government's basic interest in urban transportation systems is in the performance of the system, because of its effects on the national economy, environment and energy usage;
- the federal government's only legitimate interest in institutional arrangements is their impacts on performance and the assurance of basic democratic representation in political decisions involving federal funds;
- an outside agency such as the federal government can have substantial influence over a paper assignment of responsibility among institutions, but has much less control over the actual power relationships among state and local institutions;
- an outside agency such as the federal government can absolutely define the structure and content of what institutions report they are doing to coordinate operations, but has much less influence over their actual process of decisions on coordination of operating improvements; and

- federal requirements for good reports (e.g., TSM plans) from state and local agencies are direct incentives to write good reports, but much less direct incentives for actual performance.

Also, several principles should govern the selection of a strategy of federal incentives:

- federal incentives should be consistent, and punishment should not be meted out to states and urban areas for not responding "correctly" to one incentive when other federal incentives provide a push in another direction;

- the incentive used should be targeted as directly as possible on the aspect of behavior which the federal government wishes to change; and

- federal actions should not preclude an urban area from moving towards any of the more desirable institutional arrangements identified in this rsearch, since the potential for coordination afforded by these arrangements would represent a substantial improvement over the status quo.

Modified or new federal incentives are discussed in terms of their potential targets -- performance, policy, process, or institutional arrangements -- which were defined in Chapter Three. Figure 6 at the end of this Chapter summarizes the recommended incentives by type (financial, political, psychological, or professional). Federal initiatives in areas other than incentives are also suggested, including assignments of responsibility for coordination and informal mechanisms for coordination.

A. FEDERAL INCENTIVES TARGETED ON PERFORMANCE

Since the federal government's principal legitimate concern for effective and efficient urban transportation systems is how the performance of the systems serve national economic, environmental, and energy goals, the principal target of federal incentives could also be system performance. Incentives aimed at institutional arrangements, policy, or process are implemented partly in the hope that they will eventually influence performance.

Performance incentives can work directly on the operating agencies, or can be implemented through changes in consumer demand. To utilize direct performance incentives for operating agencies, the federal government has to be able to measure performance. Comparisons among urban areas are both difficult and unfair, since geography and local history have great influence on current performance. Therefore, the performance to be compared should be year-to-year trends within the same urban area.

Consideration should also be given to making financial performance incentives available to general purpose governments, with no constraints on the use of such funds for transportation or other purposes. The general purpose state and local governments could use their influence on other agencies to bring about operating efficiency and coordination. Managers of operating agencies would have an incentive to perform well in order to maintain their agency's importance. Then, if the current institutional arrangement was not performing, the state and local governments would have a financial incentive to develop a more effective institutional arrangement.

The selection of performance measures is not straightforward on either technical or political criteria. The federal government would have to be certain that the performance information was accurate and objective, and may have to actually gather such information directly or rely on audited financial information. Certainly, air quality information could be gathered by the federal government. Energy usage information is already gathered for each state. Trends in total vehicle usage, peak period vehicle usage, and vehicle occupancy could be utilized if statistically reliable counting programs are of sufficiently low cost.

With corrections for demographic changes, a portion of federal funds could be distributed to general purpose governments based upon relative changes in their performance compared to changes in the performance of other areas of the country. Standards could also be set and some funds given to each jurisdiction which met a particular performance level. In this instance, urban areas would not be competing with each other for a share of a given amount of federal funds.

The removal of financial incentives to increase the cost of capital projects would probably cause both transit and highway agencies to look for and implement alternative operations improvements.

The federal government could also act directly to change the choices facing consumers as a means of increasing operating efficiency. Any federal incentive which acts to increase the cost of a single occupant auto trip relative to other means of travel will result in somewhat higher vehicle occupancy. Gasoline taxes have this effect, in addition to their impact upon total trips made per person. Treating the value of free parking at the workplace as taxable income, would also be an incentive for commuters to increase auto occupancy or to use vanpools or transit. Parking costs do not impact as directly on system performance, however, as do costs which are related more directly to vehicle miles of travel.

Direct federal subsidies could be targeted at specific groups with income or mobility deficiencies. If not simply in cash, such subsidies could be redeemable by legitimate transporation companies at a price determined by the federal government. This would lower a subsidy recipient's payment for transportation service, and could lead to higher utilization of non-auto modes (transit, taxi, and other paratransit). An increase in total travel would also occur.

For any particular set of federal initiatives to alter overall consumer demands substantially, very large changes in cost variables would have to be made. The large changes in cost variables would involve federal intervention in transportation finance at dollar levels far greater than the level of funds now given out each year by the federal government.

B. FEDERAL INCENTIVES TARGETED ON POLICY

A prerequisite to state and local governments changing their process, performance, or institutional arrangements is that their policies are not presently being served. Policy agreement on the need for coordination of multi-modal operations as a high priority is necessary before an urban area will really devote effort to it.

Policies develop from institutions' and individuals' practical responses to incentives and from their value systems about what is best for society. Those value systems evolve from the experiences and relationships each individual has, both inside and outside the job. Besides the other incentives and the promulgating and publicizing of federal policy statements, the only tool available for federal personnel to further influence policy development is personal contact.

Personal contact is already fairly extensive between state and federal personnel, and the value systems of the two bureaucracies tend to be similar. However, federal and local government personnel might have more productive personal contact, leading to development of mutual value systems and attitudes towards policies.

In many of the case study urban areas, central cities and counties were the effective coordinators of multi-modal operations improvements. At the policy level, the federal DOT has endeavored to be very cordial to local political leadership. However, the federal DOT has usually had a less direct relationship with local jurisdictions than with states, regional associations of governments and transit agencies. The cities and counties themselves are not usually the actual grant recipients, and therefore coordination and interaction by federal field office staff is not as extensive as with state transportation agencies.

In general, although certainly not in every instance, FHWA Division and state transportation agency staff already tend to share a common viewpoint on the substantive needs of the state and its urban areas. To some extent, the FHWA Division offices have acted as the representatives of their states within FHWA. Regional office personnel are more removed and Washington office personnel much more removed from establishing staff working relationships. This model of relative contact levels might be applied to urban areas and throughout the federal DOT.

Two potential coordinated changes in federal-city relationships could be:

- some categories of funds might go directly to the city (or county if it is dominant) or pass through the city; or

- the city could be assigned responsibility for coordination of, or other aspects of, multi-modal transportation, providing an incentive for closer federal-city staff relationships.

All federal relationships must, of course, recognize that local jurisdictions are creatures of the states. State legislatures define the powers and responsibilities of the various classes of cities or of the counties within the state. Federal-city contacts should never, therefore, be exclusionary of the states.

Efforts to build better staff relationships between federal and city personnel must also realize that the major background of federal personnel is highway engineering and the backgrounds of city personnel are traffic engineering and city planning. The federal government and the cities have few personnel with experience in transit operations. A mutual learning period is necessary before common value systems or professional understandings emerge.

C. FEDERAL INCENTIVES TARGETED ON INSTITUTIONAL ARRANGEMENTS

Simply establishing federal requirements for major changes in an urban area's real political and institutional structure is probably not feasible politically. If the models identified in Chapter Four come about fully in any urban area, it will be due to the effectiveness of local and state proponents of such an institutional arrangement. The federal government can strengthen the hand of such proponents by making it apparent that areas with good institutional arrangements are successful in securing discretionary or other funds. However, the historical infrequency of success in establishing effective metropolitan institutions indicates that future successes will be few and far between.

One potential federal strategy is to accept the existing institutional arrangements, work with them, and not try to add to the responsibilities of institutions (such as regional associations of governments) which have paper powers but no constituency. Among the largest U.S. metropolitan areas, there are some which would most naturally evolve towards each of the eight candidate models, except the Multi-Modal Federation of Operators, if those metropolitan areas wished to implement an arrangement with a potential for better coordination of operating divisions. The conclusion that no single model best fits the political culture and history of institutional responsibilities in every urban area comes as no surprise. The implication for federal policy towards urban area institutionsl arrangement is that several desirable candidate arrangements should be accommodated, and the structure of federal incentives should not strongly penalize any arrangements representing improvement over today's situation.

The Multi-Modal Federation of Operators model is vastly inferior to the others. It would not perform well in coordinating operations or be consistent with basic democratic principles of representation.

The Voluntary Association of Governments model is characterized by fragmented responsibility for operations. The association of governments provides a forum in which the implementing agencies can meet, and its staff often help coordinate the preparation of documents submitted to the federal government. Our case studies found, however, that the actual coordinators of operations improvements more usually represent agencies with important political constituencies.

Federal requirements that further fragment institutional responsibilities for decisionmaking are not likely to cause better coordinated operations. For example, requiring a transit agency to approve state highway projects and vice versa could lead the agencies to make a deal for support of each other's favored capital projects. The actual incentive for each agency would be to reach agreement to build more, rather than to improve the operation of the existing multi-modal system. Local general purpose governments would then face an even more difficult political task of having their priorities implemented, particularly if the transportation agencies presented a united front.

D. FEDERAL INCENTIVES TARGETED ON PROCESS

Procedural requirements are viewed by potential recipients of federal-aid as the hurdles to overcome in order to get federal money. If incentives are to be most effective, positive rewards and negative punishment should both be focused on, and consistent with, the desired behavior. Regulations telling agencies to consider low capital solutions are inconsistent with the financial rewards if an approved project costs more.

Existing financial incentives induce the solution search away from coordinated operations or system management options. However, if performance measures were used to qualify an area for revenue sharing funds, the federal government would have an effective incentive for shifting the urban area's concern to short range multi-modal improvement programs.

Federal policies can be directed towards achieving better coordination of services, even though urban area institutional arrangements remain fragmented. If, as at present, there are unintegrated federal programs available to each of several agencies, then the federal government misses an opportunity to apply incentives towards coordination.

Federal regulations or judgments on the type and degree of intermodal system coordination are not recommended, since they could not be highly specific. Such an incentive would not likely affect actual performance, but would induce an agency to send the federal government a good written report or present a convincing verbal report that its coordination efforts were exemplary and as effective as possible. Political efforts at coordination are not easily described or prescribed, and their success is best measured by what gets implemented.

No one interviewed for this project expressed a desire for more federal regulation or specification of procedures. This is understandable since these people perceive potential change as likely to add to their burdens of paperwork. Added procedural requirements are not needed as much as a restructuring of the entire system of federal incentives for more consistency and more impact upon the actual delivery of coordinated urban transportation services.

E. FEDERAL INCENTIVES ON ASSIGNMENTS OF RESPONSIBILITY FOR COORDINATION

Federal incentives can either broaden or limit the opportunities for persons in particular positions to coordinate decisions on operating improvements. The case studies showed that most effective coordination was done by representatives of general purpose governments, those agencies with the broadest and strongest political legitimacy. Any federal initiative should strengthen those aspects of the decision process that have worked effectively.

F. FEDERAL INITIATIVES ON MECHANISMS FOR COORDINATION

An outside party, such as the federal government, can suggest what might work and disseminate information on how mechanisms were used effectively in other situations. A requirement to utilize specific mechanisms could be counterproductive, however, and cause resentment or perfunctory compliance if the

mechanism is not considered useful by participants.

The federal DOT has generally asked states and regional planning agencies to develop and describe their mechanisms for coordination, which are then reviewed and approved by federal personnel. Specific mechanisms were not mandated by federal law or regulations. Working committees are the most commonly reported coordinating mechanism in comprehensive transportation planning, highway planning, and transportation system management planning.

The most effective mechanisms for coordination often never get reported. Personal relationships may be more important for achieving coordination than structured mechanisms such as committees. Agreements are made between two individuals at a time, until, thorugh a complex pattern of negotiation, substantial agreement is reached among all those who have to approve an action before it can be implemented. Then a meeting may be held and the agreement formalized. Only the meeting is likely to be identified as the coordinating mechanism.

The federal government, the Transportation Research Board, and the transportation associations and professions provide the principal forums and mechanisms for nationwide information exchange on practice and experience in operating urban transportation systems. At the metropolitan level, federal sponsorship of informal opportunities for information dissemination can serve to develop an understanding of coordination opportunities at both the policy and staff levels.

G. RECOMMENDED FEDERAL INCENTIVES BY TYPE

Figure 6 shows the recommended federal structure of incentives to improve urban transportation operations.

Revised federal laws are obviously required to implement changes in funding programs or tax policies. More flexibility in the use of federal funds by agencies supplying urban transportation has been a long term trend in U.S. law, and there is no reason to suspect that the trend will not continue. Legal changes affecting tax policy may be more likely now than before. However, the reluctance on the part of Congress to raise taxes, even those related to energy usage, indicates that changes in tax policies affecting transportation are only likely as part of an overall reform package which maintains or lowers tax rates.

None of the other suggested incentives, if separated from the changes in funding programs and tax policies, requires changes in federal laws.

FIGURE 6

POTENTIAL FEDERAL INCENTIVES FOR COORDINATED URBAN TRANSPORTATION OPERATIONS

FINANCIAL INCENTIVES

- Influence consumer demand through tax policy
- No financial incentives for big capital projects
- Most major funding fixed and predictable
- Demonstration grants continued
- Some funds tied to performance and to institutional potential for coordination
- Support user subsidy programs

POLITICAL INCENTIVES

- No further granting of paper responsibilities to institutions without a constituency
- Reward areas with efficient institutional arrangements
- Process applications for operations improvements faster
- No political incentives for big capital projects
- Allow any institutional arrangement with more concentrated authority than today's

PSYCHOLOGICAL INCENTIVES

- Develop internal DOT agreement on policy and procedures
- More emphasis on accomplishments of cities and counties
- Closer ties with city and county personnel

PROFESSIONAL INCENTIVES

- Support informal urban area professional gatherings
- Publicize effective mechanisms for coordination
- No further formal procedural requirements
- Structure meetings and conferences so that everyone has the opportunity to speak

The federal bureaucracy must also develop and maintain effective agreement on its own policies. There should be sufficient internal control to minimize opportunities for internal dissenters to stall implementation of desired policy, although of course their substantive inputs as checks on reasonableness should never be stifled.

The bureaucracy and the Congress, together with the state and local interest groups must organize a process of change in institutional arrangements and incentives if those changes are to be effective. The development of federal initiatives, and their implementation, has always and will always involve DOT's constituencies as well as federal personnel.

The potential shift in financial funding incentives would be the most difficult to implement, requiring complex negotiations before Congress and with the state and local agencies potentially affected. Some of these suggested incentives are consistent with the thrust of new U.S. DOT proposals, particularly the proposal to eventually make available the same federal matching share for all modes and programs, and the proposal for completely multi-modal funding.

Additional performance incentives would create opportunities for some states and urban areas to gain more funding, but could also threaten others. Negative threats should be minimized.

A political implementation strategy for a new financial incentive structure would include at least these four principal considerations:

1. New funding (i.e., above existing levels) should provide incentives for desired operations improvements.

2. Existing funding programs should be maintained, at least in the short run, so as to avoid the threat of losing something to recipients.

3. A guaranteed fixed level of funding, roughly equal to expectations from existing programs, should be established for each state and urban area, in order to minimize opposition to the change.

4. Policy formulation discussions should begin at both the Congressional level and among the professional interest groups such as AASHTO and APTA. Discussion would center on the amount of funds to be distributed by fixed formula and the nature of the formula; the amount and means of distributing funds based on performance (including at least air quality, energy and mobility measures); the performance measures to be utilized; the amount of funds to be given out at DOT discretion each year; and the criteria through which the DOT would evaluate grant applications for discretionary funds.

All large federal transportation programs (e.g., the Interstate highway program) have emerged from a relatively long process of debate and formulation involving a wide range of the principal client groups. An important result of the debate and formulation period is that tacit or explicit agreement is reached upon how the funds will be distributed.

Any new system of funding incentives will also be arrived at through such a political process. Each state and urban area will have a general understanding of the level of funds they will accrue from a new program and of the things they must do to improve their funding opportunities. The process of deciding upon the funding programs' potential changes is no different than the usual process through which federal highway and urban mass transportation acts are formulated in each Congress.

A politically realistic strategy to bring about change in federal funding would attempt to minimize anyone's perceived losses from the change, in the same way that a politically realistic strategy for coordinating urban transportation would attempt to minimize any group's perceived losses from a new operating strategy. Thus, the preservation of current funding expectations, with all growth occurring in the new funding mechanisms targeted as desired, will enable the Congress, DOT, and their clients to make an incremental transition towards a system of incentives for urban transportation which is better targeted on achieving national goals for energy, mobility and air quality. For political reasons, that transition period would include a fixed level of funding for each state and urban area. Another benefit of such a provision is the stability of programming which fixed formula funding will allow.

APPENDIX

CASE STUDIES OF INSTITUTIONAL COORDINATION IN SEVERAL METROPOLITAN AREAS

This Appendix contains case studies of interagency coordination to implement operations improvements in nine North American metropolitan areas:

- Chicago,
- Knoxville,
- Los Angeles,
- Madison,
- Miami,
- Minneapolis/St. Paul,
- Portland,
- San Francisco, and
- Toronto

These case studies discuss the institutions that operate and regulate transit, highways, streets, taxis, paratransit services and ridersharing programs, and how they cooperate to modify system operations. Innovative projects that required careful coordination among several agencies are discussed so as to explain how the agencies worked together to solve a problem. Important institutional, interpersonal, political or economic factors contributing to coordination are described.

Following these nine case studies are write-ups of interesting operations innovations in several foreign cities. These cities were investigated to determine if there were any unique institutional arrangements that would be potentially useful to U.S. metropolitan areas, and if field visits to any foreign cities were warranted. The research team concluded that the nine North American metropolitan areas were sufficiently comprehensive in their representation of the range of institutional structures for operating urban transportation, so no visits were made to foreign cities.

The write-ups of foreign operations innovations were included here because they tend to support and elaborate upon the observations made in the detailed North American case studies. However, the information contained in these write-ups was all taken from secondary sources and does not contain much detail as the North American case studies. The European cities discussed include:

- Gothenburg,
- Hamburg,
- London,
- Paris, and
- Singapore.

The case study write-ups which follow were arranged alphabetically in two groups, with the nine North American metropolitan areas discussed first.

CHICAGO

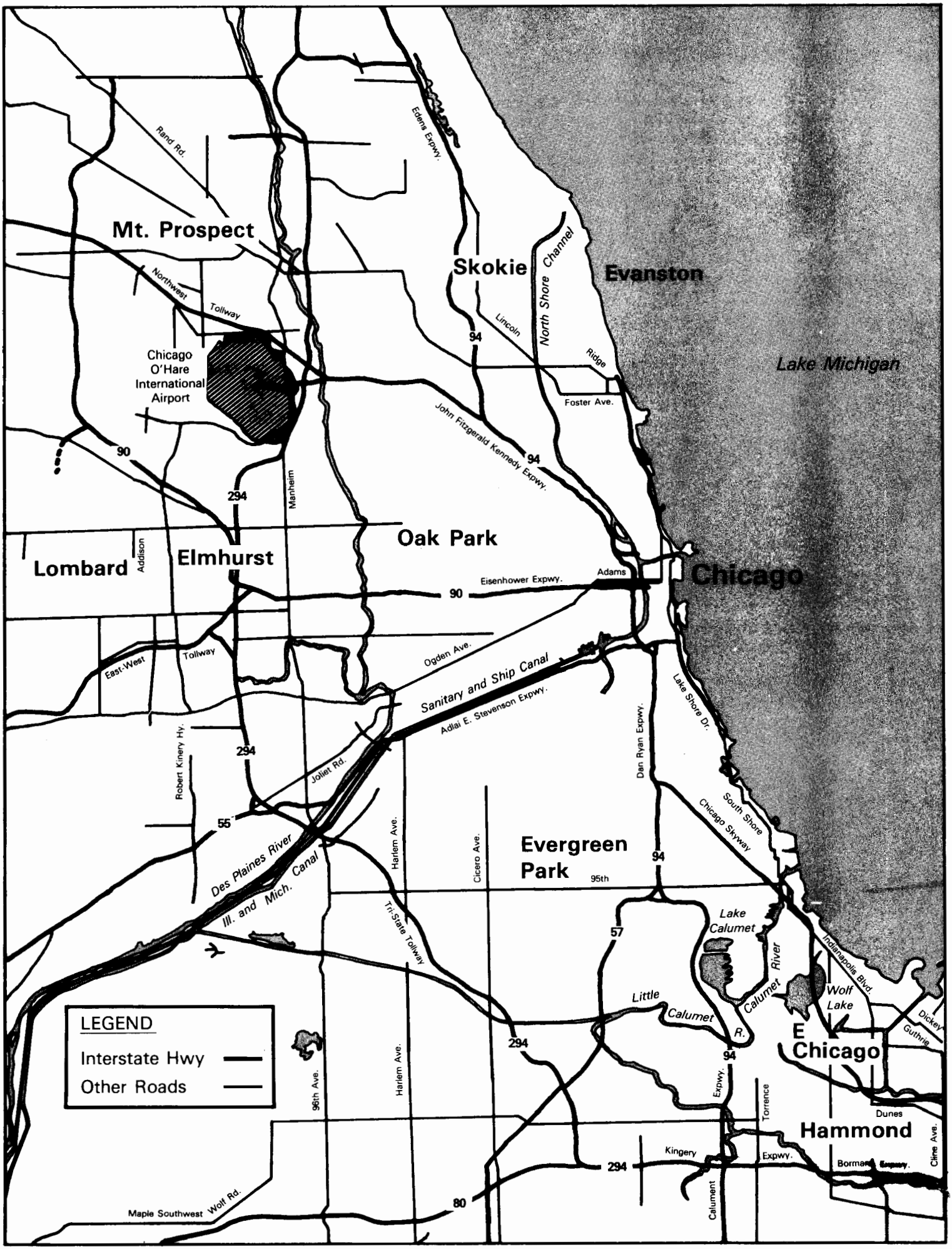
Chicago is usually cited as the prime example of the city-dominant metropolitan area. This is apropos not just because of Mayor Daley's long history of political control reaching far beyond the city limits, but also because of the exceptional degree of focus of the regional transportation system and all related institutions toward Chicago and its core, the Loop. Nor does this focus seem likely to be quickly diminished with the passing of Daley or the tipping of the regional population balance in favor of the suburbs.

Shifts of control are occurring, to be sure, but they are moderate and often increase the focus on the Loop. Chicago is losing sway in the Illinois Legislature and is, like most large central cities, increasingly burdened by costs of public services, while population, manufacturing and other industries, which have traditionally provided the tax base, continue to decentralize. Yet, the concentration of activity in the Loop has been strengthened. Chicago appears to have forged and sustained an effective alliance of politicians, regional corporate leaders, other local downtown business interests and the transportation sector to promote the CBD.

The Regional Transportation Authority

The best example of the institutional transitions that are occurring is the Regional Transportation Authority (RTA), which encompasses all six Illinois counties of the metropolitan area and also provides funding and operating authority. RTA can: fund and implement transit capital and operating programs in the region; it is the designated recipient of UMTA Section 5 operating assistance; and it has veto power over any application for UMTA funding in the six-county region, including Section 3 (capital) and Section 9 (planning) assistance.

The only other multi-county transportation agency in North America with comparably strong formal powers over all area-wide operators is the Toronto Area Transit Operating Authority (whose scale is quite small by comparison). RTA's responsibilities compare in scale and number of operators with the State level public transportation programs of New York and New Jersey.


Mt. Prospect
Skokie
Evanston
Lake Michigan
Chicago O'Hare International Airport
Lombard
Elmhurst
Oak Park
Chicago
Evergreen Park
95th
Hammond
E Chicago
Lake Calumet
Wolf Lake
Little Calumet R.
Calumet River
Des Plaines River
Ill. and Mich. Canal
Sanitary and Ship Canal
Rand Rd.
Edens Expwy.
Northwest Tollway
Lincoln
North Shore Channel
Ridge
Foster Ave.
John Fitzgerald Kennedy Expwy.
Manheim
Addison
Eisenhower Expwy.
Adams
East-West Tollway
Ogden Ave.
Adlai E. Stevenson Expwy.
Robert Kinery Hy.
Joliet Rd.
Harlem Ave.
Cicero Ave.
Tri-State Tollway
Dan Ryan Expwy.
Lake Shore Dr.
South Shore Chicago Skyway
Indianapolis Blvd.
Dickey
Guthrie
Dunes
Torrence
Kingery Expwy.
Cline Ave.
Calumet
96th Ave.
Maple Southwest Wolf Rd.
90
294
94
55
57
80
LEGEND
Interstate Hwy
Other Roads

RTA was established by the Illinois Legislature in 1973, subject to a referendum in the six-county area. Voters approved it in March, 1974, by a slim margin overall, but by a very large margin in Chicago. One of the suburban counties voted 10-1 against it. The strength of the suburban opposition resulted in attempts to weaken its charter in the Legislature and the appointment of suburban board members with reputations of being less than enthusiastic supporters of public transportation.

RTA is empowered to contract for transit services throughout its service area; make grants; operate transit services; and to determine fares, routes, schedules and other operating characteristics. It commands an array of funding mechanisms, inlcuding:

- the power to levy a tax on parking (a user tax);
- 3/32 of the 4¢ State sales tax collected in the six-county area;
- $14 from each license fee for each motor vehicle registered in the City of Chicago; and
- $5 million from governments in Cook County.

RTA also has authority to issue up to $500 million in general purpose bonds, and authorize expenditures from the State Transportation Bond Funds for suburban transportation facilities in the six-county area in the amount of $75 million.

Before RTA began functioning, there was an intense struggle between Chicago and the suburbs over its chairmanship. Although Chicago's nominee was appointed to chair the otherwise equally split RTA Board, the decision die not represent a final Chicago victory for control of RTA. Votes of the nine-member RTA Board on any significant issue, such as budget, must have one more vote than a majority (i.e., six) in order to pass.

The suburban board members held out for suburban-oriented programs, many of which were aimed largely at aiding Loop-bound suburban rail commuters. Although a large proportion of RTA's funds have gone to projects which support improved services for suburbanites, the overwhelming emphasis of RTA's program has been on preserving and improving the existing, predominantly Loop-oriented public transportation system. This program emphasis included capital and operating improvements in commuter rail operations, suburban feeder operations to the rail system, improved Loop stations and improved transfer facilities and ticketing.

Also notable, are accomplishments of the Authority in coordinating the existing system into a unified region-wide network. Major steps in this direction include implementation of a universal transfer among the bus and rapid transit systems, institution of uniform fares on suburban bus systems and rail carriers, a uniform marketing system, a regionwide reduced fare program for elderly and handicapped persons on RTA-funded systems, and plans for a special fare program for students and children.

RTA is an institution which is likely to grow in strength, in spite of its recent difficulties in getting agreements on financing, programming and organization. Its broad authority and funding resources offer the potential for its being a semi-independent force of considerable power. RTA's program has resulted in increased funding for public transportation, and its capital program has resulted in a dramatic increase in the amount of federal funds coming into the region, particularly for the commuter railroads and suburban bus systems.

RTA has assembled well qualified staff, although it has taken a long time to mold an effective organization. The process has been enhanced considerably by the appointment of a chief operating officer with a solid professional reputation. Programs with promise to encourage innovation and efficiency include:

- A paratransit demonstration program which will involve taxis and a variety of social service organizations, with RTA serving the brokerage function.1/

- The operating assistance program for commuter railroads, which uses a set of criteria and standards in purchase of service contracts. Incentive payments are made for increases in on-time performance and for increases in revenue passenger miles.2/

- A continuing refinement of RTA's operating assistance with emphasis on procedures and incentives for efficiency and performance. RTA began by merely funding 100% of all deficits up to 45% of operating costs. This was followed by adjustments related to ridership per mile of operation. Beginning in FY 1978, a formal funding policy is being established which includes:3/

1/ A Paratransit Demonstration Program -- Application to Urban Mass Transportation Administration by RTA, February, 1977.

2/ Five Year Transit Program, Fiscal Years 1978-1982, by RTA, June, 1977, pages 14 and 15.

3/ Op. cit., page 53.

-- Use of the budget and the spending plan by quarter as the major expenditure control tools;

-- Carrier responsibility for controlling expenses within budgeted levels;

-- RTA responsibility for revenue performance and for correction of poor performance through route analysis, restructuring, and promotional programs; and

-- From fiscal 1979 onward, incorporation into the budgetary process of cost control and revenue performance standards.

Comprehensive regional route maps and timetables have been developed. New toll free region-wide travel information numbers have been established. Work has begun on a unified fare and transfer program than includes the CTA rapid transit and the bus system. Preliminary planning has identified several corridors in which high speed, limited-stop regional circumferential service might be initiated to complement the radial rail system.

RTA has the potential for achieving significant autonomy by virtue of its authority to earmark certain taxes for its Public Transportation Fund. The RTA Board of Directors adopted a 5% gasoline sales tax on June 30, 1977. The revenue from this tax will significantly enhance RTA's ability to improve public transportation in the region. Prior to the Board's action, RTA faced a $60 to $75 million shortfall for FY 1977 based on previous commitments. Subsidy levels would have to have been cut back without the gas sales tax. Now, RTA can expend the suburban bus fleet and fulfill commitments to existing services.

No serious consideration has been given to using the authorized parking tax because of the difficulty of collection and its anticipated large impact on a small group of businesses.

RTA has not yet utilized its $500 million bonding authority because it has not been in a position to pledge a major revenue source without jeopardizing the operating assistance commitment to the carriers of the region.

One of the major issues which RTA has been facing is the choice between continued proliferation of transit operators under a subsidy program which inherently encourages new operators, or gradual public acquisition of existing operators to integrate them into an operating agency.

Until recently, RTA has not exercised its authority to become involved directly in transit operations. However, the RTA Board has recently voted to purchase several of the operators it has been assisting. This action significantly changes the nature of RTA and may foreshadow an evolution of RTA into a regional operating agency.

Chicago Transit Authority (CTA)

CTA was organized in 1945-47 by the State Legislature and by local referendum, and is the primary public transportation carrier in the region and the only operator of rail rapid transit. The rapid transit network consists of 90 miles of right-of-way on 10 routes, 8 of which serve the Loop. CTA operates approximately 1,100 rapid transit cars and is the largest bus operator in the region with about 2,400 buses in operation on about 130 routes, which extend into 30 suburban municipalities in Cook County.

The Chicago Transit Authority has long had a reputation for efficiency and competent management. No doubt this competence was a major reason that CTA was one of the nation's last major transit systems to require operating assistance from external sources in 1971.

Although it was creased by the Illinois Legislature and the Governor has formal appointment and veto powers, the Mayor has the appointment power for a majority of the Board. In the CTA, a majority vote counts, so the Mayor has considerable power over CTA decisions. Hence, CTA has always been viewed as a City agency and could not expect to obtain aid from State or other regional sources.

Operations planning has received a higher status within CTA than within many other transit properties. The Operations Planning Department has parallel status with Transportation, Maintenance and Engineering. Unlike some other major properties, CTA continued to recognize the importance of operations planning throughout the period of declining ridership and the resulting financial squeeze. It has retained most of the sizeable Operations Planning staff, which is broken down into four sections: Schedules, Routes and Systems, Passenger Controls and Street Traffic.

CTA may be the foremost major American transit property in terms of the care with which it fine-tunes its service to demand by time of day, in response to geographic/land use changes over time, and to seasonal and holiday/special events needs. It has a well trained staff for on-board surveys and peak load and boarding counts and uses them in a well programmed manner for both special studies (e.g., to prepare for system improvements) and continuing monitoring of changes in

system use. Complete seasonal adjustments in operations are made on a system-wide basis six times a year.

City of Chicago

CTA, however, does none of the long range planning for major capital improvements; this work has always been done by others. Three major city agencies are involved in urban transportation:

- The Department of Development and Planning which is the conceptualizer and long range planner -- the City's conscience in physical planning matters. This department generally has prime responsibility until projects become well defined. Its responsibilities include functional planning at the system level and it plays the lead role in determining what gets built.

- The Department of Public Works (DPW) is responsible for all major projects through design and construction.

- The Bureau of Street Traffic of the Department of Streets and Sanitation is the operating agency responsible for traffic management and transit operations as related to the street system.

Chicago is fortunate in not having a major high level division between transit and highways. The City's long history of success in the joint development of expressways and rapid transit can be attributed in part to this fact, and in part to the fact that the City had long been able to maintain responsibility for all highway development inside its boundaries, unlike most other cities in the nation.1/

Another indication of Chicago's ability to bridge the usually wide gap between transit and highway responsibilities is the fact that it has taken the lead in several important bus priority projects now nearing implementation, including the State Street Transit Mall and four counter-flow bus lanes in the Loop area.

Chicago's success in coordinating urban transportation development and operations also is the result of several principles that guided the management of City government:

1/ An Assessment of Community Planning for Mass Transit, Volume 4: Chicago Case Study, U.S. Congress, Office of Technology Assessment, March, 1976, especially see pages 14-17.

- In dealing with other levels of government, a single City spokesman is always designated and all important external relations are coordinated through that person. In most transportation matters involving the State and/or U.S. DOT, the Commissioner of DPW is the authorized City representative.

- There is a high degree of professionalism in the City's civil service system, and a tradition of emphasis on responsiveness and workability -- particularly important qualities by comparison with other large cities.

- City agencies that provide public services in each neighborhood frequently include representatives of various areas of the City who tend to serve as ombudsmen within the agency for the needs of those areas.

- The Mayor protected the Commissioners and all top staff from direct pressures from Aldermen and other politicians. The eight top agency heads serve as a cabinet advising the Mayor on all major actions.

- At the working staff level, interagency committees coordinate matters of mutual concern. Conflicts are resolved at the Commissioners' level.

An important City interagency committee is the Technical Advisory Committee (TAC), which is basically a City planning advisory group for public works of all types, with a focus on transportation. Any large project in every development stage is reported on and discussed in TAC's regular monthly meeting. Participants are staff who report to the Deputy Commissioners. In addition, interagency task forces often are set up on an ad hoc basis to deal with major complex projects such as the State Street Transit Mall, which is soon to be implemented. In this instance, the downtown merchants also have been brought into the task force.

Other City interagency groups include a Street Improvements Project Task Force (similar to TAC but oriented to the construction phase of projects) and a Highway Design Committee (a more formalized group involving city, county, state and federal highway agencies).

Private Interests

The Central Area Committee (CAC) is a downtown business group, with a permanent staff, that has been very influential in planning for the State Street Mall, the Loop subway and distribution system, downtown parking policy and all other long range planning for the central area. City agencies regularly coordinate with the CAC on Loop area planning.

The Association of Commerce and Industry, which has a committee on transportation, is an area-wide business group which is also quite influential. It has been a prime supporter of the Crosstown Expressway Project. The Association also did a study of the potential benefits and problems involved in the staggering of working hours.

Organized labor plays an important role in Chicago in supporting all projects which involve large construction budgets. Labor always is well represented in Chicago area decisionmaking. One of the City's RTA Board members is a labor representative, as is one of the City's CTA Board members.

Private Operators

The commuter railroads also have set up a Passenger Law Committee to coordinate their mutual interests in dealing with RTA. Unfortunately, the relationship between RTA and the railroads has not yet developed into one of full, open cooperation. The carriers have considered their financial security to be threatened by the contractual terms which the RTA staff have pressed. However, the larger railroads do have the staff and organizational ability to deal with RTA on balanced terms. The small bus companies feel quite threatened by what they consider to be an uncooperative, tough-minded approach to purchase of service agreements, but they lack the bargaining resources of the railroads. Also, unlike the railroads, the bus operators do not have bonus incentives clauses for on-time performance and ridership increase in their contracts.

RTA has assumed regulatory responsibility from the Illinois Commerce Commission for the subsidized suburban railroads, except that RTA may not take actions which infringe on other carriers.

Yellow and Checker Cab and Continental Air Transport (the airport bus service) are jointly owned in Chicago and work very closely with the City's regulatory body, which is the Committee on Local Transportation, part of the City Council. It establishes fares and zones and oversees licensing by the Department of Consumer Sales, Weights and Measures. Coordination between these groups and the regular transportation agencies has been minimal to date. Some illegal jitney operations have sprung up on King Drive through the South Side, where licensed cabs often will not operate. They can compete successfully with CTA because there is no CTA zone system and the base fare of 50¢ applies to all trips including very short ones.

Vanpooling is seen as having some potential in the region, but there is a growing reluctance of some large firms to get involved in promoting them for fear that unions may demand the service for all employees as a condition of employment. Carpooling has not been energetically promoted in Chicago, because it is seen as potentially counter to efforts to encourage transit riding.

Illinois Department of Transportation

The Illinois Department of Transportation has little direct control over public transportation matters in the region or over local highway matters in the City. Nor does it have authority relative to the RTA budget, use of the region's UMTA Section 5 funds, or of the regional taxes and bonding capability made available to RTA by its authorizing legislation. The significant role of DOT has been its control of the State contribution to public transportation capital improvements -- usually 13 1/3% of project costs. However, the $200 million bond fund that has been used in the past by IDOT to provide this matching money, has largely been spent.

The Chicago Area Transportation Study (CATS)

The State traditionally had a strong role in CATS, having been the primary actor in creating and staffing the group in 1955. Every employee of CATS is hired and paid by the Illinois Department of Transportation. Until recently, CATS was the recognized agency for the highway program but not for the transit program. It now functions as the MPO and its orientation has broadened in response to this role and to the increased multi-modal policies and attitudes at all levels of government.

Like most MPO's, CATS has not been substantively involved in short range planning, resolution of conflicts, and operations planning. The operating and implementing agencies which controlled CATS in the late 1960's did not want that orientation. However, CATS has been shifting its emphasis in response to renewed multi-modal influences from IDOT and to similar changes in policy and attitudes at other levels of government.

The re-orientation of CATS will result in a roughly equal balance of staff effort among long-range, mid-range and operations planning, with somewhat more emphasis perhaps, on mid-range -- i.e., the TIP process. The recently appointed Deputy Director for Operations brings to CATS substantial experience and contacts in both highway and transit aspects of operations planning. Comparable additions are being made at the staff level. Notwithstanding these shifts and staff additions, RTA will receive most of the UMTA planning funds and will retain expertise in transit operations planning.

A more ambitious institutional framework for communications and coordination is being attempted at CATS' initiative. A Transportation Operations Committee has been established, with representation from 15 public and private agencies. The Committee would be organized under 4 sub-groupings as follows:

Highway Representation

1. Cook County Highway Department
2. A suburban County Highway Department
3. IDOT - District 1
4. Chicago Department of Streets and Sanitation

Transit Representation

1. Regional Transportation Authority
2. Chicago Transit Authority
3. A suburban bus representative
4. A commuter rail representative

Private Sector Representation

1. A trucking industry representative
2. A commerce and industry representative
3. A taxi company representative

Governmental Agency Representation

1. Chicago Department of Public Works
2. Illinois Transportation Study Commission
3. A suburban mayor or manager
4. A suburban public works director

Other groups may be added. CATS will provide staff assistance to the Committee, whose primary emphasis will be on implementation of a strong transportation system management (TSM) process.

CATS is also embarking on an ambitious work program which will include methodological development for TSM planning, identification of priority regional TSM-related problems, a regional educational effort in this field, and the initiation of a staff consulting service primarily aimed at smaller municipalities in need of very short term assistance or advice on implementation of modern traffic management concepts.

The Transit Carriers' Coordinating Committee

A regional Transit Carriers' Coordinating Committee (TCCC) was set up in the mid-1960's to foster communications among all major public transportation operators. CATS provides staff

services to the TCCC. Four or five of the largest commuter railroads participate, but not the small ones. CTA and several suburban bus operators also participate in this purely voluntary committee, which was set up to coordinate inputs to the CTA extension studies. The TCCC claims to have made no effort to deal directly with policy issues. It is of interest, however, to note that the TCCC also participated in the staggered hours study done by the Chicago Association of Commerce and Industry, a study which concluded that staggering work hours in Chicago was not feasible because any shifting of commuter rail operations away from the peak would bring them into conflict with rail freight operations.

Observations from Chicago Experience

First, by comparison with the other large metropolitan areas such as Los Angeles and San Francisco, Chicago's regional structure is not overly complex, there is somewhat less fragmentation, and the interrelationships among agencies seem better defined. There is more of an established agency hierarchical structure to sort out priorities and assure that required justification is provided for actions. This is reinforced by long-established working relationships among professional staffs. The result is that the region tends to speak to federal agencies with a better coordinated voice and with more authority.

Second, the City of Chicago itself has been the most successful coordinator of actions. This is particularly true for internal affairs. City agencies, city political leadership, and public input are extraordinarily well integrated. Some observers refer to this integration as one of the benefits of "machine" politics, which have survived in Chicago but in few other cities. However, the high level of professional and managerial capability within the City is certainly not a characteristic of the prototypical, old style political machine.

The City itself performs a wider range of functions than other cities, including integrated highway and transit planning. The City's capability to coordinate with other agencies is enhanced by its broad technical experience as well as by its political clout as a jurisdiction which still makes up about half of the urban area's population.

Third, the RTA has promise as a future coordinator of transit operations, although political squabbles at its creation have made the agency cautious in exercising its full degree of authority. So far, the RTA has chosen to work through its funding power, attempting to gain coordination through this

function, rather than operating services itself.

Fourth, the Chicago Area Transportation Study, long renowned for its technical skill and contributions in long range capital planning, is seeking to build a staff capability in short range and operational planning. CATS is just now beginning to form a committee of operators, and it is too early to tell how effective this mechanism will be.

KNOXVILLE

On November 22, 1976, the City of Knoxville, Tennessee, created the Department of Public Transportation Services (DPTS) to coordinate the implementation and operation of publicly and privately owned transportation services, including taxis, limousines, publicly owned fixed route and express commuter buses, private buses, carpools and vanpools. This multi-modal agency is not quite a comprehensive department of transportation, since the Knoxville Department of Traffic Engineering remains a separate agency. The City originally intended to create a department of transportation but did not out of concern that the traffic engineering function might dominate the new organization.

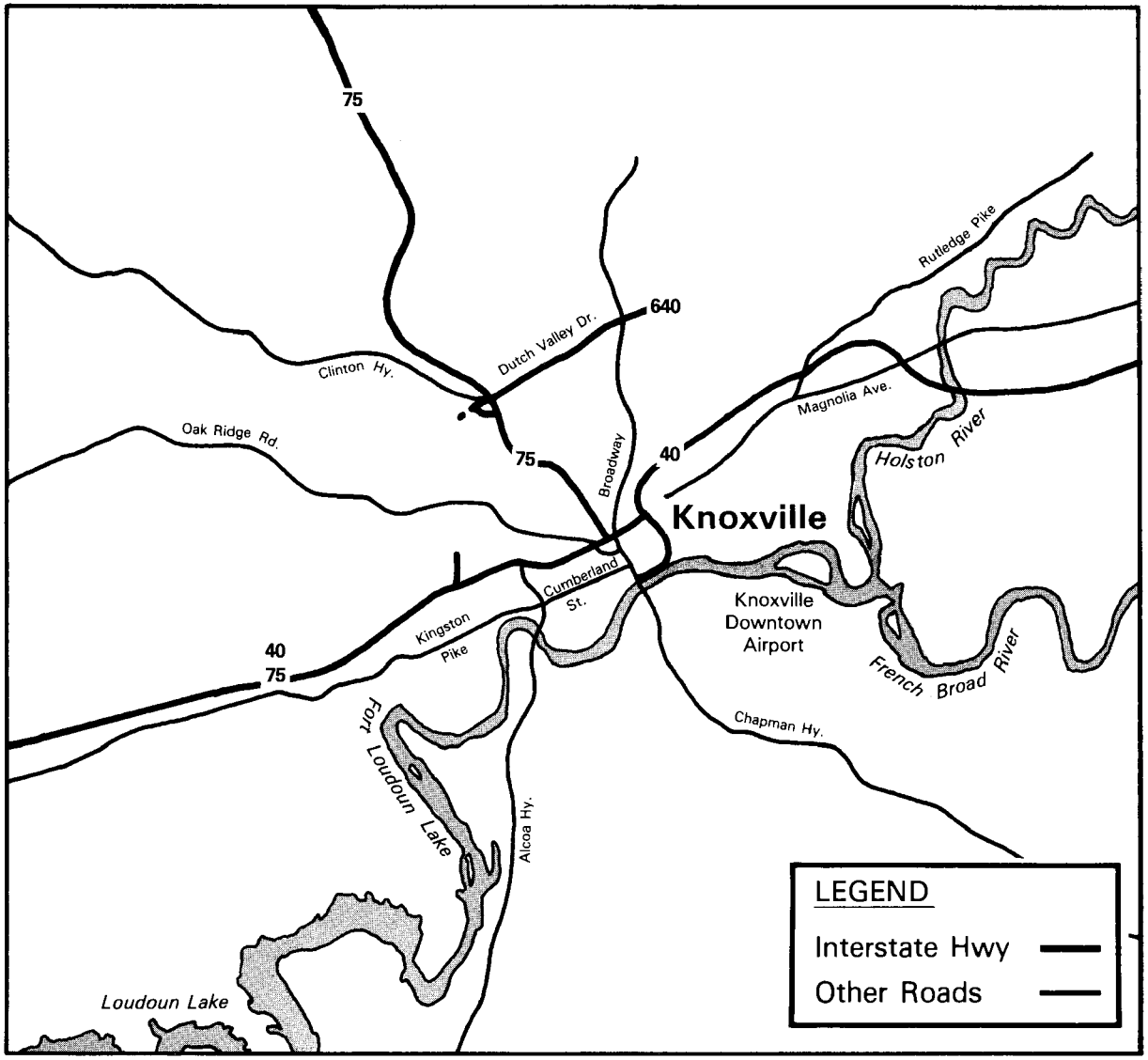
The DPTS has three units:

- the Ridesharing Brokerage Bureau,
- the Fixed Route Bus Operation Unit, and
- the Contract Services Bureau.

The Ridesharing Brokerage Bureau took over operation of the Knoxville Commuter Pool (KCP), which had been operating as a demonstration project at the University of Tennessee Transportation Center. The primary function of the transportation broker is to act as an intermediary to help match persons seeking rides with persons ready to provide service.

The Ridesharing Brokerage Bureau now operates the commuter matching service used to connect interested citizens with available vanpools, carpools, public regular route buses, publicly and privately operated express commuter buses, taxicabs and limousines, whichever best meets a person's transportation needs. The new Administrator of this Bureau is expected to continue the positive aggressive approach to marketing ridesharing with area employers that was used at the Knoxville Commuter Pool.

The Ridesharing Brokerage Bureau has also assumed management of KCP's seed vans (i.e., those vans purchased with part of the UMTA demonstration grant and leased to private operators), but will attempt to sell the entire fleet to individual commuter/operators. If the terms and conditions of sale are approved by UMTA and the local transit union, three stipulations will be placed on purchasers of vans: the vehicles must be used for vanpooling; owners must register in a commuter pool; and owners must furnish the DPTS with a monthly progress report. The Department has been meeting with employee credit unions to work out financing arrangements for prospective van purchasers. The Department has also negotiated a vanpool abort clause with the State (similar to one in California) to protect the van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640
Dutch Valley Dr.
Clinton Hy.
Oak Ridge Rd.
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Broadway
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Rutledge Pike
Magnolia Ave.
Holston River
Knoxville
Cumberland St.
Kingston Pike
40
75
Knoxville Downtown Airport
French Broad River
Chapman Hy.
Fort Loudoun Lake
Alcoa Hy.
Loudoun Lake
LEGEND
Interstate Hwy
Other Roads

purchaser against loss of capital (through vehicle depreciation) if his or her vanpool terminates during the first year of operation.

The fixed route bus operation unit will monitor the bus operations of the Knoxville Transit Corporation and provide technical guidance to the Knoxville Transit Authority. The Knoxville Transit Corporation, a division of American Transit Corporation, is one man who manages the daily operation of the City-owned buses under contract to the City. The Knoxville Transit Authority (KTA), a five member lay board appointed by the Mayor and approved by the City Council, oversees KTC operations and votes on service discontinuation, route changes, fare structure and schedules. The Mayor will now be able to make technically-informed policy decisions on City-owned bus service, a capability not previously extant within City Hall.

The Contract Service Bureau will manage the Department's contracts with taxi and limousine operators, private bus companies and social service agencies that provide contract transportation services. For example, Knoxville has debated replacing some lightly used regular route KTC bus services with taxi feeder service or with service provided by private bus companies under contract to the City. The City is also negotiating a contract with Easter Seals to provide all elderly and handicapped transportation service in Knoxville, as an alternative to retrofitting KTC buses. Similarly, the Department envisions contracting with taxi operators to provide services for social service agencies.

Knoxville's ridesharing program has evolved over the past 4 years and is now a major component of the region's transportation program. KTC express buses, private express buses and vanpools now carry nearly 75,000 riders per month, approximately 1,780 individuals (3,560 riders) daily. This ridership is equal to 27% of the traditional transit ridership and approximately 15% of the total CBD work force.[1] TVA, the largest CBD employer, has shifted its modal split from 68% single occupancy autos in 1972 to 18% in the summer of 1976.[2]

The program's success has resulted primarly from the cooperative efforts of three key regional power centers: the

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[1] Frank W. Davis, Jr., and John D. Beeson. "Knoxville Public Transportation Brokerage Service: Early Findings," Transportation Center, University of Tennessee, January, 1977, p. 2.

[2] Frank W. Davis, Jr. "Regulatory Barriers to Innovation and the Knoxville Experience," Transportation Center, University of Tennessee, January, 1977, p. 16.

Tennessee Valley Authority (TVA) and several other major employers, the past two Mayors of Knoxville and the Knoxville Transit Authority (KTA), and the University of Tennessee. Major Knoxville area employers, including the Tennessee Valley Authority, Levi Strauss and Camel Manufacturing Company, pioneered private sector involvement with employer-supported ridersharing programs. The initial work was funded by a $100,000 allocation of Federal-Aid Urban System funds. The grant contract was between Tennessee DOT and the City of Knoxville. Later on the Transportation Center at the University of Tennessee was instrumental in helping the City obtain an UMTA Service and Methods demonstration grant to promote and test a large-scale regional ridesharing program. Both the present and former Mayors were concerned about the decreasing ridership and growing deficit of the Knoxville Transit Corporation and were receptive to proposals to reverse that trend.

One of the first tasks undertaken by the Director of Public Transportation Services was the preparation of a new taxicab ordinance. This ordinance which was passed by the City Council gives the Department of Public Transportation Services sole jurisdiction to issue, deny or revoke taxi licenses; creates a three member Taxicab License Review Board; and, authorizes a Knoxville police officer to serve as taxi inspector. The new ordinance specifically recommends new taxi markets for taxis (such as elderly and handicapped, and feeder service to regular bus routes), and recognizes the importance of ridesharing and pre-arranged group riding.

A key factor in the preparation and passage of this taxi ordinance was the coordination between the DPTS and the Knoxville Chamber of Commerce. The Director of the DPTS approached the Chamber seeking their support for the ordinance he had drafted. The Chamber suggested some changes, which were made, and then helped the Director convince the taxi operators to also support it.

Good coordination in Knoxville has also occurred between the DPTS and the Department of Traffic Engineering. These two City agencies are presently cooperating with the Downtown Knoxville Association and the Chamber of Commerce on a program aimed at revitalizing the downtown area as a commercial and shopping center. To promote downtown shopping, steps are being taken to facilitate short-term parking in the downtown. Employers are being encouraged to subsidize all employees who rideshare to work, including those on regular route buses. To achieve the subsidy, poolers must park their vehicles in designated parking lots on the fringe of the CBD. A series of one-way streets and a fare free transit zone are planned to facilitate circulation in the downtown.

The other transportation institutions with responsibilities in the Knoxville area, the Tennessee DOT, Knox County, and the Knoxville/Knox County Metropolitan Planning Commission (MPC), have not been major participants in the institutional changes that have occurred thus far. Tennessee DOT assisted the City in dealing with the State Public Service Commission and the legislature. However, the DOT's Bureau of Mass Transit which operates under a policy if non-interference in local affairs, and does not get involved unless its help is requested by the locality. The interstate highways through the Knoxville area do not have sufficient congestion for HOV lanes or ramp metering, so there is little incentive for Tennessee DOT to get more actively involved in operating and managing Knoxville's transportation system.

The Metropolitan Planning Commission (MPC) is a City-County planning agency which recently became the MPO for Knoxville. Before, the Tennessee DOT was the designated MPO for Knoxville and contracted with the MPC to perform the MPO functions.

The new MPO Executive Board is comprised of the Governor, the Mayor of Knoxville, the Knox County Judge, and an elected official of the East Tennessee Development District. The Executive Staff contains representatives of County, City, State and federal agencies, and is chaired by the Executive Director of the Metropolitan Planning Commission.

The Prinicpal Planner for the MPC functions as a coordinator in the Knoxville area, in that he schedules transportation meetings, provides for data dissemination and adherence to schedules, and coordinates transportation and comprehensive planning. He is in charge of preparing the TIP and other federally-required documents, a function he performed last year under contract to Tennessee DOT.

The MPC has recently added a staff person with a background in transit operations to analyze proposed Knoxville Transit Corporation service cutbacks. The MPO staff want to ensure that any cutback in regular route bus services is carefully analyzed and all the consequences of such actions identified. The MPC will probably have a major role in future transit service planning.

Knox County, which contains the City of Knoxville, has never taken an active role in the MPO process. The Knoxville Transit Corporation does not operate regular route service outside the City, and Knox County operates no transit service of its own. Moreover, Knox County has made no technical or financial contribution to the regional ridesharing program, even though many Knox County residents are beneficiaries of the program.

Observations from the Knoxville Experience

Several conclusions about institutional coordination and service integration can be drawn from the Knoxville experience. First, when one level of government, in this case, the City, has multi-modal operating responsibilities and regulatory control over private taxis and limousines within its jurisdiction, problems of coordination become relatively easy to solve. Moreover, when the Mayor, administrators of key City agencies, and the regional MPO are all located in the same building, many barriers to coordination and good communication that faced larger urban areas do not exist. Knoxville also is a relatively small urban area and has the open, unhurried, friendly atmosphere typical of many small towns.

Second, active private sector participation is a necesary ingredient of a successful regional ridesharing program.

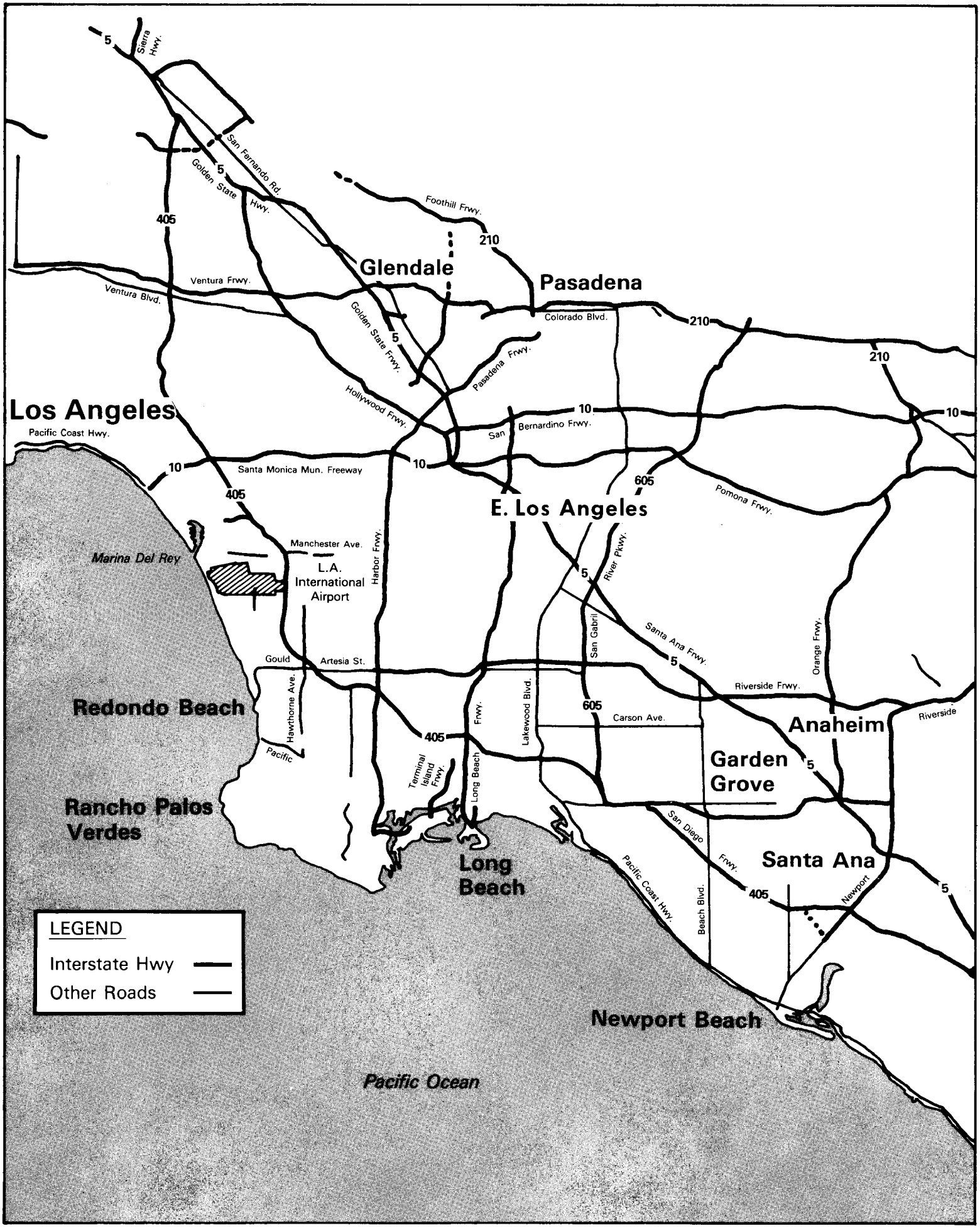
Third, in smaller urban areas a comprehensive regionwide ridesharing program may be a more effective way to increase vehicle occupancy and conserve energy than expansion of regular route bus service. In areas without regular route service, a ridesharing program with publicly funded seed vans may be more cost effective than the initiation of conventional transit service.

Institutional coordination in the Los Angeles metropolitan area is complicated by the physical size of the Region and the large number of agencies with decisionmaking responsibilities for some aspect of transportation. The Southern California Association of Governments (SCAG), which is the MPO for Los Angeles, has planning responsibilities for an area covering 38,000 square miles and containing more than 10 million people. SCAG is a voluntary association of governments (as distinct from a statutorily created one) whose membership included 11 municipalities and six counties (Los Angeles, San Bernardino, Riverside, Orange, Ventura, Imperial). Seventy-nine of these municipalities are in Los Angeles County (which will be the geographic focus of this report).

The number of transportation agencies in Los Angeles County is staggering. Each of the 79 municipalities is responsible for non-State highways within its boundaries; the County Road Department has the same responsibility in unincorporated areas. The District 7 office of the California Department of Transportation (CalTrans) operates the State highway system. In the City of Los Angeles, the Traffic Engineering Department, the Planning Department, the Department of Public Utilities and Transportation, the Bureau of Engineering in the Department of Public Works, and the Community Redevelopment Agency (CRA) all have transportation responsibilities. The Southern California Rapid Transit District (SCRTD) operates regional bus transit service throughout Los Angeles County and into several adjoining counties. The County also has 7 municipal bus operators -- Commerce, Culver City, Gardena, Long Beach, Montebello, Santa Monica and Torrance. Some small municipalities have localized services, such as the La Mirada or the City of Norwolk dial-a-ride service. Obviously, this many agencies with some operations responsibility makes coordination difficult.

The Los Angeles County Transportation Commission

The California legislature expressed its concern for better institutional coordination when it passed Assembly Bill 1246, which was approved by the Governor on September 29, 1976. AB 1246 created county transportation commissions in Los Angeles, Orange, Riverside and San Bernardino Counties "to coordinate transit service, to approve public mass transit system and federal aid and state highway planning, and to designate the operators of transit guideways." The General Provisions of AB 1246 state that regional transportation policy should avoid duplication of services, lead to coordination and integration within the transportation system, reduce auto usage and dependency, and reduce energy consumption and air pollution. To do so, the commissions were directed to give priority to low cost transit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San Fernando Rd.
Golden State Hwy.
Foothill Frwy.
Glendale
Pasadena
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Golden State Frwy.
Colorado Blvd.
Pasadena Frwy.
Hollywood Frwy.
Los Angeles
Pacific Coast Hwy.
San Bernardino Frwy.
Santa Monica Mun. Freeway
E. Los Angeles
Pomona Frwy.
Manchester Ave.
Marina Del Rey
L.A. International Airport
Harbor Frwy.
River Pkwy.
San Gabriel
Santa Ana Frwy.
Orange Frwy.
Gould
Artesia St.
Riverside Frwy.
Redondo Beach
Hawthorne Ave.
Lakewood Blvd.
Carson Ave.
Anaheim
Riverside
Pacific
Terminal Island Frwy.
Long Beach Frwy.
Garden Grove
Rancho Palos Verdes
San Diego Frwy.
Long Beach
Pacific Coast Hwy.
Beach Blvd.
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Newport
Newport Beach
Pacific Ocean
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Interstate Hwy
Other Roads

and highway improvements, and to maximize the effectiveness of the existing system.

According to one local analyst, the county transportation commissions were created to put control of transportation planning back at the local county level. Some legislators were apparently disenchanted with the Southern California Rapid Transit District (SCRTD) and the decision southern Californians have made in deciding against a rapid transit system for the Region, and wanted the Los Angeles County Transportation Commission (LACTC) to assume responsibility for rapid transit planning, relegating SCRTD to the role of bus operator. The county commissions were also seen as alternatives to SCAG for short range capital and service planning.

The Los Angeles County Transportation Commission has 11 members -- 5 county supervisors, the Mayor of Los Angeles, 2 appointees of the Mayor of Los Angeles, 1 Long Beach City Council appointee, and 2 at large members appointed by a special selection committee representing the municipalities in Los Angeles County. The Commission is funded with up to 1 percent of Local Transportation Fund (SB 325) revenues annually received by SCAG. The LACTC is supposed to have only a small core staff, is supposed to utilize existing data and the expertise of local, regional and State agencies, and is not to duplicate the efforts of other agencies.

The LACTC now has short range capital and service planning functions that used to be the responsibility of SCAG. The Commission will develop the short range (3 to 5 years) transportation improvement program (TIP) and annual element, in coordination with SCAG and CalTrans. The Commission will approve all transit and highway construction plans for projects using federal funds, except for highways of statewide significance.

The LACTC has approval power over all transit operator proposals to be funded with Local Transportation Fund (SB 325) monies; formerly SCAG allocated these funds. This fund allocation power should help the Commission coordinate transit operations within Los Angeles County. The Commission has the political constituency that SCAG lacked; and that is vital if reluctant operators are to be brought in line.

The LACTC may place on the ballot a 1/2% sales tax for transit purposes. In addition, the Commission can define and adopt standards for establishment and governance of "local transportation zones" having a large percentage of short and medium length transit trips, and enforce coordination between regional transit operations (i.e., SCRTD) and local operators serving these zones.

A key determinant of the actual power of LACTC might be the manner in which the Commission carries out its mandate to design and provide "local transit services to improve the responsiveness of public transit to public needs." The subject of community level transit services, versus regional transit, is very much an issue in Los Angeles County, with increasing pressure being exerted by the smaller municipalities who are demanding better local services. SCRTD has always taken the position that local transit and paratransit services should be funded entirely by local governments. SCRTD does not want any federal or state transit funds diverted from itself and the 7 designated municipal operators, who until recently were the only transit operators in Los Angeles County who could legally receive Local Transportation Fund (SB 325) monies.

Last year the legislature amended the law to allow the counties to set aside up to 5% of their SB 325 funds for community level transit. The legislature has also been considering a bill that would enable operators of small community level services (such as the La Mirada dial-a-ride) to receive UMTA Section 5 funds, provided the local government (e.g., La Mirada) contributes the entire non-federal matching share. UMTA has pressured SCAG. in the past, to limit the number of operators in the region to prevent duplication of costs, and has used the refusal of small municipalities to sign Section 13(C) agreements as a reason for not giving them any Section 3 or Section 5 grants.

Prior to the creation of the Los Angeles County Transportation Commission, SCAG was under pressure from UMTA to show progress in institutional arrangements, and SCAG requested all public transit operators in the Region to sign a Memorandum of Understanding with SCAG in which each operator agreed to:

- regularly participate in SCAG's Transit Advisory Committee and use the Committee as a forum for revolving inter-jurisdictional transit service problems;
- cooperate, as necessary, to coordinate its transit system with the other existing or planned transit systems in the Region;
- help SCAG develop and adopt minimum basic service criteria to be used by SCAG to evaluate all applications for state and federal funding assistance;
- help develop logical groupings of municipal operators in order to document inter-system coordination; and
- document coordination with other transit operators.

In return, SCAG would endorse the operator's applications for state and federal funding assistance. Many operators were reluctant to sign these agreements, since they were aware that the new County Transportation Commission and not SCAG will be allocating transit funds in the future.

Previous Institutional Coordination in Los Angeles County

Several notable examples of operations coordination and service integration in Los Angeles resulted from financial incentives, pressure from the state or federal governments, or some combination of external pressure and financial incentive. For example, Los Angeles County takes credit for getting SCRTD to make cooperative transfer arrangements with the 7 other designated municipal bus operators in the County in return for County operating assistance (9% of the SCRTD's operating budget for FY 76). The subsidy agreement between the County and SCRTD also involves an experimental reduced fare program. SCRTD says that the passage of SB 325 by the State legislature induced coordination with the other operators eligible to receive SB 325 funds. Regardless of which account is correct, both agree that money was the incentive for service integration in Los Angeles County.

The Los Angeles County Road Departmant and SCRTD have a Joint Committee that reviews individual bus routes to evaluate ridership and costs, and recommends service changes. The County takes credit for getting SCRTD to create additional park-and-ride lots, rationalize services within the County, institute grid service on major arterial streets, and eliminate the 280 fare zones once existing in the County. SCRTD has recently established a "red flag" process by which any line covering less than 20 percent of its operating costs from the farebox is cut from the system. As part of the subsidy agreement with SCRTD, Los Angeles County has the right to review any such proposed major route modification, and can choose to not subsidize routes it does not approve. SCRTD must give written reasons for rejecting any service modifications suggested by the County.

In addition to its subsidy agreement with the County, SCRTD has subsidy agreements with San Bernardino County and the West Valley Transit Service Authority (WVTSA), Riverside County and the City of Riverside, and the Orange County Transit District (OCTD). One minibus line operated by SCRTD in downtown Los Angeles is subsidized through an agreement between the District, the City of Los Angeles, and the Community Redevelopment Agency (CRA). A Minibus Advisory Committee, with each of the above agencies represented, reviews and approves any service modifications. SCRTD and the City of Los Angeles also have a subsidy agreement for a minibus operation in the Westwood shopping area. Revenues from City-operated parking lots in Westwood are used for the minibus subsidy.

SCRTD cooperates with other transit operators in the region in several ways, including joint operation of common terminals, joint use of bus stops, transfer agreements, and coordination of routes and schedules to facilitate transfers. SCRTD has concluded joint transfer arrangements with 13 carriers in the region, including 6 of the 7 designated municipal operators in Los Angeles County. SCRTD and the Orange County Transit District (OCTD) have agreed in principle to let OCTD primarily serve intra-county lines in Orange County, while SCRTD will be the primary provider of inter-county service. The two transit districts also jointly operate two park-and-ride interchange terminals.

Much of the Los Angeles institutional coordination occurs through the single purpose committee, many of which are ad hoc and disband after solving the problem for which they were convened. For example, when its municipalities and Los Angeles County were faced with the problem of coordinating traffic signals, speed limits, signs, etc., they created an ad hoc committee. Committee membership included the California Highway Patrol, the League of California Cities, CalTrans, the County, and city law enforcement agencies. The output of this Committee was the Uniform Traffic Control Program for Los Angeles County.

Excellent institutional coordination in metropolitan Los Angeles occurred during the Region's preparation of the EPA-required Transportation Control Plan (TCP) in an effort to reduce air pollution. TCP preparation involved an intense, cooperative effort between City, County, State and municipal transportation agencies that lasted approximately four months. Virtually, all the projects in Los Angeles' initial TSM element were products of the Transportation Control Plan preparation effort, including the Santa Monica Freeway diamond lane. Despite the fact that EPA eventually backed down on the TCP requirement, the projects developed in a short period of time in response to that requirement have endured (though not all have proven politically acceptable).

Other single purpose cooperative efforts include the Joint Cooperative FAU Committee, comprised of local and County elected officials, which sets the priorities for FAU projects in Los Angeles County. Twenty percent of the FAU funds allocated to Los Angeles are set aside for transit-related projects. The recently approved extension of the El Monte Busway will use around $7 million of FAU funds.

Perhaps the most important cooperative effort in Los Angeles County over the past several years has been the coordination effort leading to consensus on a regionwide public transportation improvement program. This consensus was achieved largely through the Rapid Transit Advisory Committee (RTAC) which was formed under SCRTD's leadership in 1975 after several

rejections of a regional sales tax for rapid transit by Los Angeles voters and UMTA's refusal to commit federal funds without regional consensus.

RTAC began as a policy level committee with membership from Los Angeles County, the City of Los Angeles, the Cities of Long Beach and Burbank, and the League of Calfornia Cities. Later, technical subcommittees and policy planning subcommittees were established, and SCAG and CalTrans were brought into the committee.

CalTrans had originally told SCRTD to decide on the course of action they wanted to pursue and CalTrans would help if they agreed with SCRTD's decision. However, Governor Brown after his election pushed the State into a more active role than it had taken under his predecessor's leadership. CalTrans, at a "summit meeting" with 6 or 8 of the key politicians in the Los Angeles area, was asked to assemble believable travel data for the region. CalTrans' entry to the regional transit decision forum was also facilitated by UMTA's request that regional high quality bus transit options be considered as alternatives to a rail rapid system. RTAC developed and analyzed the bus-on-freeway alternatives that were studied. CalTrans has subsequently expanded the study and submitted it as an element of the 4 element program.

The cooperative forum engendered by RTAC has evolved somewhat since agreement was reached on the regional transit improvement program. Currently, CalTrans' District 7 Director and the General Manager of SCRTD, together with their chief technical staff, meet once a month to discuss transit planning and operating issues. Similar interagency cooperative, trouble-shooting meetings between CalTrans director and the City Engineer also take place. Since TSM is a key element of the regional transit program approved by UMTA, it is reasonable to assume some policy level discussion is being devoted to system operations issues.

CalTrans, SCRTD and the City of Los Angeles (whose Community Redevelopment Agency originated the City's Downtown People Mover project) have created an Interagency Coordinating Committee (IACC) to handle the policy level coordination of the components of the recommended regional transit improvement program. The IACC membership includes the District 7 Director and the head of the Sacramento headquarters Mass Transit Division of CalTrans, the Mayor and 1 Councilman from the City, and two members of the SCRTD Biard. Other groups, including Los Angeles County, SCAG, UMTA, FHWA and the Los Angeles County Transportation Commission have also been invited to participate in the IACC. It is interesting to note that the Los Angeles City Councilman on the IACC is the Chairman of the New Los Angeles County Transportation Commission and, as mentioned earlier, the Mayor of Los Angeles is also on the LACTC.

One other noteworthy example of successful coordination is the Los Angeles area's regional ridesharing program, commonly known as Commuter Computer, which is operated in 5 counties in and around Los Angeles by a private non-profit corporation, Commuter Transportation Services, Inc. A separate vanpool program is operated through a cooperative effort between Commuter Transportation Services, Inc., Crocker National Bank and the Atlantic Richfield Company.

The carpool matching program got underway in early 1974, in the midst of the national gasoline shortage. The general manager of a local radio station, KFWB, is credited with being the prime mover behind the program.

Commuter Computer has stressed a private sector/governmental partnership with funding and technical support provided by both segments of the community. However, most of the financial support has come from City and County FAU funds, State highway funds, SCAG planning funds, general and highway funds of other cities and counties, and from private sector contributions of cash, professional services and supplies. The City of Los Angeles has provided all computer services for the program.

Commuter Computer has emphasized the employer's role in carpool matching, handling much of its marketing, promotion and information distribution through employers, and by encouraging employers to provide incentives for their employees to rideshare.

A separate corporation, with no assets, was established to handle the vanpooling program because of the concern over a costly lawsuit in the event of an accident involving a van. There are now three different approaches to vanpooling in the Los Angeles region:

- in-house vanpooling (such as 3M)

- the Commuter Computer Vanpool, Inc., program, in which the vans are owned and insured by the Crocker-McAllister Leasing Company, but operated by a driver who has full responsibility for the day-to-day operation of the vehicle. In return the driver gets free transportation, use of the vehicle during off times, evenings and weekends at a nominal mileage cost, and retention of part of the revenue brought in by the ninth fare

- a new program started by CalTrans in which they find a person interested in buying a van and using it for vanpooling. It is up to the individual to find riders; however, if after one year the person is unsuccessful and wants to sell his van, CalTrans will reimburse the person for 90% of the year's depreciation in the value of the van. There is no reimbursement for operating losses.

Other Factors Influencing Coordination in Los Angeles

Several persons interviewed in Los Angeles emphasized the need for careful coordination on both the policy and technical levels in order to successfully achieve interagency cooperation and political acceptance. They noted that a strong formal relationship among key technical staff, which presently exists, is essential. The Metropolitan Transportation Engineering Board (MTEB) is such an example. As an ad hoc advisory board to SCAG it brings every county, road and public works/city engineer official in the six county region together once a month to discuss mutual transportation interests.

Once this relationship is achieved, thorough technical analysis must be done and technical staff must be able to present elected officials with project objectives, scope and impact forecasts. Even then, however, there is no guarantee of political acceptance. Such preparation is particularly crucial for projects, such as the Santa Monica and San Diego Freeway diamond lanes, in which the public is asked to make a sacrifice and where the support of elected officials is very important.

The CalTrans headquarters administration apparently lost the respect of both the City and County as a result of the Santa Monica diamond lane "failure," and will have to work hard to keep future coordination from suffering as a result. Since the same technical representatives from the State, City, County, etc., work with each other on countless interagency committees, mutual respect is an important ingredient for a committee's success. Future projects requiring interjurisdictional cooperation can be jeopardized by such interpersonal problems.

A second point made by some Los Angeles transportation decisionmakers is the need to keep separate the policy and technical committees. Los Angeles had some bad experiences on earlier rapid transit planning efforts that had technical staff and elected officials sitting on the same committee. The tendency, in that case, was for politics to enter the technical analysis and technically unsound alternatives got assembled. Sizable sums of money, time and technical effort were consumed on analyzing alternatives that had very little chance of implementation.

Observations from the Los Angeles Experience

The following observations are based on our study of Los Angeles transportation operations decisions and interagency coordination.

First, in an urban area whose institutional arrangements for transportation operations allocate some responsibility to so many agencies, coordinated operations improvements often

require a very complex process of negotiation. Many different mechanisms have been used to coordinate operations improvements in Los Angeles, ranging from the ad hoc problem-solving committee (e.g., uniform traffic controls) to the requirement to prepare a document for the federal government (e.g., transportation control plan). Coordination in Los Angeles has at different times been induced by the County Board of Supervisors, the State legislature, the U.S. Environmental Protection Agency and the Urban Mass Transportation Administration.

Second, the creation of county transportation commissions removes several barriers to coordination by reducing the geographic scale at which coordination is to be achieved from six counties to one county, and by giving to the technical staff charged with making short range resource allocation decisions a political constituency. SCAG's 19 member Executive Committee has been an ineffective decisionmaking body. Los Angeles and Orange Counties with 90 percent of the Region's population have only 10 of the 19 votes on the Executive Committee. Thus, the smaller counties have had considerably more voting power than their population would warrant, frequently to the detriment of Los Angeles and Orange Counties.

Third, it is important to build-up to innovative technical projects, such as the Santa Monica diamond lane, by first doing simpler projects and gradually developing technical and political credibility. By involving all appropriate technical staff from the project's earliest conception, the likelihood of a technically sound project is increased. Technical staff then have a better chance of gaining the acceptance of the elected officials to whom they report. The public is more apt to accept a project that limits their prerogatives if it is vocally supported by their elected officials. Time and money need to be invested for education of the public and the media.

Fourth, operations coordination between the major operators in the region, SCRTD and CalTrans, seems assured now that UMTA funds are on the line. Future skirmishes will likely focus on increased competition for state and federal financial assistance between SCRTD, the 7 municipal operators and the small municiaplities who want local service. Given the amount of effort being put into the regional transit improvement program, purely local services will likely continue to receive low priority.

MADISON

The City of Madison, Wisconsin, has a well defined set of major institutions which play a role in the coordination and implementation of transportation system management and operations improvements. Madison, with a 1970 population of 204,000 is the State Capital, County Seat and home of the University of Wisconsin. Agency staffs are small and their responsibilities broad. A handful of key individuals with duties far in excess of their job titles interact on most transportation issues and are accessible and accountable to local officials, the public and agency staff.

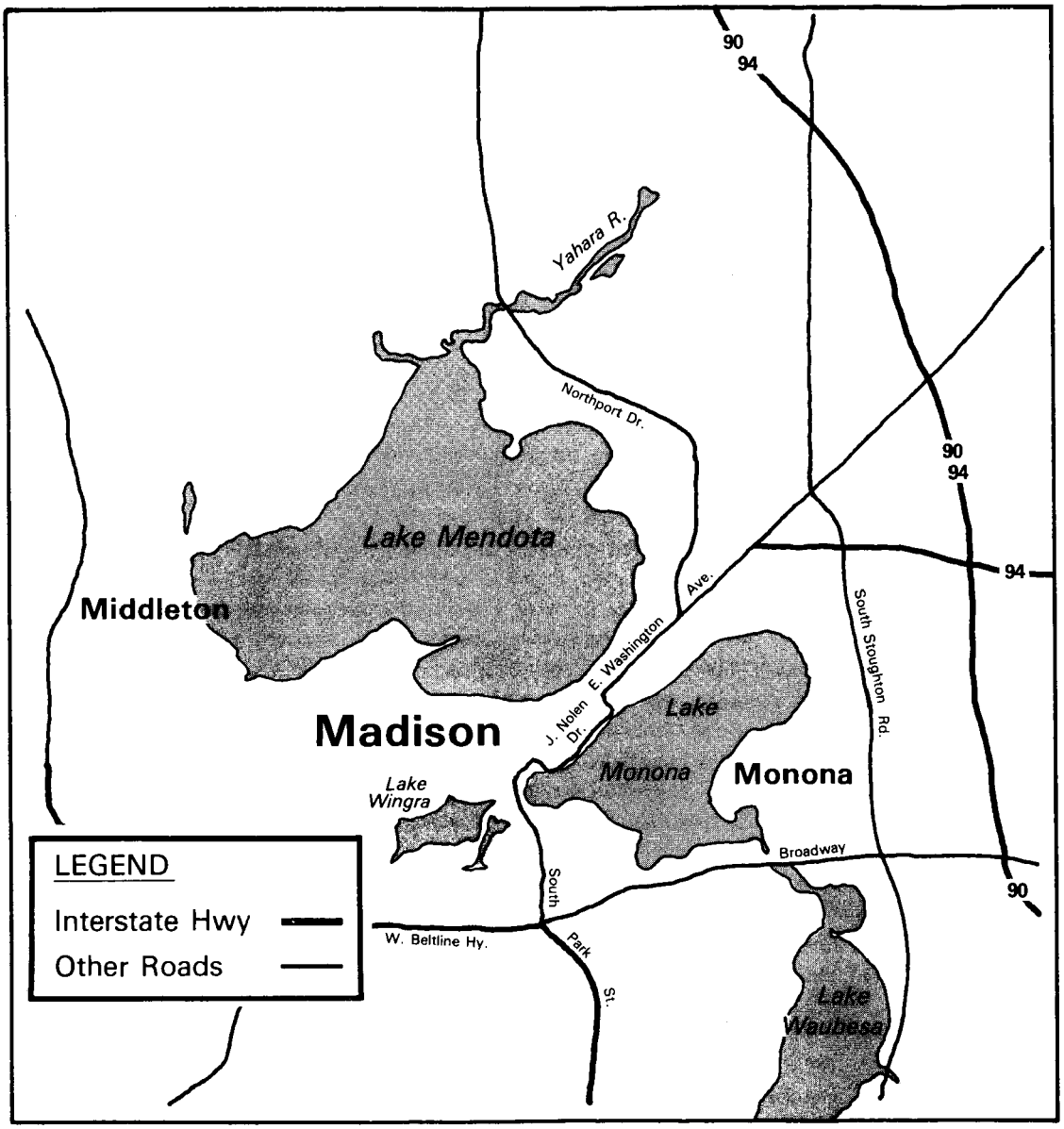
Interagency and intergovernmental coordination is facilitated by close physical proximity. The Dane County Regional Planning Commission, City Transportation Commission and County Government Offices are all located in the same building adjacent to City Hall, the State Office Building and the State Capital. The practical consequences of this proximity can be measured in time savings, access to information, a highly personalized level of communication, and shared staff capabilities.

The most important factor in Madison's ability to coordinate and implement system operations improvements is the existence of a multi-modal City Department of Transportation (MDOT) which is supported by a strong, transit-minded Mayor and public. Because MDOT has in-house responsibility for traffic operations and engineering, public transit, parking, taxi regulation and pedestrian and bicycle facilities, it can coordinate diverse activities to meet priorities.

The best examples of this coordination involve the Madison Metro Transit System, which the City purchased in 1970 after passage of a referendum calling for public ownership, operation and subsidies. In seven years, the Madison Metro System has grown to provide quality, areawide service. Three factors have contributed to this success:

- a history of coordinated, transit-related traffic engineering improvements;
- institutional and operational coordination between the City and Madison Metro; and
- intergovernmental cooperation in financial support for transit.

Madison has made extensive use of traffic engineering techniques to improve transit. As early as 1955, the City traffic engineer began supplying bus stops, prohibiting left turns, removing parking at bus stops, and constructing 30 foot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South Park St.
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LEGEND
Interstate Hwy
Other Roads

corner radii. In 1964, stop signing began to emphasize people, not vehicle flow. In 1970, the City eliminated through traffic from a residential renewal area near the CBD. In 1975, traffic signals were progressed around the Capital building to reduce auto flow in the inner loop used by transit and to speed auto flow around the outer loop. Madison also has instituted parking policies designed to increase the attractiveness of transit relative to the auto, and a staggered work hours program to improve peak-hour traffic flow and increase transit efficiency.

Madison contracts for the management of its transit system with a private firm (American Transit Corporation of St. Louis), and operations are conducted through a subsidiary corporation (Madison Service Corporation). Since transit workers are not City employees, civil service and residency requirements are not applicable, and ATC is responsible for labor negotiations. Politics is kept out of the daily operations of the system and a high priority is placed on efficiency and innovation.

Operating policy for Madison Metro is established by the City's Transportation Commission and Transit Utility Committee (the Commission's transit advisory group), under general guidance from the Mayor and Common Council, and implemented by the Director of Madison DOT. The Madison DOT provides staff support to the Transportation Commission and Transit Utility Committee on operating policy matters. Requests for service changes are considered by a route Subcommittee of the Transit Utility Committee and must be approved by the Commission, the Common Council, the Wisconsin DOT and the State Public Service Commission. This approval process appears rather lengthy, but all responsible agencies are involved, most changes are not major, and approval is usually pro forma.

The key to the implementation of operating policy is the MDOT Transit Coordinator, who works closely with the manager of Madison Metro. The Transit Coordinator, who is a planner with a transit operations background, reconciles City policy objectives with the practical considerations faced by the operator. He deals with the community, the Common Council and local legislators or aldermen on transit issues, especially service changes, and is the chief coordinator for transit-related improvements and innovations suggested by the operator.

Following the City's lead, numerous other governmental units and private parties have contributed to the financial support of the Madison Metro System. From 1967 to 1970 the City subsidized the Madison Bus Company's operations with local property tax dollars. Since public acquisition, Madison has expanded its operating support for the system and added funds for capital improvements; Dane County and the University of Wisconsin have also contributed local share capital grant funds.

In 1974, the State of Wisconsin initiated an "Operating Assistance Program for Urban Mass Transit." Under this program, the State provided 2/3 of Madison Metro's 1974 operating deficit. Starting in 1976, the system was funded on a general formula under which UMTA pays 50 percent of the total deficit, the State pays one-third and the City pays one-sixth. Additional operating support has come from various parites who have contracted with Metro for service, including the Madison Board of Education, University of Wisconsin, Cities of Monona and Middleton, Village of Shorewood Hills and several apartment complexes.

DCRPC, the Regional Experience

The Dane County Regional Planning Commission (DCRPC) is an advisory planning body to all local governments in the Madison area. As the designated MPO, it has planning, programming and coordination responsibilities for the regional transportation system encompassing a range of specific improvements supported by diverse interests. Overall coordination efforts are achieved through the organizational structure of Dane County Transportation Study (DCTS). The DCTS includes a Technical Coordinating Committee represented by the comprehensive planning agency, transit operators, local governmental units, the University of Wisconsin, State DOT and other agencies and the FHWA. Other coordination mechanisms include a Citizens Advisory Committee and the frequent use of interagency technical staff groups. The management of the existing transportation system and the implementation of specific improvements is vested with the governing bodies of each of the sixty-one local units of government within the region, and the Wisconsin Highway Commission.[1/]

In its role as a forum for all agencies and institutions, the DCRPC has demonstrated the ability to coordinate conflicting groups at odds over the implementation of specific transportation projects. By establishing special interagency staff and citizen participation committees to resolve specific controversial issues, such as the South Beltline Project, DCRPC has successfully integrated long range, project level planning activities with system management improvements. For example, while the South Beltline Citizens Committee made some capital

1/ In 1976 the DCRPC entered into a Memorandum of Understanding with the Madison DOT, pursuant to federal rules for joint planning certification, regarding transit planning and implementation on the Madison Urbanized Area. Overall coordination of short and long range transit planning and programming is the responsibility of the Regional Planning Commission as the lead agency, with cooperation and assistance from Madison. Transit implementation planning is the responsibility of Madison, with cooperation from the Regional Planning Commission.

improvement recommendations for the corridor, it also recommended improved transit service through the use of express bus routes and peripheral parking lots, and the designation of bicycle trails.[1] Committees have helped resolve a number of other transportation issues, including the transportation consequences of the University of Wisconsin's new Health Sciences Facility.

Clear policy directions for future transit capital and service improvements have not yet been established at the regional level, thus impeding effective coordination. For example, no unified approach has been developed for the identification, coordination and implementation of paratransit services, resulting in isolated initiatives by each level of government. As a first step, Madison DOT would like to extend its taxi regulating authority to cover all types of paratransit vehicles. It has drafted a new paratransit ordinance which would subject all non-regular route services to the same licensing, reporting and insurance requirements as taxis. DCRPC in cooperation with the State DOT is identifying elderly and handicapped mobility needs and all existing transportation opportunities provided by social service agencies. Both the State Department of Administration and the County Highway and Transportation Committee are potential participants in paratransit. The County appropriated $10,000 to hire a carpool coordinator, and the State is interested in starting a vanpool demonstration project.

The DCRPC recently initiated the Dane County Transportation Re-Evaluation Project to conduct a complete and indepth review of existing plans, including their underlying goals, policies and assumptions, and to promote a broad public discussion of alternative long range transportation plan and short range improvement program elements.[2] It is anticipated that this interagency effort will provide the overall context for continued systemwide, multi-modal transportation planning and policy development, as well as a public mandate for specific facilities.

One possibility discussed by a Madison official, and to some extent promoted by legislation proposed by the Governor, is an expanded role for Dane County in the provision of transit services outside the franchise area of Madison Metro. The County Highway and Transportation Committee historically has exercised important financial and allocation prerogatives for the County road network. The County Board of Supervisors is well represented on agencies, commissions, committees and advisory boards which develop transportation policy and plans. A precedent for

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1/ South Beltline Corridor Study, Summary Report, reprinted January, 1976.

2/ Toward a New Transportation Plan, DCTS Transportation Re-Evaluation Project, Dane County Regional Planning Commission, October, 1976.

countywide transit operations was established when Milwaukee County, rather than the City, purchased the local bus system.

Conclusions from the Madison Experience

In conclusion, several key points about Madison are worth repeating. First, Madison has achieved much of its operations improvements through an incremental approach that relies on interagency technical staff work and broadly representative special purpose committees. Such cooperative efforts are facilitated by the close physical proximity of most agencies and levels of government involved, and the personalized level of communication inherent in relatively small staffs.

Second, Madison's multi-modal City Department of Transportation is an effective mechanism for implementation, coordination and operation of transportation improvements within its jurisdiction. The creation of a new mechanism with similar responsibilities in the remainder of the region will likely be necessary to achieve fully integrated systemwide management and operation.

Third, the institutional relationship between Madison DOT and Madison Metro, including the unique role and responsibilities of the Transit Coordinator, are significant factors in the successful operation of the City's public transit system.

MIAMI/DADE COUNTY

In early 1974 the Metropolitan Dade County Board of Commissioners approved an administrative order creating an Office of Transportation Administration (OTA) within the County Manager's Office. This office was created "to provide central, top-level coordination for the various ground transportation programs and activities sponsored by Metropolitan Dade County." The official title of the "professional administrator-expediter" hired to head this office is Transportation Coordinator.

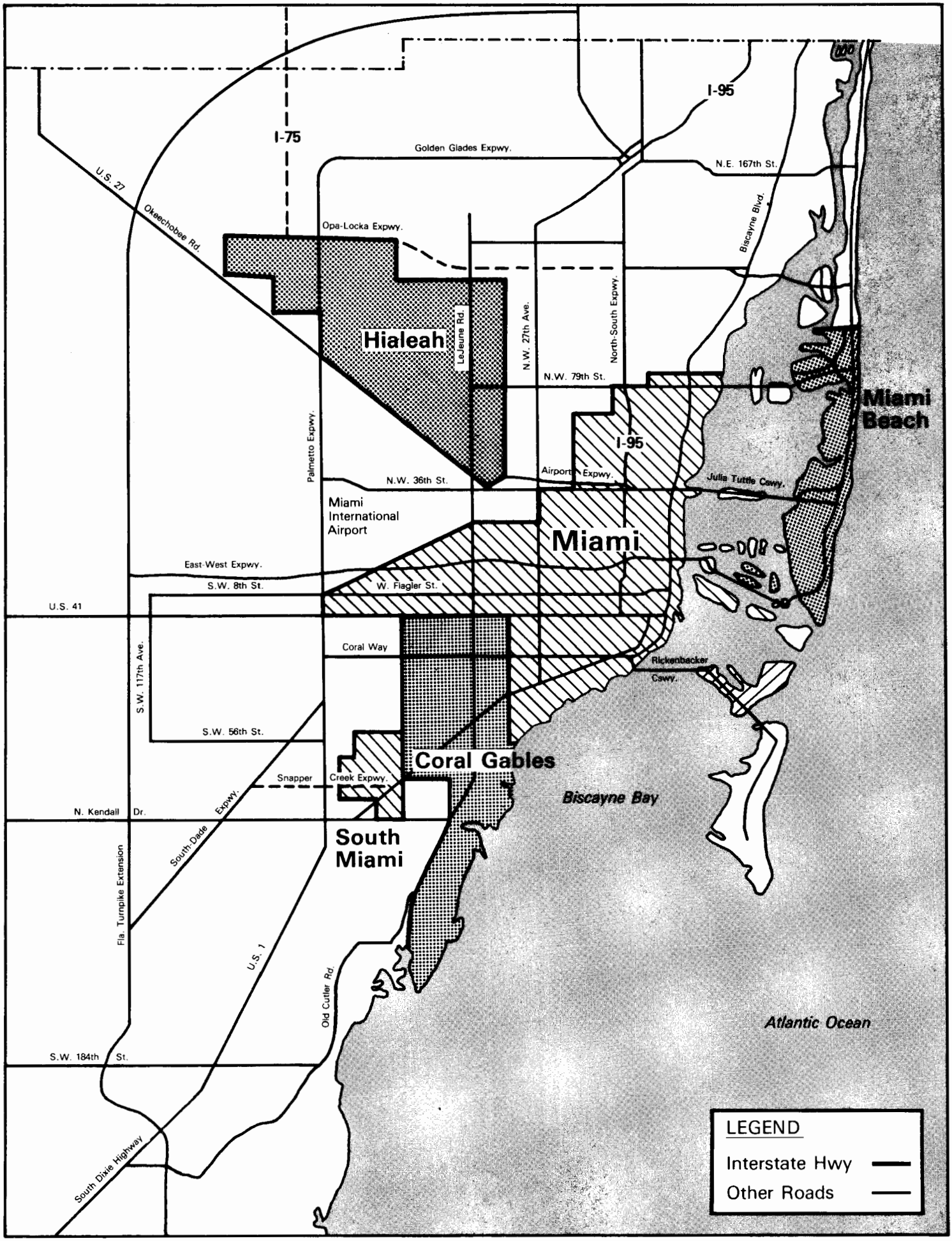
Recognition of the need for formal intermodal coordination is particularly noteworthy in Dade County, since the County has had a metropolitan form of government since 1958. Since 1962, the Metro government has owned and operated most bus transit in Dade County. Furthermore, the Metro government has control of virtually all transportation planning, implementation, regulation and operating responsibilities in Dade County (except for Interstate, Turnpike and State primary and secondary road programs).

The responsibilities assigned to the Transportation Coordinator include:[1/]

- Coordination, monitoring and evaluation of the ground transportation activities of the Traffic and Transportation Department, the Public Works Department, the Metro Transit Agency, and the Planning Department.
- Organization, staffing and management of Dade County's rapid transit system.
- Filing grant applications and receiving federal and State funds for ground transportation activities.
- Review, analysis and evaluation of State allocation procedures and the distribution of highway and expressway funds as well as funds received directly from federal sources through the Federal-Aid Highway Act of 1973 and other legislation.
- Development of plans and participation in the development program for regulation of taxicab operations as approriate and as established by the Legislature.

The Transportation Coordinator also assists the County Manager in the "review and approval of all program budgets, requests for change, and amendments which are based on transportation strategies and priorities developed through the coordination process."

1/ Administrative Order No. 9-32, Metropolitan Dade County, Office of the County Manager, February 5, 1974.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Opa-Locka Expwy.
Biscayne Blvd.
Hialeah
LeJeune Rd.
N.W. 27th Ave.
North-South Expwy.
N.W. 79th St.
Miami Beach
Palmetto Expwy.
I-95
Airport Expwy.
Julia Tuttle Cswy.
N.W. 36th St.
Miami International Airport
Miami
East-West Expwy.
S.W. 8th St.
W. Flagler St.
U.S. 41
Coral Way
Rickenbacker Cswy.
S.W. 117th Ave.
S.W. 56th St.
Coral Gables
Snapper Creek Expwy.
Biscayne Bay
N. Kendall Dr.
South-Dade Expwy.
South Miami
Fla. Turnpike Extension
U.S. 1
Old Cutler Rd.
Atlantic Ocean
S.W. 184th St.
South Dixie Highway
LEGEND
Interstate Hwy
Other Roads

As one of the metropolitan-wide services provided by Dade County, the County has operated a mass transit system since the Home Rule Charter was adopted. Prior to 1974, this service was provided by Metro under the supervision of an appointed Board of the Metropolitan Transit Authority. With the passage of the Decade of Progress Bond Issue in 1972, and the increasing priority assigned to the mass transit function, and specifically to the development of the rapid transit system, the Authority was abolished in 1974, and the Office of Transportation Administration established to bring the coordination of all surface transportation services with Dade County directly under the County Manager. In 1975, the transit management contract was cancelled and a staff of County employees hired to operate the bus system directly as the Metro Transit Agency. The bus operations now function as the Transit System Operations Division of the Dade County Transportation Administration.

The Transportation Administration is comprised of the Office of the General Manager of Transportation, two staff divisions for Equal Opportunity and Finance and Administration, and four line divisions including Transit System Development, Community Services, Transit System Operations, and Planning and Programming. In accordance with Administrative Order 9-32, the Office of the General Manager of Transportation is headed by the Transportation Coordinator, who functions as the Chief Executive Officer of the Transportation Improvement Program. Within the policy guidelines of the County Commission, the County Manager delegates to this office the authority and responsibility for directing the day-to-day application of the Dade County resources to carry out the development of the Rapid Transit System and assisting the County Manager and the Board of County Commissioners in the exercise of the overall management and policy making responsibilities associated with the Transportation Improvement Program.

The Transit System Development Division has direct line responsibility for the Rapid Transit System design and engineering.

The Community Services Division is responsible for, among other things, the citizen participation aspects of the rapid transit project, including the development and implementation of the system of corridor and station group review councils; the relationship with the municipalities within Dade County regarding the Transportation Improvement Program; and citizen involvement and community participation in all transit-related decisions within Dade County. This Division is also responsible for implementing special transportation projects including the maintenance of special carpool parking lots in the downtown area, supervision of the provision of elderly and handicapped portal-to-portal transportation services by taxi industry contractors, and the regulation and rate setting activities

associated with the regulation of the taxicab industry in the County. In addition, the County regulates and licenses jitneys, limousines and rental cars.

The Transit System Operations Division is a division which reports to the Transportation Coordinator as the General Manager of Transportation, and operates a fleet of over 500 buses on line haul and express routes. This division is the Metro Transit Agency, and is the successor to the previously existing Metro Transit Authority.

The Division of Planning and Programming is responsible for the planning aspects of the Transportation Improvement Program in Dade County, including the development of the annual element of the Transportation Improvement Program, preparation and submission of the Unified Planning Work Program Grant Application, development of models for the forecasting of ridership demands through the years 1985-2000, and the evaluation of the effect of various aspects of the Transportation Improvement Program. The Planning and Programming Division is the primary responsible agency for assessment of impacts of the rapid transit development program and other short and intermediate range improvement aspects of the Transportation Improvement Program.

Street control and traffic engineering in Dade County are the responsibility of the Department of Traffic and Transportation (DOTT). A uniform traffic control ordinance is in effect throughout the County. The twenty-seven incorporated municipalities in Dade County have virtually no transportation technical or planning capabilities, and have no traffic engineering or traffic control responsibilities. The municipalities (including Miami) function as "housekeepers" in the transportation arena, doing minor repairs to local streets.

In early 1977, the Governor of Florida designated a new MPO structure for Dade County. The MPO's Governing Board now consists of the 9 member Dade County Commission (including the Metro Mayor) as voting members, plus 2 non-voting members of the Florida Department of Transportation. Four working committees and a Secretariat were established to work under the direction and supervision of the County Manager. Each of the committees is responsible for developing one of the 4 work products: Unified Planning Work Program, Prospectus, Transportation Plan, and Transportation Improvement Program. The Secretariat will handle the MPO's administrative affairs and coordinate the activities of the 4 committees. The MPO in Miami is much more management oriented than plan oriented -- a function of the area's desire to build its rapid transit system.

Although Dade County has created an institutional structure to ensure program coordination and service integration among transportation modes, coordination between the County and the

Florida Department of Transportation has been a problem. Several factors appear to contribute to this situation.

1. In 1972, Dade County deleted 72 miles of expressways from its approved plan. At the same time citizens passed bond issues for a transit system ($132.5 million) and arterial street improvements ($113 million).

2. There is persistent dissatisfaction in Dade County with the amount of State gas tax dollars returned to the County, and the small amount of State funds devoted to public transportation (approximately $5 million out of $400 million in the current FDOT budget).

3. Florida DOT does not have a major role in the decision-making process for Miami's rapid transit system.

4. Florida DOT is now a non-voting member of the MPO.

The formal channels for technical level coordination between Dade County and Florida DOT are the various technical committees of the MPO, on which both units of government are well represented. However, the former MPO, the Miami Urban Area Transportation Study (MUATS) Technical Committee afforded the same opportunities for coordination, with no remarkable results.

There have been two publicized projects on which Florida DOT and Dade County have cooperated -- the U.S. 1/South Dixie Highway bus and carpool demonstration project and the I-95/N.W. 7th Avenue Bus/Carpool Systems Demonstration Project. The State has also contributed one half the non-federal share for recent MTA bus purchases.

There may be good reasons to hope for better future cooperation between Dade County and Florida DOT, with the new Miami rapid transit system as a focal point. The new District Engineer for Florida DOT in the Miami area has a background in mass transit and believes that a State/County partnership will be necessary "to get things done." Also, Dade County will need funds from the State in order to complete the rapid transit system. State financial participation could help remove many long standing antagonisms.

FDOT expressed an interest in coordinating State highway improvements with the location and design decisions on rail rapid transit stations. If Dade County provides the appropriate timing and schedule information, then the DOT can schedule highway improvements to provide good access to the rapid transit system.

To improve State/County coordination on rail system implementation, Florida DOT has created a new position for a District Rapid Transit Engineer, who will coordinate with the Dade County Office of Transportation Administration on transit system development.

Dade County, which does not include the entire urbanized area of South Florida, has also had some problems coordinating with its northern neighbor Broward County. Broward, which includes the rapidly growing Fort Lauderdale area, apparently lacks the transportation planning and administration capabilities of Dade County and is focusing inward on its own internal problems. There are opportunities being explored to coordinate Broward bus service with MTA service at a park-and-ride lot in northern Dade County, but thus far the Counties have not gotten together. Interestingly, a Florida DOT spokesman expressed the opinion that a key future role for the DOT may be to bring about improved cooperation between Dade and Broward Counties.

Observations from the Dade County Experience

In summary, Dade County has an institutional structure for multi-modal transportation planning, implementation, management and operations that should make transportation administrators throughout the rest of the U.S. extremely envious. One person, the Transportation Coordinator, has programming responsibilities for traffic operations and engineering, bus transit operations, rapid transit system development, street and highway construction, taxi regulation, and elderly and handicapped transportation services.

By virture of these powers, the Transportation Coordinator can, as a routine function of his job, order the kinds of intermodal coordination that can require hours of careful negotiation and compromise among various agencies and government jurisdictions in other metropolitan areas. For example, traffic signal preemption to improve bus flow, construction of bus turn-outs on local streets, removal of on-street parking, reservation of bus only lanes and other similar actions can be ordered by the Transportation Coordinator. As construction of the new rapid transit system proceeds, local street improvements or traffic engineering measures, as well as rerouting of buses, can easily be accomplished to facilitate overall transportation system efficiency.

At the present time a lot of human energy in Dade County is focused on building a rail rapid transit system. This undertaking is the top priority transportation concern in Dade County. The public, elected officials and County transportation professionals are united to achieve this goal. There is not a lot of fanfare and journal articles bragging about coordinated management and operations. Perhaps, this is due not only to a

consuming interest in building a rapid transit system, but also to the fact that after nearly twenty years of Countywide traffic engineering/operations responsibility and fifteen years of Countywide bus operations experience, multi-modal coordination in Dade County is routine and is, therefore, not singled out for the blandishments it receives in other metropolitan areas.

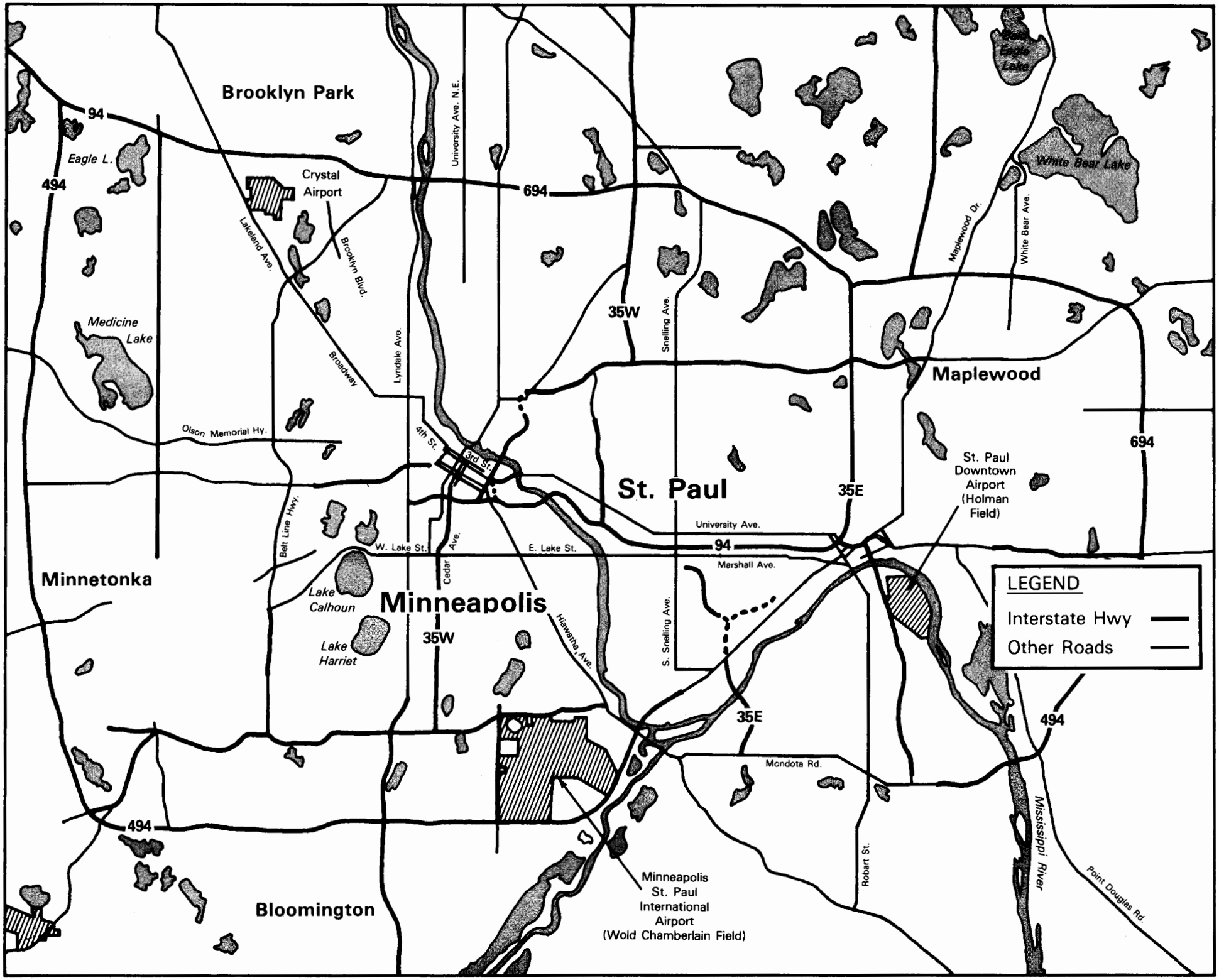
MINNEAPOLIS-ST. PAUL: THE TWIN CITIES

The Minneapolis-St. Paul area is often held out to possess a desirable model for institutional structure and has implemented several innovative approaches to operating urban transportation systems. Additional interesting characteristics of the Twin Cities are the general ethos of progressive good government and the high level of citizen awareness of and competence in urban transportation and other issues. The possibility of implementing the Twin Cities area regional institutional structure in other urban areas is remote, since most regional institutions are likely to remain dominated by local elected officials rather than governed by regional or state appointed or elected councils. However, while it may not be politically feasible to transfer the institutional structure or the political progressiveness of the Twin Cities to other urban areas, several transferable lessons come out of the Twin Cities institutional approaches to TSM and other operational improvements.

The Metro Council (MC) is the state created regional body with strong regional land use planning and development authority. Unlike most regional agencies, the MC's policy is not under the control of local elected officials. The Metro Council now appoints MTC (transit agency) commissioners, and develops the transportation policy plan which the MTC and others are supposed to implement. With the strong authority of the MC over autonomous local governments, policy level interaction with local officials on transportation matters cannot be completely separated from potential controversies between the MC and local governments on non-transportation matters. The technical advisory committee in transportation enables the staff of all the operating agencies and important jurisdictions to get to know each other.

One analyst has observed that in the Twin Cities region the generalized rivalries between local jurisdictions had been somewhat supplanted by issues between the respective institutions for metropolitan planning and metropolitan implementation. 1/ Certainly, in transit and TSM planning, our interviews confirmed a high degree of institutional-based rivalry between the staffs of the Metropolitan Council who do policy planning and the Metropolitan Transit Commission, who do transit planning.

1/ David W. Jones, Jr., "The Politics of Metropolitan Transportation Planning and Programming - Implications for Transportation System Management," Institute of Transportation Studies, University of California at Berkeley, November, 1976.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Eagle L.
Crystal Airport
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Lakeland Ave.
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Medicine Lake
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Lyndale Ave.
35W
Snelling Ave.
Maplewood Dr.
White Bear Ave.
Eagle Lake
White Bear Lake
Maplewood
Olson Memorial Hy.
4th St.
3rd St.
St. Paul
35E
St. Paul Downtown Airport (Holman Field)
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University Ave.
94
W. Lake St.
E. Lake St.
Belt Line Hwy.
Cedar Ave.
Marshall Ave.
Minnetonka
Lake Calhoun
Minneapolis
Lake Harriet
35W
Hiawatha Ave.
S. Snelling Ave.
LEGEND
Interstate Hwy
Other Roads
35E
494
Mondota Rd.
494
Mississippi River
Robart St.
Point Douglas Rd.
Minneapolis St. Paul International Airport (Wold Chamberlain Field)
Bloomington

The Metropolitan Council has been given appointive powers over the membership of the Metropolitan Transportation Commission. However, the Council recently reappointed two MTC Commissioners due to outside political pressures, and therefore showed they were not necessarily willing to take political risks to bring the two policy bodies into agreement. Also, the MTC, which currently had its planning staff in offices across the hall from the MC staff, moved to a new building. Therefore, the interaction level among their respective staffs is likely to diminish in the future.

The reasons for disagreement among MC and MTC seem to revolve around the issue that MC "policy" which is oriented generally towards ridesharing differs from current MTC operations which emphasize fixed route bus service, and MC felt its policy is not being implemented by the MTC. In the past, MTC and MC had fought over transit capital systems.

In their current dispute, there is not particular blame to assign. The Council's policy goals and philosophy hit to the heart of TSM policy and call for making better utilization of existing facilities by increasing ridesharing, without regard to the type of vehicle used or who owns it. The Metro Council's policy plan document is a TSM plan, and their most recent TSM plan document is a policy plan for TSM.

The MTC has been assigned the rather difficult task of making such policies work, but without the authority to impose any drastic disincentives to the use of the single person auto. Thus, while it is frustrating to the policy planners that the implementors have not done more, it must also be pointed out that no other implementing agencies have found the magic formula for a comprehensive program of ridesharing which is cost-effective in serving a dispersed travel pattern and is perceived as superior to the single person auto by a large percentage of those who now drive alone. The reasons MTC hasn't moved as quickly as some might desire can be explained as well by such substantive factors as the difficulty of the task as by the institutional factors that MTC is a traditional transit agency oriented to regular route bus service improvements.

In some sense then, the policy goals are currently a bit ahead of the practical opportunities for coordinated operating improvements, and the lack of performance by the implementors is due to more than shortcomings in the institutional framework of MTC as the implementor. There seems to be no particular reason for considering that a schism between goals and performance is undesirable, as long as the schism between the policy planners and the implementors doesn't become so great that each ignores the other. If such friction leads to creative solutions, the region can move forward in innovation and implementation.

While the MTC and MC have sometimes disagreed, useful coordination on several innovative actions has been fostered by them and by the City of Minneapolis, the State of Minnesota, and private groups and businesses. In several of these actions, the MC has been the nominal lead agency or the MTC has been the funding agency, but the actual coordinators have been the other actors.

Minneapolis Downtown Actions

Downtown Minneapolis has implemented numerous improvements that enhance pedestrian and transit movement. Among the projects already completed are the famous Nicollet pedestrian and transit mall, pedestrian "skyways" at the second level providing indoor links between blocks, reverse flow bus lanes on 2nd and Marquette, and three fringe parking garages. Actions about to be implemented include a computer controlled signal system in the downtown area which will allow bus preemption on three streets and will tie into 650 of the 720 signalized intersections in the City, and a change in bus layover locations so that buses will wait at fringe parking lots. The lots will charge only 10¢ per day for parking, in addition to the 10¢ bus fare.

Cooperation among the downtown business community and City agencies has contributed to the success of many of these projects. The mall had strong support in the business community 12 years ago, and the concept evolved from just a pedestrian facility to include transit. The skyway system was all privately developed by the downtown business community in Minneapolis (St. Paul's skyways are publicly financed). The skyway idea was generated by the Minneapolis Planning and Development Department, and implemented by the business interests, who realized there were profits to be reaped from the high rentals for commercial space along the major pedestrian paths. The downtown business community was originally opposed to the bus lanes, but the majority of politicans wished to do something additional for transit, so the bus lanes were implemented on an experimental 90 day basis. The City now plans to make the lanes permanent.

There is a Downtown Council comprised of business interests who are organized into various committees, with City staff sitting as members of the committees. On the purely governmental side, a key factor has been the good coordination among the City agencies themselves, which is facilitated by a City Coordinator's office and includes close ties between the Planning Department and Traffic Engineering.

There is no legal limit on parking spaces in the core, although there is some general agreement that there should be.

No new major core area parking facilities have been constructed in the past 5 years. The downtown ordinance has been changed so that parking is not required as a part of new buildings. Approval for parking lot uses is relatively easy to obtain, but there is an ordinance requiring beautification, paving, and fencing for the lots.

Public Service Options

Public Service Options (PSO) is a private non-profit consulting group which grew out of two other private organizations, the Citizen's League and the Upper Midwest Council. PSO has attracted competent staff to address issues of increasing ridesharing programs restricted to a portion of the metropolitan area (South Hennepin County). The contract with MTC provides PSO with complete management control of the project, and is oriented entirely to developing ridesharing for non-CBD work trips, presumably so as never to conflict with current MTC bus services.

There is a signed Section 13(c) labor agreement for this project covering custom subscription buses (MTC drivers), vanpools without paid drivers, and carpools. There will be no contracts with taxi companies. The project has no regulatory problems, because multi-employer vanpools were exempted from regulation by 1976 State legislation. PSO and other public and private groups participated actively in the development and passage of this legislation.

PSO developed four potential multiple-employer ridesharing models, which were evaluated for possible implementation. Model One envisions a service provided by independent third party management under contract to MTC. Public funding would be provided until program revenues exceeded fixed expenses. This model has the advantage that it can be set up as a self-sustaining, replicable package which involves no commitment on the part of the employer. It is the best situation from an insurance standpoint, and the private, third party operator has a vested interest in keeping the vans filled and operating efficiently.

Under Model Two, the individual employers would contract with third party vanpool management to operate the same type of services as in Model One. MTC would pick up front end costs. Model Three assumes that some existing employer sponsored vanpool programs (e.g., 3M) could be expanded to other employers on a shared cost basis. Model Four follows the Knoxville experience, relying on independent van operators. Essentially, the MTC would provide a van to some willing operator and let him set up his own service.

All four models have advantages and disadvantages. For example, the nature and organization of a third party operator

is unresolved, as well as the applicability of overtime and minimum wage provisions of the Fair Labor Standards Act.

Experience has shown that vanpool and carpool programs take from 2 to 3 months of start-up time at each site. Unless this initial effort is complemented by an ongoing program, the service will eventually disintegrate. PSO recommended a Phase II strategy for South Hennepin County which will consist of a start-up team (PSO) responsible for building service to a critical mass, followed by an area office (MTC) which will monitor and expand existing service.

These private actions by PSO tend to fill a portion of the gap between the Metro Council's policy planners who have no direct implementation responsibilities, and the MTC, which is a competent regular route bus operator and knows fixed guideways, but has little experience with paratransit or marketing analysis. While the MTC is legislatively mandated to provide ridesharing programs, they turned over this responsibility to the State Highway Department (by contract), because the State had a computer. Although Minnesota DOT had been in the carpool business since the energy crisis, they had no marketing data to process in their computer and had been faltering along with a public relations program. Thus, a private group with strong connections to other influential groups has taken the initiative to fill a gap in public institutions' capabilities to coordinate operating actions.

The I-35W Corridor

The I-35W corridor is 16 miles long, extending south from the Minneapolis Central Business District. Since 1969, this corridor has been the focus of a demonstration project to test the concept of bus priority access to a metered freeway. From the outset, the project has been closely monitored and widely reported.

Like other transportation projects in the Twin Cities[1/] area, I-35W had a project management board (PMB) consisting of representatives from the local participating agencies. Initially, the PMB had five members, the State Highway Department,

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1/ Service and Methods Demonstration Program, Annual Report, No. UMTA-MA-06-0049-75-2, U.S. Department of Transportation, November, 1975.

I-35W Urban Corridor Demonstration Project, Final Report, prepared for Metropolitan Council, August, 1975.

Transit Performance in the I-35W Urban Corridor Demonstration Project. Paper presented at TRB Annual Meeting, January, 1977.

MTC, City of Minneapolis, Hennepin County, and FHWA (ex-officio), and met on the average of every other month. The Metropolitan Council became an official member and the nominal lead agency soon afterwards, but didn't change the project's basic orientation. Some breakdowns in communication occurred between the project and the MTC operations division, resulting in occasional route, service and implementation disagreements. In general, however, the PMB seems to have functioned well as a coordinating mechanism.

Project planning, design and implementation were done by a working team which reported to the PMB. The team consisted of the Highway Department's traffic manager, consultants to the project, and staff from MTC. During the implementation phase, a marketing group was added to the team. Between the PMB and the project team was a joint project directorship, consisting of a State appointee and a representative of the consultants. The main line of public communication was by the project director working through the City Traffic Department and existing City structure.

Although the metered freeway got some bad press on opening day due to equipment failures, complaints ceased after two weeks and the project continues to have a good public image. Evidence of this is the high level of compliance on the 9 metered bus ramps with less than one violation per 100 cars. The project had been less successful with its one outbound carpool ramp, which handles between 70 and 80 carpools in the evening peak with an average of 15 violators. In some areas of the corridor where capacity constraints exist due to restricted numbers of lanes at the southern end, compliance is declining.

Interestingly, now that close to maximum use has been made of the metering and surveillance systems to solve capacity problems, future priorities for the corridor itself are focused on capital construction. Additional lanes are planned for the bottleneck areas. A secondary priority is to establish a hardware and phone system link with Minneapolis' planned CBD traffic signalization, eventually leading to a direct software connection as computerization is introduced to the City's system.

There seems to be a general acceptance by responsible agencies that the I-35W project is successful and worth duplicating in the future. District 5 Minnesota DOT engineers are sufficiently impressed to have included meters and special bus ramps in the planned construction of I-94. No project management board is contemplated for this future project other than a working relationship with MTC. This illustrates that this type of action is now well enough accepted that less coordination is needed to apply it elsewhere.

Observations from the Twin Cities Experience

First, coordination of agencies within the same city (Minneapolis) can be a most important aspect of a TSM approach.

Second, once an innovative project is proven, such as the I-35W ramp metering and priority bus/carpool project, further such projects become routine, and do not require as much coordination to implement.

Third, strong institutional ties between agencies do not necessarily bring about staff or policy level cooperation. The MC and MTC are tied together by a policy level appointee process and had adjacent offices, yet a spirit of cooperation did not always exist at the policy level or among their transportation planning staffs.

Fourth, the Twin Cities policy planning and aggressiveness in transit had received a lot of attention, yet auto use and auto dependency is among the highest in the nation. This auto use is correlated with the high level of affluence of the Twin Cities population. Good laws, good policies, good personnel, and a strong regional institution have not reduced that auto dependency.

Fifth, the principal coordination activities for specific innovative TSM and operating actions have been undertaken by citizen's groups, private industry (3M, Cenex, etc.), city government, and the Minneapolis DOT, all of which have little to do with the uniqueness of the regional institutional structure, except that the same citizen forces which created those institutions are pushing for TSM and operating improvements.

Sixth, the responsibility for translation between policies and practical actions is a very grey area in the institutional structure. There has to be some doubt as to what the legislature meant when it mandated that 50% should ride rather than drive, and whether or not this policy goal has already been met. Similarly, the Metro Council staff and policy bodies have pushed a concept of transit oriented to community subareas, have roughly broken up the metropolitan region to subareas, and have identified what kinds of transit should provide what linkages. However, nobody has looked at whether those subareas and transit concepts are operationally reasonable.

Seventh, with their high degree of competance, most Twin Cities agencies understand what they must do to coordinate innovative approaches with other agencies and jurisdictions. It is standard practice for MC, MTC, and the Minnesota DOT, to set up a project management board (PMB) and a citizens advisory committee (CAC) to deal with actions requiring multi-agency

cooperation. PMB's set policy and agree on the work programs for each project, and technical staff is assigned to perform the necessary work. The key influential person outside MC, MTC, or Minnesota DOT is generally the city or county representative(s) for the affected jurisdiction(s). The chairman of the project's community advisory committee (CAC) also sits on the project management board. CAC members are appointed by the local jurisdictions.

Thus, most important things are associated with a group brought together which represents all the interested parties in the decision or the project. This can be accomplished either formally by always establishing PMB's and CAC's, or informally. The major goal is to involve those with an interest, but not to involve those whose interests are non-existent or peripheral.

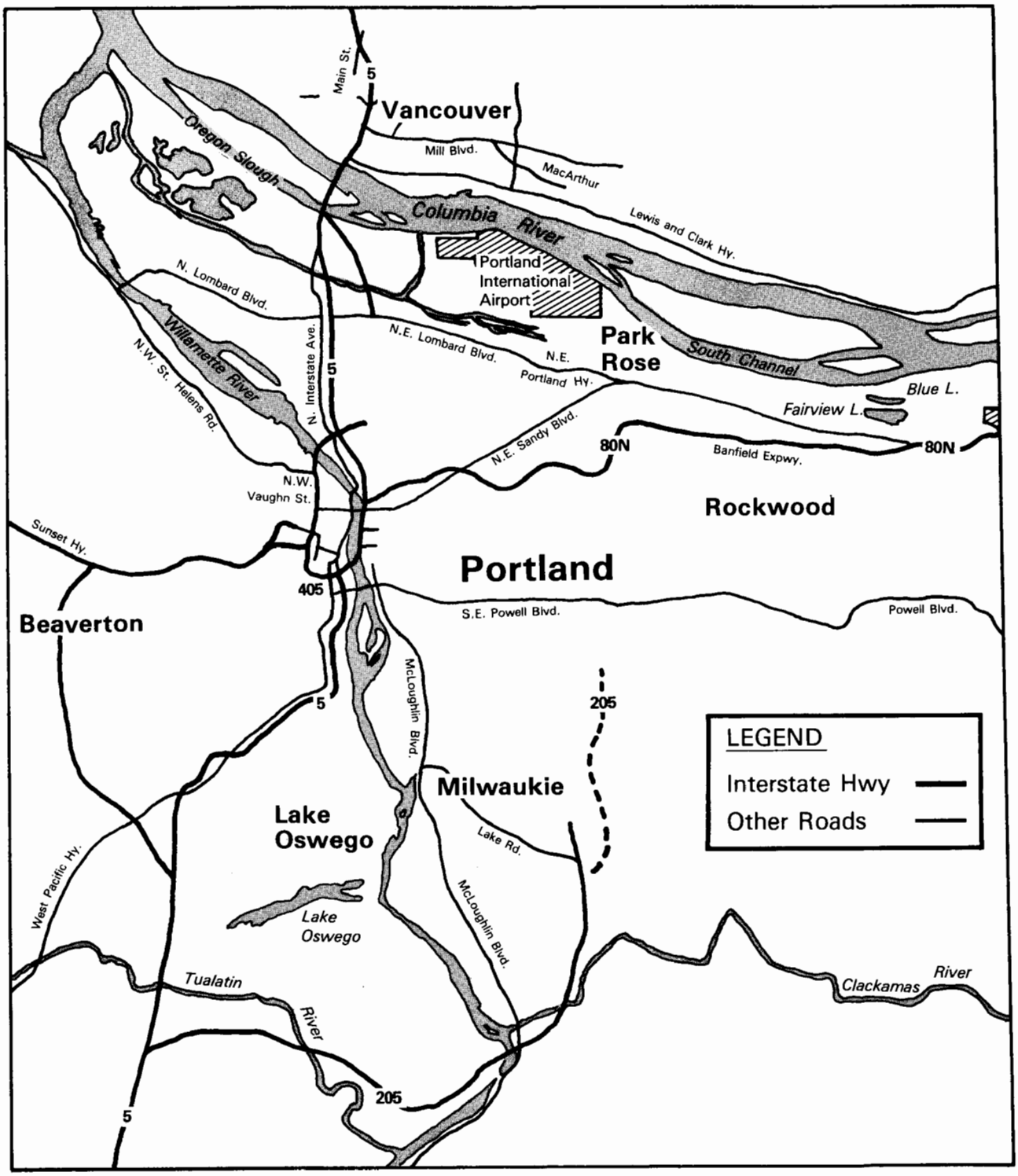
PORTLAND

In the Portland, Oregon, area there is a contrast between the institutional responsibility for coordinating the operation of the urban transportation system and each institution's actual influence in coordinating actions. The states and local jurisdictions are the operators of the highway system and Tri-Met, the regional transit agency for three Oregon counties, operates the transit system. The coordination of operations improvements occurs either between any two operating agencies or is regionally based at CRAG, the Columbia Region Association of Governments. However, the City of Portland is much more important in deciding upon actions and coordinating actions than would be apparent from any chart of institutional responsibilities.

All the important institutional actors acknowledge the policy and staff level leadership of the City as the initiator of changes in major transportation policies, including new approaches such as TSM. The City's influence is due in part to the dominating personality of its Mayor as a regional political actor and to the personality of his chief aide for transportation, generally acknowledged to be the most influential staff person from any agency. While policy decisions and staff work on TSM and other operations improvements cover projects proposed by many jurisdictions, the general regional policy toward operations improvements, as opposed to capital projects, has changed recently, and this change was led by the City.

There was excellent institutional coordination in the area prior to 1970, since every important institution believed that extensive freeway and expressway construction was desirable. The State had built four radial freeways and a tight inner belt around downtown, and the City had implemented progressive signalization in the downtown and along most major arterials. Institutional disagreements tended to be oriented to the local jurisdictions all wanting more from the State. The region's transportation plan prior to 1973 called for a nearly ubiquitous system of freeways and expressways through the center city, as well as the suburbs. There was no transit element prior to 1973.

This period of virtually complete agreement between the State and local jurisdictions was shattered by a change in the City's and other agencies' policies away from favoring new freeway construction and towards more reliance on transit and coordinated operational improvements. The important City-State institutional relationships were briefly threatened by this policy change, but those agencies are once more in agreement. Agreement on the desirability of coordinated multi-modal operations improvements is the key aspect of the new value system shared by the City and State.


Vancouver
Main St.
5
Mill Blvd.
MacArthur
Lewis and Clark Hy.
Oregon Slough
Columbia River
Portland International Airport
N. Lombard Blvd.
Willamette River
N.W. St. Helens Rd.
N. Interstate Ave.
N.E. Lombard Blvd.
N.E. Portland Hy.
Park Rose
South Channel
Blue L.
Fairview L.
N.E. Sandy Blvd.
80N
Banfield Expwy.
N.W. Vaughn St.
Rockwood
Sunset Hy.
Portland
405
S.E. Powell Blvd.
Powell Blvd.
Beaverton
McLoughlin Blvd.
205
Milwaukie
Lake Oswego
Lake Rd.
West Pacific Hy.
Lake Oswego
Tualatin River
Clackamas River
LEGEND
Interstate Hwy
Other Roads

Portland's transportation planning and implementation process is now characterized by City and State policies favoring TSM actions and other operations improvements, rather than capital investments. The City spearheaded a political decision to withdraw a proposed Interstate freeway, and has successfully worked within the Columbia Region Association of Governments (CRAG) to set aside a small portion of the federal funds thus made available for TSM improvements. Most of the proposed TSM actions in the area of the formerly proposed freeway will be improvements along the arterials designated by the City as major transit streets. These will include curb treatments, narrowing of intersections, possible signal preemption by buses, and shelter areas. The major portion of the funds is earmarked for regional transit capital improvements.

The emphasis on operational actions by the City Bureau of Planning and by the City Traffic Engineer applies to all of the City's residential neighborhoods and to its downtown. The usage of arterial streets is the major focus of the City's arterial streets plan, and in the downtown, the City's policies and several implemented projects have focused on the usage of downtown's circulation resources for transit and pedestrians rather than for private vehicles. These include a transit mall on two downtown streets, removal of a major road which formerly cut the CBD off from its adjacent river, explicit policies for the use of each street by transit or autos, and a statutory lid on the number of parking spaces in the CBD.

It should be mentioned that in a comparative technical sense, there had been a substantial excess of road and parking capacity in the Portland downtown. However, it is really the excellent coordination between the City Bureau of Planning and the City Traffic Engineer which has made possible the continued innovation of operations improvements in the downtown.

The formal institutional setting of the transportation committee at CRAG, the Transportation Technical Advisory Committee (TTAC), does overlap with the more important informal working and decision-making relationships which grew out of the process of withdrawal of the Mt. Hood Freeway. The personal relationship among the key staff of the City and the State are now the most important linkage for interaction about all regional transportation issues. The same personnel who coordinate the decision process at the staff levels attend the CRAG staff meetings as the spokesmen for their jurisdictions.

While the regional agency has provided a forum for decision-makers and their staffs, the staff of the CRAG has never yet been important to decisions, and key compromises are worked out prior to the formal committee

meetings through the parallel informal web of personal contacts. That web of contacts predates the current commitment structure, determines who speaks with what weight, and sometimes recruits the committee chairman.

The four important counties in the region -- Mulnomah, Washington, and Clackamas Counties in Oregon and Clarke County in Washington, are interested in regional activities only to the extent that their favored projects are affected. Multnomah County had a transit advocate as the representative commissioner, whereas Washington, Clackamas, and Clark Counties pushed strongly for regional acceptance of road projects in their jurisdictions, at least until this year.

The regional transit agency, Tri-Met, has not consistently pursued a practice of cooperating openly with the State and City staffs on major regional transit projects in the planning stage. The City and State consider that Tri-Met has not managed well on projects of regional significance, although they have had success with several aspects of transit service improvements. In the area of major capital projects, Tri-Met was outside the general pattern of trust and personal credibility which characterizes those relationships critical to success in transportation decisionmaking.

Except for projects and operations in the downtown Portland area, there are currently no mechanisms or procedures for integrating transit operations planning with institutions outside the transit agency. The lack of mechanisms for general coordination, however, has not prevented particular transit agency staff from adequately performing the tasks which the overall institutional structure has explicitly or implicitly assigned to them.

The transit mall was fostered and carried through by the City and the former President of the Tri-Met Board, a downtown businessman who ran the agency in its formative years and was dismissed from the Board in 1974 by the Governor because of the Board's conservative policy on spending money and expanding service. A special coordinator, chosen by the City and Tri-Met, has handled the transit mall, and this project has continued towards successful implementation. The City Traffic Engineer has maintained excellent downtown traffic operations throughout the mall's construction period.

Tri-Met's various divisions have a well functioning internal mechanism for coordinating service improvement

planning, operations, and marketing. The agency has worked directly with several major employers to institute special express buses for their workers. A single Tri-Met staff coordinator works with the employers on express buses, car-pools and vanpools. Since the responsible individual handles this job well, there are no current pressures from other institutions for involvement in these actions. Tri-Met also has another competent staff person assigned to elderly and handicapped services.

While most actors and institutions in the area favor TSM actions, they do not have similar interests in every operational or TSM improvement. Doug Wright of the City of Portland has observed that the Portland region's initial TSM element was a compilation of projects that were already completed, underway, or proposed and, thus, a response to the federal regulations comparable to that of most other regions. Now, however, the City and others are questioning the previously implied "goodness" of each proposed TSM project simply because it is a TSM project. Specifically, Doug Wright notes that the TSM projects which improve traffic flow in outlying areas may tend to induce somewhat more traffic onto the City's streets, contrary to the City's interests. Wright suggests that the Portland area will carefully evaluate all projects including TSM projects, to assess their consistency with regional goals. He prefers to identify possible TSM alternatives to all capital projects, although he recognizes that not all projects will have viable TSM alternatives.

Another very important institutional actor in Portland is the public. Wright makes the interesting observation that many of the transportation professionals in Portland have for a long time placed high priority on TSM actions and understand their usefulness and applicability, but that the general public lags far behind in the understanding of changes in multi-modal system operations. He suggests that extensive marketing efforts and public participation are necessary for many TSM actions, and their implementation must be flexible or maybe even deemed "experimental" in some cases. The City's Traffic Engineer emphasizes the importance of demonstrating a real improvement in service each time a TSM-type project is implemented, in order to avoid a backlash of public recrimination towards the overall policy.

CRAG -- The Regional Institution

The Columbia Region Association of Governments (CRAG) was created by the Oregon legislature, which mandated the membership of Counties and local jurisdiction in the three county Oregon area of Washington, Clackamas, and Multnomah counties. Other jurisdictions of contiguous counties in

Oregon and Washington States may have a voluntary membership in CRAG. In addition, the Oregon DOT, the Port of Portland (Oregon), Tri-Met (a three county Oregon transit district) and the Washington Highway Commission are on the CRAG Board of Directors. Voting by the Board of Directors is apportioned according to population for the representatives of cities and counties. Each Oregon agency has one vote. CRAG is the designated metropolitan planning organization.

Since a regional agency or MPO such as CRAG is governed by a Board of Directors of policy makers from member jurisdictions, each of which have their own staff, it is unlikely that an MPO staff person can become the day-to-day advisor of key policy makers. Rather, MPO staff must develop relationships at the staff level, and hope to establish substantive technical credibility with the technical managers.

So far, no CRAG staff members have entered fully into the "in-group" of City and State personnel who have catalyzed or negotiated most important decisions, with the exception that the technical traffic forecasting person and the TSM staff have credibility within their specialities. However, some CRAG staff have begun to establish enough personal credibility to lead to a larger role in supporting a decision process.

In TSM, this can be done by slowly changing the region's list making response into a planning and decision process in which technical and political considerations can interact. This will involve the development of new actions and tradeoffs, since Portland's initial TSM list does have a political history, constituency, and consequent legitimacy.

While members of the CRAG technical committee responsible for the TIP (and TSM element) professed a professional desire to prioritize actions, their job was also to make sure their jurisdictions' projects were included. Technical committee representatives were not empowered by their jurisdictions to do any "horse-trading," and they could certainly not conclude publicly that another jurisdiction's projects were more deserving than their own.

CRAG has been funded by UMTA Project No. TI-09-0068 to prepare a prototype Transportation Systems Management (TSM) program for the Portland-Vancouver metropolitan area. The project is being undertaken by CRAG staff in association with a TSM working group composed principally of traffic engineers from Oregon and Washington, local jurisdictions and Tri-Met. The TSM working group is responsible for this work in coordination with the revision of the TSM element, and reports to the Transportation Technical Advisory Committee (TTAC) composed of principal staff from all jurisdictions.

The TTAC reports to the CRAG Board of Directors, whose member jurisdictions and agencies have responsibility for implementing projects.

A new TSM staff member at CRAG was charged with the responsibility to develop and implement innovative TSM planning procedures. Periodic reports of the work activities are prepared for UMTA. The new person in the CRAG TSM job is, however, politically sophisticated enough to recognize where the impetus for regional decisions comes from at the staff and policy levels, who trusts whom, and who does and does not cooperate with other agencies.

The approach taken so far in the CRAG staff efforts might be characterized as integrative, in that the effort is seeking ways to integrate TSM planning with the agency's 1990 systems planning analyses, and the TSM project list is being analyzed in comparison to present and projected transportation system deficiencies.

The CRAG staff approach has included analyses of the relationships between the technical work being done at the regional level and the politically oriented list making which has characterized preparation of TIP's and TSM elements. In the second year of preparing a TSM element, the CRAG staff has compiled and mapped the locations of proposed TSM projects which can be mapped. The maps also indicate, according to current and predicted 1990 road network assignments, where there are current and predicted capacity deficiencies, so that these can be related to TSM on a program basis. In this way, CRAG has identified major corridors or subareas in which TSM actions are being taken, and have begun to assess whether there is consistency of needs with actions and integration of actions in those corridors and subareas. The act of mapping has been very illustrative in assessing whether a TSM program or just isolated projects are being put together.

This approach of relating TSM to regional technical work on capacity deficiencies may provide the regional institution a means to gain credibility as a technical resource for operations planning. It may also serve to provide evidence to the federal review agencies of the relationship of TSM to other planning activities and analyses. It is, of course, unlikely that present or projected capacity deficiencies will or should become a sole criteria for TSM and other operating changes.

Paratransit

Social service agencies in the region have for many years provided special transportation services for their client groups. In the last several years, the City of Portland and Tri-Met began discussing a more centralized financing and operating commitment from Tri-Met for services to the elderly and handicapped. Tri-Met's responsibilities have now evolved to include operation of a special service, "The LIFT" for those handicapped or elderly persons within the City of Portland who are unable to use existing transportation. For this service Tri-Met uses 12 specially equipped vehicles and provides drivers from among its operating personnel. A special pass is necessary and is given only to those who cannot use the regular route service.

The "LIFT" initially served only clients of the social service agencies, but was expanded to include the general public who are unable to utilize regular bus services. There has thus been a progressive broadening of cooperation on special transportation programs over time. The cooperative relationships have evolved from many separate programs run by particular social agencies for their client groups, to one program for most of the city's social agency client groups, to one program for all those unable to utilize regular transit.

Tri-Met contracts with local taxi companies and with Buck chair-lift, a special transportation firm, for services when the "LIFT" buses would be unavailable or unproductive. The "LIFT" emphasizes subscription (repeat) trips, and all rides are currently pre-scheduled. There is computerized billing to the social service agencies.

For passengers sponsored by public agencies, the full $3.00 cost is billed to the agency. General passengers pay 50¢, and the rest is made up by Tri-Met funds. Non-profit private agency affiliated passengers have their agency billed for $2.00, and the organization is responsible for collecting a portion, if any, of the costs.

There are only two taxi companies in the City of Portland, Broadway Cab and Radio Cab, which used to be one company which was split apart by City anti-monopoly actions. Tri-Met set aside $25,000 for the first year of "The LIFT" for contracting with taxi companies for additional services, and hoped that competitive bidding would hold the costs of taxis to Tri-Met below strict meter costs. However, when the two firms discovered that joint ventures were allowed by UMTA, they submitted a joint bid. No discounts from meter rates are provided to Tri-Met. Thus, the monopoly history of the taxi business in Portland has helped serve to ensure that

paratransit services would not be provided to the public at lower rates than regular taxi service. Tri-Met has calculated place-to-place fares in order to monitor what they are billed by the companies. The taxi drivers are members of the Teamsters' Union.

Tri-Met also provides financial and planning support, if requested, to non-profit suburban agencies in each of the counties. Such financial assistance is only provided to one such agency per county. There are about thirty social service agencies in the CRAG region which provide some transportation services for their clients. There are also rural transit demonstration projects in the area under 16(b)(2), which is managed by the State of Oregon, but for which Tri-Met provides the local share and staff assistance. A big reason that three out of 45 such projects in the nation came to this area was the Tri-Met promise of $20,000 per successful local grantee.

Conclusions from the Portland Area's Experience

Several conclusions from the Portland area's experience with institutional coordination seem to have applicability to other situations:

First, the City of Portland's agencies themselves have cooperated extensively and productively on TSM activities. This has already led to several innovative actions in the downtown, and other operating improvements are planned for neighborhood streets. These actions were not brought about by any regulations, but by continuing staff efforts to find common ground among the City agencies which had not had strong ties for several years. The agencies include the Planning Bureau, Traffic Engineering, and Engineering. In both the downtown and the neighborhoods, the Planning Bureau has helped initiate policy shifts which have been carried forth to implementation by the City Traffic Engineer. Substantial further progress is likely to be made by the City itself in operating its street system to favor the movement of people rather than private vehicles, whether or not the City gets any cooperation from other agencies.

Second, the lack of cooperative relationships among particular agencies has been more of a problem in capital investments planning than in TSM and other operating improvements. While the situation is at loggerheads on transit mode choice in major corridors, the City and State have been more than willing to foster TSM type transit improvements. Transit operations planning at Tri-Met has been handled competently in several areas, but has not involved much inter-agency coordination.

Third, with the orientations of the key decision-makers being what they are in the Portland area, a TSM approach had already been adopted independent of federal regulations. It is not certain whether the need to submit documents to the federal government has fostered any TSM or other operational strategies or actions. The UMTA prototype study has provided an opportunity for regional agency staff to contribute positively to TSM decisions.

Fourth, those urban areas such as Portland's, with little congestion relative to many other places, and with large amounts of roadway capacity, may tend to have greater leeway in managing their transportation system than areas with more intensively utilized facilities. Three of the most heavily utilized North-South Streets out of the thirteen in the downtown have recently been closed to auto traffic, yet there is no lack of capacity for downtown movement.

Many transit or pedestrian-oriented uses of streets can therefore be implemented without causing substantial negative impacts on those who continue to be auto users. Perhaps in ten or fifteen years, that would no longer be the case in the Portland area, if the region's forecast for a modest growth of traffic occurs by 1990. Therefore, it might be most desirable to implement as many TSM actions as possible now in cities like Portland, and have the public grow used to their existence as a given, and thus forego later fights over use of facilities when space may be less available. Those who would forecast a shortage of petroleum in 15 years will not find it a compelling argument that political implementation of operations improvements may be easier now than later, but changes in vehicle fuels and energy usage per car may allow growth in vehicle travel compared to today.

Fifth, operating and TSM approaches have an important committed policy level spokesman in the Director of the Oregon Department of Transportation, a long time advocate within the transportation profession of approaches similar to TSM, and in the City's Mayor and his staff, whose commitments to TSM are political as well as technical. Within this policy framework, the technical staff work of the regional agency might be adapted to TSM and other operational strategies and actions and made relevant to the need for regional and local decisions on investment programs. The regional TSM staff can become a useful resource in the decision-making process if the necessary pattern of allegiances with the City and State is solidified over time without alienating the other regional actors who are sensitive to City and State domination.

SAN FRANCISCO

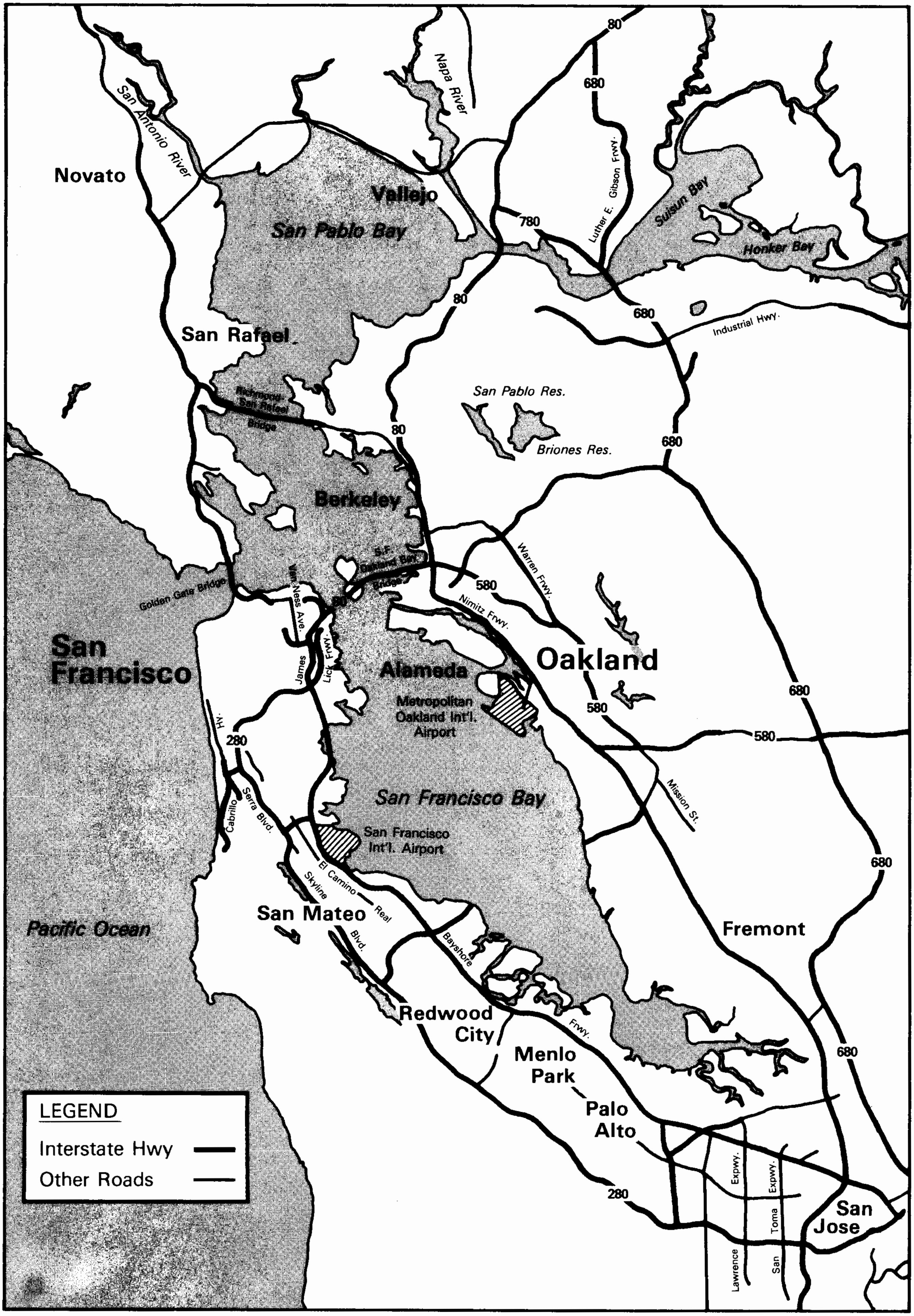
The San Francisco Bay Area possesses several special features which make regional integration difficult. These special features have created unique coordination problems for the Bay Area and have led to the development of innovative regional institutional mechanisms in a highly complex institutional environment.

Intense development in the "City" began early for the West, in the pre-auto era. This development, together with an unusual extent of water and mountain constraints, led to relatively dense, transit-oriented development within the City. High density, in turn, was reinforced by the focus of rail and port facilities in San Francisco and Oakland. The geographic constraints and the rail and port-oriented development patterns led to a pattern of multi-centered development around the shores of San Francisco Bay, inter-connected by a small number of intensely utilized, costly transportation linkages -- bridges, ferries, railroads, tunnels and highways. The existence of these constrained corridors has had a strong impact on the development of the institutional structure for operating the urban transportation system.

This multi-centered development pattern led to a highly fragmented metropolitan political structure, with hundreds of independent special purpose districts, about a hundred cities and nine counties -- with no single politically dominant local government. The population of the City and County of San Francisco is only about one-seventh of the regional population -- a smaller proportion of metropolitan population than that of probably any other major U.S. central city or county. As a result, transit systems and other local services evolved separately in each community, or in each corridor to the core areas.

In the last few decades the Bay Area lost political power at the State level because of more rapid population growth of Southern California. Moreover, the Bay Area became increasingly fragmented as San Francisco, Oakland and San Jose vied with each other commercially and politically, and as the patterns of development and life style became more differentiated among different sectors of the Bay Area.

One consequence of this fragmentation at the regional level in the Bay Area is that very often no mechanism existed to get things done, unless an impending crisis was foreseen -- a crisis significant enough to convince local governments to accept the imposition of a new regional authority. The State traditionally has taken little direct initiative in metropolitan affairs, except in matters of concern throughout the



Novato
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Napa River
Vallejo
San Pablo Bay
Luther E. Gibson Frwy.
Suisun Bay
Honker Bay
780
680
80
San Rafael
Industrial Hwy.
San Pablo Res.
Briones Res.
Richmond-San Rafael Bridge
Berkeley
S.F. Oakland Bay Bridge
Golden Gate Bridge
Van Ness Ave.
580
Warren Frwy.
Nimitz Frwy.
San Francisco
James
Lick Frwy.
Alameda
Oakland
Metropolitan Oakland Int'l. Airport
280
Cabrillo
Serra Blvd.
San Francisco Bay
Mission St.
San Francisco Int'l. Airport
El Camino Real
Skyline Blvd.
San Mateo
Pacific Ocean
Bayshore Frwy.
Fremont
Redwood City
Menlo Park
Palo Alto
Expwy.
Lawrence
San Toma
San Jose
LEGEND
Interstate Hwy
Other Roads

State such as highways. When peculiar Bay Area problems required regional solutions, the Bay Area had to reach a political consensus and appeal to the State legislature to establish special purpose regional agencies.

These special purpose regional agencies have usually been given their own multi-jurisdictional tax base and a relatively high degree of autonomy. Examples of this pattern can be found in several fields -- sewerage, Bay fill and water pollution, air pollution, bridges, ferries and transit.

Although the State has generally not taken direct initiative in these areas, the State legislature has had a high degree of involvement in overseeing the management and technical performance of these institutions. This involvement is partly a reflection of the long tradition of high quality work in the California legislative process, but is also due to the fact that regional agencies such as BARTD, MTC and others have been charged with important, very visible responsibilities and have no State executive branch agency to whom they must report.

Examples of the regional special purpose districts that came about in this manner in the transportation field include:

- the Bay Area Rapid Transit District (BARTD),
- the nine county Metropolitan Transportation Commission (MTC),
- the Alameda-Contra Costa County Transit District (AC Transit),
- the Golden Gate Bridge, Highway and Transportation District (G.G. Transit).

Another agency, the State Division of Bay Toll Crossings, fits this pattern in that it was set up to build bridges serving many Bay Area communities using local funds (tolls). However, it is a State agency rather than a multi-county regional agency.

Four other Bay Area organizations with important roles in the coordination and operation of multimodal transportation systems are:

- the Bay Area Council,
- the Municipal Railway of San Francisco (Muni),
- the San Francisco Jitneys,
- the California Department of Transportation (CalTrans).

Each of these organizations is thoroughly described in the following pages.

BARTD, the Bay Area Rapid Transit District

BART has been in operation over the entire 72 mile network now for more than two years, has recently initiated weekend service, and is improving its performance record in terms of reliability and coordination. It links most of the older core cities and towns, provides added capacity in the most congested corridors and generally offers the potential for being the principal transportation skeletal structure for the Bay Area. Not all of the potential has been realized, however.

A critical flaw in BARTD's creation was the failure to provide any mechanism or process for integrating the new regional rail system with existing local services. Some thought was given to the problem back in the mid-1950's when the BARTD organizational structure was being formulated, but the problem was deferred to facilitate adoption of the plan rather than stir up additional problems by proposing changes in local governmental powers or independence of existing transit operators.

A second factor in the regional go-it-alone approach to BARTD as an organization was that the rail system was conceived and designed almost completely independent of other ongoing transportation planning activities.

During the initial planning and design, the BARTD Commission was set up as an independent regional agency with protected funding. Its principal relationship with other units of government was the selling of the system to gain support for the bond issue.

Until relatively late in BART's construction period, all funds came from Bay Area tax bases. Not until cost overruns became severe and help had to be sought from the State and UMTA, did any serious outside review occur. Even then, the emphasis was primarily on technology and management rather than coordination. Meanwhile, local governments and other transit operators had to relate to BARTD almost as competitors.

Current critics recognize that the original plan relied far too much on direct walking access in the core areas and on park-and-ride in most other areas, including many older developed residential parts of core cities. Across-the-platform transfers with the Muni-Metro subway were not provided on Market Street. A passenger who wants to transfer from the regional to the local service must not only change levels in the subway, but must go up two levels, go through turnstiles and descend one level.

None of the excellent bus-to-rail design concepts used in Toronto were incorporated in the BARTD system. No plans were made for feeder bus service in some outlying areas which had no previous bus service until the system was complete. A decade long struggle has continued between BARTD and other operators, particularly AC Transit, over reorientation of parallel competing routes, provision of improved feeder service, and transfer arrangements. There is no regional authority with sufficient power to force resolution of such issues.

The Legislature recently reorganized BARTD to provide for direct election of board members, largely because of the widely held view that BARTD was unresponsive to community interests during construction, and that its appointed board had been too close to the consultant management team, which was blamed for the technical failures and delays in getting the full BARTD system operating reliably. After only 2 years of elected BARTD board experience, it may be too early to draw conclusions regarding its effect on management, operations, or coordination. Some observers suggest that there is more openness in the board's deliberations, but little indication of an increased inclination to coordinate with other operators or other public or private groups. Some critics point out that there even appears to be a reinforcement of BARTD's go-it-alone tradition.

MTC, the Metropolitan Transportation Commission

Recognition of the transit coordination problem was in large part the reason that MTC was created and gradually given strong powers. Initially, MTC was given veto power over the use of State and federal grant funds for projects which did not conform with its plan and program. Soon afterward, MTC was given control over the allocation of 1/4 percent sales tax funds to transit or highway projects or operations within each county. Other powers have been added more recently.

David Jones has made the case that MTC's management has been weak in exercising the authority it has.1/ He validly points out that MTC is "a constituency-less agency." However, some of his criticism is attributable to being too close to the situation (internal staff conflicts exist in any agency, particularly one that is involved in issues), and some of his criticism is based on the questionable assumption that true exercise of authority must result in dramatic vetos of plans or public clashes. However, he does receive

1/ David W. Jones, Jr., Institute of Transportation Studies, University of California at Berkeley, The Politics of Metropolitan Transportation Planning and Programming -- Implications for Transportation System Management. Case Study #1, The San Francisco Bay Area, prepared for the U.S. DOT, November, 1976, pages 32-36.

support from other observers in the area that MTC could have moved more forcefully into transit coordination.

MTC has indeed been cautious in exercising its full authority. However, it is obvious from interviews with various people in the region that MTC has generally been involved in important issues, has used its purse string powers to improve coordination,[1] and has developed a strong support from important private groups like the Bay Area Council, from various local elected officials and from the Legislature for further strengthening of its powers and for adoption of its strong financing program. This latter view is supported by the fact that MTC was recently given the power to set tolls and to allocate excess revenues for the further development of public transit and to alleviate automobile-related congestion. MTC has apparently obtained enough consensus on a specific program to implement this authority.

Progress on the creation of a stronger transit coordination mechanism, however, has been slow. A Hamburg-type federation has been discussed for several years, but other than establishment of a voluntary coordinating committee, no action was taken until recently. The voluntary committee was ineffective, and BARTD even refused to join. Recently, MTC prepared draft legislation that would require membership of the major transit operators in a Transit Operators Coordinating Council with limited powers to assure coordination. MTC's legislative initiative has sparked the major operators to form a voluntary association on their own without formal MTC participation, in an apparent effect to forestall legislation of a stronger, mandatory membership association which would give MTC more control over coordination. As of this writing, MTC is confident that the legislative requirement for an association will still be recognized as needed by most area leaders.

Another interesting institutional experiment is MTC's "rent-a-planner" program. These planners are hired from the labor market through a joint interview selection program conducted by MTC and the operator and made available on a loan basis to transit operators to accomplish an agreed upon work program. The emphasis is on planning for service improvements, coordination and integration of operations and implementation of service innovations or demonstrations.

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[1] For example, MTC used Section 5 funds matched with local funds, to bring about transfer systems between Muni and BARTD and between AC Transit and BARTD which cuts the cost of the surface transit ride in half when transfers are involved. See story in Passenger Transport, March 7, 1975, p. 8.

Indications are that the "rent-a-planner" program will be successful in achieving its objectives and filling the gap in operations planning capabilities that most operators have. The danger exists, however, that the rent-a-planners will be viewed as MTC spies or as an attempt to become involved in purely internal affairs of no legitimate concern to MTC. The success of such a program clearly depends on the talents of the rent-a-planners and the ground rules under which they operate. If successful, they could serve to help coordinate operations improvements. In fact, if very successful, these planners will likely end up on the staffs of the operators who originally rented them.

Golden Gate Bridge, Highway and Transportation District

The Golden Gate Bridge, Highway and Transportation District has been a successful multi-modal operator and innovator. Over the last several years it has demonstrated quality management and proven performance in terms of ridership gains and other measures.

It is of interest to note that Golden Gate evolved out of what had been a single purpose highway bridge authority a half dozen years ago, viewed as concerned only with protecting the Bridge and the interests of its users and open only to big construction solutions to the corridor capacity problem.

However, expensive new highway or transit bridge and tube options came to be recognized as politically and financially infeasible, at least in the near future. The problem the authority was confronted with was openly put before the Legislature and the answer came back fairly clearly that the agency should expand its responsibilities to include bus and ferry operations, to use its surplus bridge tolls and other revenues in an integrated manner and to plan its long term transportation development for the multi-county corridor in a comprehensive manner.

Golden Gate's bridge tolls are now used to subsidize ferry and commuter bus operations. Local and federal funds are used by the urban counties, Sonoma and Marin, to support local services on the basis of a highly refined cost formula.

Much of Golden Gate's success can probably be attributed to the special circumstances and geography, as well as the personal competence of its management. It benefits from having a politically-responsive board of which at least a majority are elected officials representing a well informed, well educated constituency, characterized by a high degree of environmental sensitivity and an awareness of the importance of transportation decisions to the area.

Golden Gate might serve as a model wherever the opportunity exists to create multi-modal agencies in a major sector of a large metropolitan area. Its subregional scale makes it much easier to manage as a truly multi-modal organization. A good revenue-producing source, the flexibility to adjust all fares and tolls, and direct involvement of local elected officials are also essential ingredients to Golden Gate's success.

AC Transit, the Alameda-Contra Costa County Transit District

AC Transit was created (about the same time as BARTD) to take over the failing private Key System, which provided local service in the two counties and commuter service to the City of San Francisco. The Legislature provided that the local property tax, up to a specified limit, could be used by AC after initial approval of a local referendum authorizing the take-over.

Direct election of transit board members is an experience that is unique to the Bay Area. AC Transit, which has long been nationally recognized for quality management and performance, has had direct elections since its beginning in the late 1950's. It is not entirely clear that AC's success can be traced to this factor, however. AC's direct taxing authority is perhaps a more important factor, but a power that they would probably not have been granted by the Legislature if board members were appointed. Many observers also attribute a large part of AC's success to its quality of management, and in particular to General Manager, Alan L. Bingham.

AC Transit's more successful accomplishments include:

- Holding ridership losses to a minimum during the 1960's while almost all other major systems in the country were experiencing major losses. AC actually achieved an overall gain in ridership for the decade.

- Developing a very high quality maintenance system that is well respected in the industry. A result has been an excellent record of equipment reliability.

- Being one of the first systems to extensively use bus-on-freeway express commuter service. The service is of such high quality and efficiency that it continues to serve almost as much Trans-Bay ridership as BARTD, which provides the fastest line-haul rail transit service in the nation in the three principal corridors of the AC Transit service area.

- Operating the highly successful service through the special lanes and metering system on the Bay Bridge, a major factor in its attracting trans-Bay ridership.

- Continuing to enjoy solid popular support, a fact that is well documented by Zwerling in his comparative study of the BARTD and AC systems.[1/]

The Bay Area Council

An important consequence of the political fragmentation in the Bay Area has been the emergence of strong regional leadership outside of the formal governmental structure -- most notably in various committees of the major regional corporations, the Bay Area Council, the League of Women Voters of the Bay Area, and environmental and other community groups. The Bay Area Council (BAC) is a particularly important group.

The BAC was created in 1945 by Bay Area corporate leaders. Its stated purpose has been to promote regional awareness, leading primarily to a unified approach to the economic development of the region. Early in its history the Council devoted much of its program to regional transportation systems, and was a strong advocate for the creation of BART -- as a means to integrate the Bay Area as a single economic unit. After BART was created, the Council devoted much of its program to the establishment of single purpose regional agencies, dealing primarily in the environmental field. However, most recently, the Council is concerned with the proliferation of these agencies and the lack of reconciliation of policy. The Council's most recent focus has been toward coordination among, and ultimately, consolidation of the numerous special purpose regional agencies. The Council no longer views itself as an economic development organization, but as one involved in better regional decisionmaking and the reconciliation of public policy, including but not limited to economic vitality.

BAC was originally a purely business-oriented organization. It was seen by some observers as a means to facilitate the development of downtown San Francisco as the business headquarters for an integrated Bay Area economy -- the Manhattan of the Pacific. However, in recent years BAC has broadened its base of committee participants to include academics, environmentalists and other region-minded persons.

1/ Stephen Zwerling, Mass Transit and the Politics of Technology, a Study of BART and the San Francisco Bay Area, Praeger Publishers, New York, 1974.

BAC has developed a reputation for thorough, objective and creative work toward such goals, serving larger business interests in an open, constructive manner, in collaboration with other interests having similar concerns. Because of its open, deliberate style and the involvement of other region-minded interests it has maintained its effectiveness and has generally avoided being identified as a self-serving mechanism of business.

The "Muni"and the City of San Francisco

The "Muni" (San Francisco Municipal Railway) operates the Bay Area's largest transit system (seventh largest nationally), almost entirely within the small confines (42 square miles) of the city limits. It is one of the nation's densest networks of service, involving buses, trolley coaches, cable cars and streetcars, which are being replaced by a new light rail system which will operate in the existing tunnels and the new Muni-Metro subway on Market Street.

Muni is viewed as an archaic institution by many observers. Its management has been criticized for inability to motivate staff, hire quality personnel, perform quality maintenance or deal firmly with labor. Yet, the system has maintained high ridership levels by comparison with other cities, and has kept sufficient voter support to maintain very low fares (25¢ with free transfers) and a high level of subsidy from local tax base.1/

The City and County of San Francisco lack an integrated transportation agency structure. The potential for accomplishment of operations improvements through traffic management in the City appears substantial, but is handicapped by the dispersal of transportation responsibilities within City-County government. The City has a constituency that should be among the most receptive to management of auto use and the provision of priorities for surface transit (particularly over suburban auto users). However, each of the agencies responsible for aspects of transportation, traffic control, regulation and enforcement and associated public works has a high degree of autonomy from each other and from elected leadership. The fact that a fair amount has been accomplished tends to obscure what the real potential in the City might be under an improved institutional structure.

1/ As of 1975, San Franciscans were paying about $110 per capita for total transit subsidies, believed to be the highest in the country.

San Francisco Jitneys

A unique San Francisco institution is the Jitney Owners Association, a membership corporation comprising about 90% of the one hundred or so jitney drivers in the City.[1/] The Association represents the jitney drivers in all regulatory dealings with the Taxicab and Jitney Detail of the City Police and on all policy matters with the City and County Board of Supervisors and other City agencies. The Association also provides a dispatching service and acts as a forum for drivers to develop policy positions and accomplish some self regulation.

Jitney operations grew at a rapid rate throughout the country in the years before the first World War, but were apparently regulated or otherwise forced out of business in most cities through the power and competition from the much larger and more influential street railways and their associated interests in banking and utilities. In San Francisco, public take-over of street railways began in 1911, earlier than in any other U.S. city. Public involvement in electric power supply and distribution also began early in the region. Thus, even though business interests in these sectors were powerful, their ability to eliminate competition from jitneys was probably offset by the available public sector technical expertise and knowledge in the field, together with a San Francisco tradition of well organized and informed neighborhood groups which participated actively in elective politics and in public forums of all types.

Strong competition continued, however, as what is now Muni took over private streetcar operators. Increasing subsidies and tight regulatory ordinances have diminished the jitney fleet from a peak of about 1400 to the present 100 or so. Their future is threatened by the policy of heavily subsidizing transit, by increased competition from BARTD along the same route the jitneys operate, and by the continuing negative posture of Muni's management. It was the opinion of some staff analysts in the Bay Area that jitneys are efficient because of wage scales, part time operations, etc., and that they could probably operate profitably in several additional parts of the City of San Francisco, thereby reducing the deficit of regular transit operators by providing supplementary peak period capacity.

1/ The San Francisco Jitneys, a student paper by R. A. Balknap at the University of California at Berkeley; March, 1973; original is in MTC library in Berkeley.

The California Department of Transportation (CalTrans)

CalTrans' District 4 has a mixture of laudatory success, primarily in bus priorities on freeways and bridges, and unrealized potential due to institutional limitations. A good argument can be made that District 4 has progressed with a more deliberate style, than has the Los Angeles District of CalTrans, which has received more attention in publications because of the level of controversy and the larger scale of its major projects.

Unfortunately, there apparently has been some needless competition at the staff level between MTC and CalTrans over region-level transit responsibilities -- needless because it seems apparent that a very workable and complementary split of staff talents exists: MTC in finance and coordination of operators and planning, and CalTrans in engineering, street and highway operations and coordination between transit and highways.

If top management in Sacramento had exerted their authority in District 4, it is conceivable that significantly more could have been done because of the political vacuum, the staff capabilities and the opportunities that exist. CalTrans, however, has not had the leadership it needed nor the encouragement from other regional groups to make use of the staff capabilities it has to offer. CalTrans District staff have not had a great track record in dealing with local elected officials on freeway issues and have tended to shy away from playing a leadership role.

A weakness of CalTrans organization is that the Districts lack a single, high level person responsible for public transportation. Although only a small proportion of District 4 responsibilities at present are related to public transportation, it is a growing proportion and could probably be greater if the proper organizational structure existed. This has occurred in many similar circumstances, including CalTrans Sacramento headquarters. At present, many CalTrans staff who must deal with public transportation are forced to view those responsibilities as secondary to other duties.

Recently, CalTrans has been designated by MTC and the affected three counties to negotiate for improvement of the Peninsula commuter service. Southern Pacific wants to abandon the service, but CalTrans and local jurisdictions oppose the abandonment.

Observations from the San Francisco Experience

The following observations on institutional coordination summarize our study of San Francisco.

First, the history of development and geographic constraints in the Bay Area have produced a situation in which no local jurisdiction has been able to establish itself as dominant in the Region. This absence of a dominant jurisdiction has made political coordination difficult to achieve; hence, there has been no political institution on which to base transportation coordination and it will be difficult to provide MTC with a true political base. The reluctance of the Bay Area's numerous transit operators to accept overall policy and program direction from MTC is understandable -- there is a perceived threat of reduced power over their actions as individual operators and possibly reduced service quality in particular areas if the operators band together under the direction of an umbrella agency. The several operators have resisted external efforts to establish a formal coordinating mechanism and can be expected to continue to do so.

Second, by planning the BARTD system without coordinating with other operators and ongoing planning activities, the Bay Area created many barriers to system integration that may never be overcome. Direct election of the BARTD Board has not yet produced any apparent better coordination with other institutions.

Third, by providing a public transit agency with a guaranteed source of annual revenue and an elected board to provide policy guidance, as with AC Transit, a jurisdiction may increase its chances of obtaining high level transit service with quality management.

Fourth, MTC (which is similar to RTA in Chicago) is a possible mechanism to encourage coordination among transit operators, and is probably the safest in the sense of being relatively more acceptable to Bay Area political jurisdictions.

Fifth, the Bay Area's institutional structure for planning and decisionmaking must go through significant evolution before a satisfactory model process is achieved. The regional decisionmaking framework is still highly fragmented and not conducive to decisive action. Although the current environment is probably not one in which a BART system decision could be made, it may be a good environment for incrementally approaching finely tuned solutions which are well tailored to the diversity of community interests.

Sixth, incremental operations improvements in the Bay Area might be easier to achieve and have a larger impact if CalTrans and MTC would operate more effectively at the staff level.

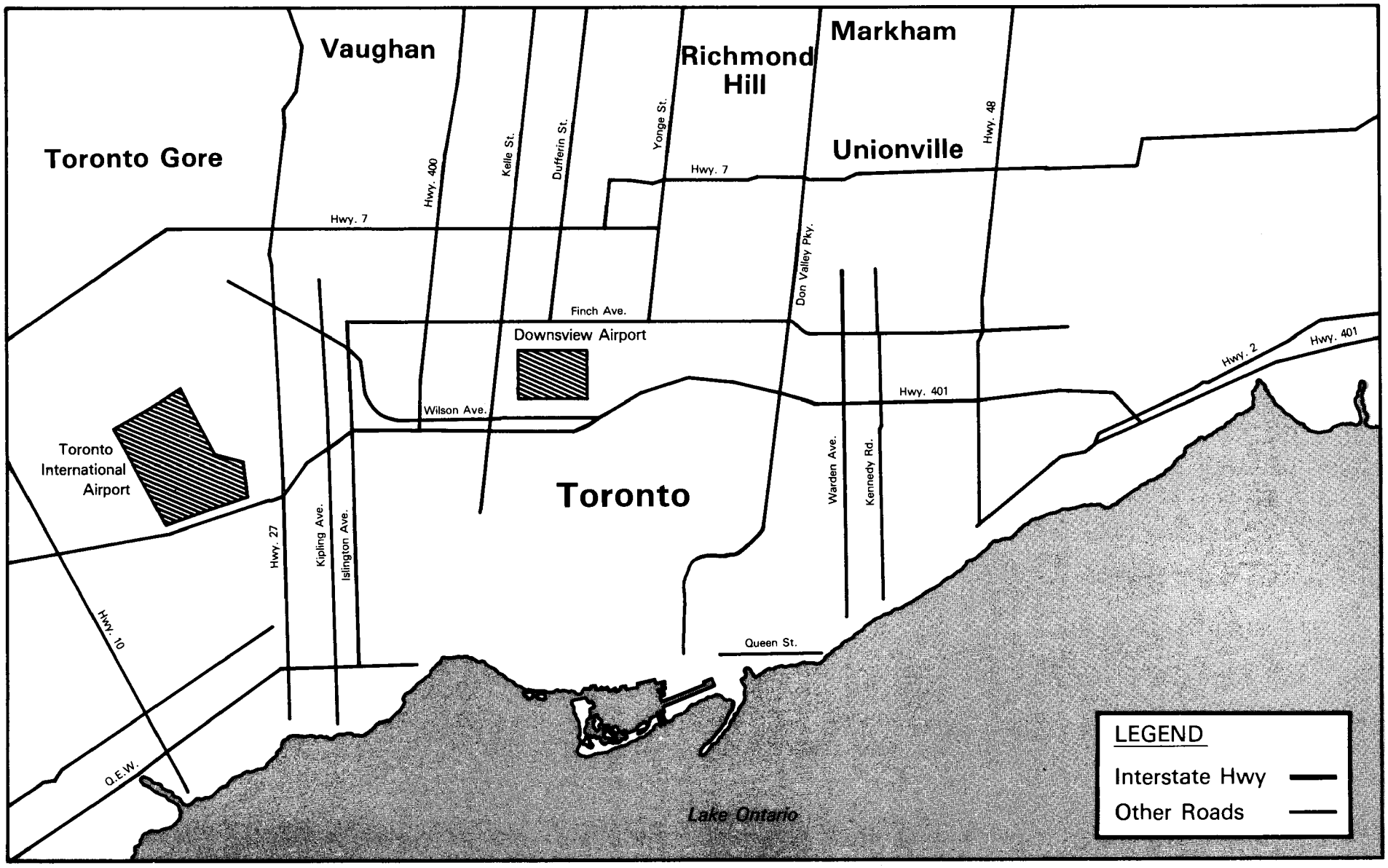
Some successes in coordination of transportation system operations in Toronto have resulted from the regionwide context for transportation planning, financing and operations that has evolved under the umbrella organizations of Provincial and Metropolitan government. This governmental structure is supplemented by special purpose operating institutions, which have sufficient independent authority to manage, maintain and expand the transportation system. Coordination between institutions and levels of government is aided by the existence of special purpose committees of broad composition and varying longevity.

Unlike in the United States, the Canadian Federal government provides almost no direct financial aid for transportation either to the Province of Ontario, a governmental unit similar to an American state, or to local municipalities. Some federal funding is available through the Transportation Development Agency of the Ministry of Transport for urban transportation demonstration projects or projects of a research nature which would advance the state-of-the-art.

The Provincial government is responsible for planning and providing an integrated and balanced transportation system. It discharges this responsibility through its Ministry of Transportation and Communications, as well as through the delegation of powers and responsibilities to metropolitan, regional and municipal governments by specific Provincial enabling legislation.1/ Through its Transport Ministry, the Province plays a strong role in financing projects and operations, in construction, maintenance and transportation research, in long-range planning, and in the financing of commuter transportation services through the Toronto Area Transit Operating Authority (TATOA).

The Metropolitan Toronto Government was created in 1954 and is based on a two tier concept: local municipalities cooperating to provide common services through a second level council of local representatives. The Metro Council is comprised of 38 members -- the chairman, 12 representatives of the City of Toronto, and 25 representatives of the five suburban Boroughs in a ratio roughly proportional to their populations. The chairman is not directly elected, but is appointed by the Council members. Within this jurisdiction and subject to specific

1/ See Transportation Organization in Metropolitan Toronto, The Royal Commission on Metropolitan Toronto, April, 1975, Chapter 3, page 33, for a description of key provincial legislation related to municipalities, transportation and metropolitan government.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Don Valley Pky.
Finch Ave.
Downsview Airport
Wilson Ave.
Hwy. 401
Hwy. 2
Toronto International Airport
Hwy. 27
Kipling Ave.
Islington Ave.
Warden Ave.
Kennedy Rd.
Queen St.
Hwy. 10
Q.E.W.
Lake Ontario
LEGEND
Interstate Hwy
Other Roads

powers delegated from the Province, the Metro Government is autonomous and its Council is the focus of transportation decisionmaking. However, a body of 38 members certainly cannot be the coordinating mechanism for operations improvements. The Metro Council's committees, commissions and departments are the working mechanisms through which transportation policies are formulated and carried out.

The Metropolitan Toronto Role in Operations

The principal transit institution in Toronto is the Toronto Transit Commission (TTC). Founded in 1921 as the Toronto Transportation Commission to operate all public transportation in the City of Toronto, except steam railways and taxis, its mandate and management have changed dramatically in recent years. The TTC was originally an independent, self-sustaining, business-minded body.

When Metropolitan Toronto was created, it acquired TTC along with the right to appoint the Commissioners, whose number was increased from 3 to 5. TTC's service area was expanded to cover the entire Metropolitan area (from 35 square miles to 244 square miles), and it was directed to "consolidate and coordinate all forms of local passenger transportation -- and to plan for the future development of such transportation so as to serve best the inhabitants of the Metropolitan area."1/

From being a legally and politically autonomous transit body, the TTC has in recent years come more directly under the control and influence of the Metro Council. The membership of the Commission presently consists of the Metro chairman, two elected officials, and two citizen members who are often former municipal politicians. Some policy and planning responsibilities are now shared with other Metro Committees, in particular the Transportation Committee which is also responsible for the Roads and Traffic Department, and the Planning Committee, through which the Metro Planning Department reports.

TTC, which owns and operates the subway, trolley coach, streetcar and bus routes, has the power to set fares and make operational decisions by itself. However, fare levels are effectively controlled by what the Metro Council and the Province are willing to pay toward operating deficits. Likewise, Council approval is required for all capital projects receiving Metro funding. TTC also must report to the Metro Transportation Committee before implementing certain types of surface transit improvements, such as express bus lanes.

1/ The Municipality of Metropolitan Toronto Act, (R.S.O. 1970, c. 295).

TTC works closely with the Roads and Traffic Department and the Police Department to implement service changes. Since 1972, these agencies have cooperated on the implementation and monitoring of four experimental express bus lanes. They have produced joint reports on the results of these experiments, and have worked to formulate recommendations for expansion of the reserved bus lane system in conjunction with street widenings and other improvements.

Because planning and operations frequently intertwine, both TTC and Roads and Traffic participate in transportation planning activities with the Metro Planning Department. Such joint efforts usually involve innovative or short-term transit operations improvements or the development of new policy directions.[1/] Metro Planning also coordinates with TTC in all transportation activities affecting land use. For example, the incremental extension of the Yonge Street subway since 1964 was planned to encourage high density, clustered development in close proximity to subway stations. Land declared surplus after subway construction has been made available for development through long-term leases. Toronto hopes to pay off the capital cost of the right-of-way (about 10% of the entire subway cost) within 20 to 30 years using this long-term lease policy.

Since TTC is a multimodal institution, a great deal of internal coordination takes place in terms of management, route planning, schedule changes and efficiency measures. The best examples of this coordination involve the physical integration of bus and subway modes at transit stations. Toronto has pioneered in the design and operation of transit transfer facilities. Out of 113 surface routes, 99 make one or more connections with the two subway lines. When the new Spadina subway line opens, it will also be fully integrated with the surface system.

The Metro Licensing Commission regulates taxicabs, and to a minor degree, public off-street parking. Within the City of Toronto, off-street parking is primarily the responsibility of the Toronto Parking Authority and the private operators. Taxi operations and parking regulations are not well integrated with the operations responsibilities of the TTC, Metro Transportation and Metro Planning Committees.

There is a limit of one taxi for every 975 persons; licenses are difficult to obtain; and ridesharing is prohibited by local ordinance. Although some initiatives have been made to restrict CBD commuter parking, no explicit metropolitan parking policy exists, and there is no institution which would effectively carry out such a policy.

1/ Surface Transit Improvements, Toronto Transit Commission, Report No. 27, March 25, 1977.

The initial conception of many multimodal projects in Toronto occurred in a temporary institution called the Metropolitan Toronto Transportation Plan Review (MTTPR). Established in early 1972, the MTTPR was funded and staffed by both the Provincial and Metropolitan Governments. Its mandate was to study short-term improvements, long-range planning options and specific transportation facilities, and the issues and policies in each of these three areas.

After more than two years of staff and consultant work, supplemented by a public participation program and many public meetings, the MTTPR was completed and its responsibilities transferred to the Metro Toronto Planning Department.[1/] Many of the short-term operations improvements studied, such as staggered work hours, express bus lanes, and paratransit innovations, were subsequently implemented in Toronto on an experimental basis and are key elements in the operating agencies' plans for future surface transit improvements.[2/] Other innovations, such as the TTC Surface Vehicle Monitoring and Control System, have been conceived by individual agencies and supported by interagency study teams.[3/]

Numerous interagency committees exist to coordinate the transportation planning and operations activities of different agencies and levels of government. The longevity of these coordinating committees varies: some last only a few years while others have existed since 1954.[4/]

One particularly effective committee has been the Metropolitan Toronto Traffic Conference. Comprised of technical officials, elected representatives, and members of private organizations, the Conference advises the Metro Council on proposed traffic bylaws, amendments and matters of policy affecting pedestrian and vehicular traffic. Its objectives are to coordinate public and private actions, reconcile views on matters of policy, and more clearly determine the community and public interest.

1/ Choices for the Future, Summary Report No. 64, Metropolitan Toronto Transportation Plan Review, January, 1975.

2/ Op. cit., Surface Transit Improvements.

3/ Technical Report: Surface Vehicle Monitoring and Control Study, Peat, Marwick and Partners and Toronto Transit Commission, March 4, 1974.

4/ Op. cit., Transportation Organization in Metropolitan Toronto, p. 29.

The Provincial Role in Operations

Because the Province of Ontario, through its Ministry of Transportation and Communications, administers a comprehensive urban transportation subsidy program, its influence over broad policy issues and systemwide integration is pervasive. Ontario initially became involved in transit financial assistance to municipal governments in 1964 with contributions to the construction of the Toronto subway. Since then, the scope and amount of funding programs has increased dramatically and includes operating assistance, surface capital assistance, rapid transit capital assistance, support for demonstration projects, study assistance, and implementation of GO Transit services in the Toronto area.

The Ministry is attempting to develop new methods for allocating subsidies in an equitable, consistent and predictable manner, without intruding on each municipality's ability to tailor the operations of its system. Effective January 1, 1977, the Ministry initiated a new strategy for transit financing based on a theoretical revenue/cost ratio for each of the 56 municipally owned and operated transit systems in the Province.[1/] The strategy provides that the Province will pay 50% of the theoretical net operating cost (operating deficit) computed from the theoretical revenue/cost ratio or target assigned. For example, the Province would pay 20% of operating costs for a municipality whose revenue/cost target was 60%. If the municipality achieved a higher revenue/cost ratio than the target (e.g., 62%), then the Province's share would remain at 20% while that of the municipality would drop to 18%. Failure to achieve the target would require a greater contribution from the municipality than from the Province.

The existing strategy with respect to Metro Toronto provides that the Province will pay 13.75% of operating expenses which when matched by the municipality should be sufficient to meet the operating deficit. The other 72.5% should come from the farebox. The same ratios apply to increases or decreases in operating costs, so the operator's attention is directed to making the maximum use of existing resources, including planning and system management, marketing, monitoring, pricing, operational strategies and overall coordination. All revenues accrue to the municipal account. The Province intends to use this allocation formula and related overall performance criteria as a means to encourage transit productivity.

1/ NOTE: In the absence of a specific determination of what constitutes a reasonable rate of return from the farebox, the ratios selected were based on the historical performance of transit in cities classified in order of population.

In 1974, the Province created the Toronto Area Transit Operating Authority (TATOA), which reports directly to the Minister of Transportation and Communications. TATOA is a voluntary association of the regional municipalities that encompass the Toronto-oriented commuter corridors. TATOA's basic responsibilities are to:

- provide inter-regional transit services, primarily between Metro Toronto and its surrounding regional municipalities;
- coordinate regional and inter-regional service;
- provide information and assistance in this coordination; and
- study the design and operation of a regional transit system.

Unlike TTC, TATOA does not directly operate transit services. The GO Transit services administered by TATOA are operated under contract by Canadian National Railways, Gray Coach, and Travelways, with the Authority having overall management and monitoring responsibilities. The Province pays 100 percent of operating costs.

The TATOA Board is comprised of the chairman from each of its member Municipal Councils. The chairman of TATOA, however, is a Provincial appointee. The fact that the chairman of the Toronto Metropolitan Council sits on both TATOA and the TTC tends to facilitate cooperative arrangements between the Authority and the TTC. Thus far, these arrangements have focused on the elimination of duplicative services, the provision of physical facilities and schedules to facilitate transfers, primarily at subway and commuter rail stations, and the establishment of a centralized telephone information service. A coordinated fare and ticketing system is being negotiated.

Observations from the Toronto Experience

The following observations are made about the effectiveness of institutional arrangements in Toronto.

First, the Toronto Transit Commission's control over subway, trolley coach, streetcar and bus operations leads to a well-integrated, well-coordinated public transportation system. This single agency control greatly facilitates the coordination of routes, schedules, fares and transfers so that inconvenience to the riding public is minimized and individual transit modes serve the market segment for which they are best suited.

Second, having the Toronto Transit Commission, the Roads and Traffic Department, the Police Department and the Planning Department all under the Metro Council umbrella significantly enhances the opportunities for coordination of transit, highways and land use planning. Nevertheless, TTC must report to the Metropolitan Transportation Committee before implementing certain surface transit improvements, presumably to ensure that the Committee's Roads and Traffic Department has the opportunity to make sure traffic operations will not be adversely affected.

Third, the use of interagency and intergovernmental coordinating committees, both ongoing and ad hoc, has proved to be a useful mechanism for expediting the transportation decision purposes. Some of these committee structures, such as the Metropolitan Toronto Traffic Conference, have elected officials, private representatives and public agency technical staff in their membership.

Fourth, the transit financing strategy which was recently put into effect by the Province of Ontario, appears to be an effective mechanism for inducing greater efficiency and better management practices in municipal transit operations. Inefficiency will cost local governments significantly more than it will cost the Province under this strategy.

Fifth, the creation of the Toronto Area Transit Operating Authority is an explicit attempt to coordinate intra-regional and inter-regional transit operations, with oversight from the Province of Ontario (read state). The fact that the Toronto Metro Council chairman sits on the TATOA Board and on the TTC enhances the likelihood that coordination will actually occur.

GOTHENBURG, SWEDEN

In August of 1970, the City of Gothenburg, Sweden, implemented a highly publicized form of traffic rerouting known as compartmentation. This City of 450,000 inhabitants divided its central business district (CBD) into five zones, and prohibited crossing of borderlines between zones by any vehicles except public transport and emergency vehicles. Vehicular traffic to and from a zone must use the entrance and exit to a ring road around the CBD. Within each zone traffic patterns were not changed.

The traffic rerouting scheme grew out of studies undertaken in the late 1960's to evaluate a possible underground rapid transit system and other options for improving public transportation. These studies recommended that highest priority in the short run be given to a traffic regulation scheme for the CBD.1/ In the early 1960's, a traffic restraint scheme patterned after a successful one in Bremen, West Germany, had been recommended by public transportation officials, but no action was taken on the proposal at that time. By the late 1960's, City officials were alarmed about the environmental consequences of traffic congestion in the CBD area.

The traffic rerouting scheme was based on decisions made by the City Planning Board and the Traffic Regulation Board, after they had conferred with other municipal boards. A special commission with representatives from the City Planning Office, the Street Office, the Transport Authority and the Police was assembled to carry out the details of the plan.2/ No approval was needed by the Municipal Council or other political bodies above the board level. However, after three months, the Municipal Council gave official approval to the rerouting, making it permanent.

The central management body in the City of Gothenburg is a fifteen member Municipal Board which develops policy guidelines and overall planning strategies for the municipality. Seven members of the Municipal Board are full time public officials known as executives, one of whom is responsible for "Transport and Economic Life." Policies are formulated in

1/ Bo Blide, Tony May and Njal Arge, "Case Study Report on Gothenburg, Sweden," Group on the Urban Environment, Organization for Economic Cooperation and Development, Paris, October 20, 1976. Restricted. The information in this discussion is drawn from their report, which contains more detail on the traffic routing scheme and other operations changes undertaken in Gothenburg.

2/ Ibid., page 5.

activity areas (e.g. transportation or housing), and programs for those areas are worked out by program committees, whose chairmen are the executives (i.e. Municipal Board members) in charge of that particular activity area. The various functional programs are coordinated by the Municipal Board and presented to the elected Municipal Council for approval once a year.

The transportation system is managed on a daily basis by the three municipal agencies: planning by the City Planning Office; construction by the Street Office; and operation of trams and buses by the Transport Authority. Each of these administrative bodies is overseen by a board comprised of Municipal Council members.1/

Problems of regional coordination appear to have been eliminated by Gothenburg's incorporation of surrounding municipalities into the City. However, coordination with the National Road Administration appears to be a problem, insofar as the National Road Administration has the final say on spending national funds for local road projects. There is a similar arrangement for underground rapid transit projects. Hence, Gothenburg must pay a large price by foregoing national assistance if the City chooses to make major improvements which are not in agreement with National priorities.

One factor contributing to successful implementation of the traffic routing scheme was the careful attention given to informing the public. An advertising firm was hired to prepare two different information pamphlets. A month and a half before implementation, all apartments, offices, shops, theaters, filling stations, etc., were sent pamphlets (16,000 were distributed) explaining the program's objectives and how they would be carried out. Three weeks prior to the change, 300,000 copies of a second pamphlet were sent to every household in the metropolitan area, as well as to gasoline stations, garages, hotels, etc. Advertisements were placed in local newspapers for the three days preceding the change, and local television and radio stations devoted air time to the traffic rerouting scheme on the first day it was in effect.

For much of the year before implementation, discussions and informational meetings were held with retail groups, the police and taxi drivers. Special attention was devoted to explaining the new system to the police and gaining their approval of it. This was considered of vital importance because of the key role of the police in aiding and directing motorists

1/ Ibid, page 32.

during the first few days of the new system. It was pointed out to us during our field visits that failure to work closely with the appropriate police departments has hindered roadway operations changes in the Los Angeles and Miami metropolitan areas.

There are no other lessons on institutional arrangements that can be drawn from the Gothenburg traffic rerouting scheme. A Swedish municipality has total planning and implementation control over the entire road network inside its municipal boundaries, although, as noted, it may have to relinquish some of this control if it wants to receive federal funds (up to 95% of construction and maintenance costs on certain roads). Every American city has operating control over the streets in its CBD, and could conceivably implement a similar traffic scheme if it wanted to.

HAMBURG

The City of Hamburg has received a great deal of attention in urban transportation because of the creation in 1965 of a federation of the transit operators in the Hamburg area, an institutional arrangement that was put together at a time when transit was still profitable in Hamburg and in most U.S. cities. 1/

Hamburg is a city-state, with no other level of government between it and the national government. The suburbs, which, within a radius of 40 km contained 800,000 persons in 1970 compared to Hamburg's 1,800,000, are parts of separate states with different political traditions and different transportation policies. Hamburg's internal planning has been comprehensive, integrating land use planning with planning for all modes of transportation. Hamburg performs all construction functions as does the City of Chicago, so it has avoided the city and state division of responsibilities common in most of the United States.

While the City of Hamburg has integrated land use and transportation decisions, the metropolitan areas' overall policy framework for transportation decisionmaking has been far from ideal. Although by 1961 Hamburg's transportation policies favored transit, the completely separate suburban jurisdictions continued to favor highway construction. When transit began to require a subsidy in 1970, the City of Hamburg picked up the entire deficit of the transit federation. The suburban jurisdictions refused to contribute even though the services linked them to the City.

Hamburg and its suburbs did participate in a joint study which developed a system of radial freeways. However, Hamburg has now deleted several of these routes from the approved plan within their borders, leaving the entire plan in jeopardy.

The Transit Federation

Hamburg's noteworthy institutional arrangement for coordination of transit operations is the Hamburg Transit Federation (Hamburger Verkehrsverbund - HVV), which was formed in 1965 as a voluntary alliance and includes eight transit properties, two of which carry 93% of the total riders. The

1/ Frank C. Colcord, and Ronald L. Lewis, Urban Transportation Decisionmaking: 12, Hamburg: A Case Study, Prepared for U.S. Department of Transportation, Office of the Secretary, Report No. OST-TPI-76-02, X, January, 1974. This review draws heavily on Professor Colcord's excellent case study for all information except speculation about the future role of the transit federation.

legal contracts binding the companies specify a revenue redistribution formula calculated to make each company's profit and loss situation similar to what it was before joining the Federation, thus removing some of the operational disincentives to integration. The financial interests of the smaller carriers were somewhat protected from the potential economic and political power of the two largest carriers. Three suburban railroads and one suburban bus operator serving 0.8% of the passengers got to divide up 1.23% of the revenues. The Hamburg Federation includes operators carrying 99% of the transit riders.

Of the two largest transit agencies, the Hamburger Hochbahn Aktiengesellschaft (HHA) carried 71.3% of passengers at the date of formation in 1965 and is a corporation 85% owned by the City of Hamburg. The Deutsche Bundesbahn carried 20.5% of the 1965 passengers, and is part of the federally owned national railway system whose policy direction comes from the Ministry of Transport.

The HHV's most notable achievements have been in establishing free transfers, single ticketing, and integrated scheduling. Colcord noted a lack of bus priority treatments on Hamburg's streets; this aspect of transit operations was the only one which he considered less than excellent.

Thus, Hamburg's success in operating coordination seems confined to the transit operators themselves, and does not include noteworthy institutional coordination of transit and the street system.

The future of multi-modal coordination in the urban area is also clouded by the lack of an effective coordinating mechanism between the City and the other political entities representing its suburbs. This could even threaten the cooperation between the City and the federal government,which is embodied in the Transit Federation, if no agreement is maintained on who should provide how much subsidy for the Federation's operating losses.

The lack of effective coordination between the general purpose governments seems to limit the opportunity for multi-modal operating improvements on a regional scale. While it has received a great deal of attention, the Transit Federation's name aptly describes the limits of its potential as an institutional mechanism. The good integration within the City government itself is the other desirable aspect of Hamburg's institutional arrangement outside that of its transit operators. The area as a whole,however, contains no institutional lessons for others in the area of regional multi-modal operations.

LONDON

The London Transport system is generally recognized as one of the best run, easiest to use, and best integrated in the world.

The London Transport Executive operates about 4,400 rail cars on 252 miles of Underground routes with 179 stations, and about 6,500 buses on 1,670 miles of bus routes.

London's public transportation system has evolved gradually over a long period, in both a physical and institutional sense. The evolution of public involvement in control of the system has proceeded over time from fragmentation among many transit and highway operators, to an institutional structure for control of the transit system, to an institution with policy control over regional highways and transit.

Pooling of revenues among the group of private underground rail operators was provided for as early as 1915 by an Act of Parliament. By the early 1930's, a patchwork of public and private operators had evolved in a manner similar to more recent experience in large U.S. metropolitan areas. These included:

- the Underground Railway "combine," a group of privately owned companies which included all existing underground railways except the Metropolitan Railway;
- the London General Omnibus Company (LGOC), by far the largest bus operator in London;
- tramway companies operating in suburban areas outside the administrative County of London;
- outlying county bus and express coach operations;
- a large tramway system operated by the London County Council (LCC), on many routes in competition with LGOC bus services;
- small municipal tramways operated by local governments beyond the LCC's area, also competing in many cases with LGOC buses;
- independent bus and express coach operators, providing services both in central and suburban London and in outlying country districts, in many cases in competition with either the LGOC buses or the LCC trams, or both; and

- suburban trains operated by the four main-line railway companies: the Southern Railway, the London Midland and Scottish Railway, the London and North Eastern Railway and the Great Western Railway.

Although the Underground Combine had assembled numerous routes into a coordinated system, and government regulation had achieved some rationalization of service, there was still a large degree of wasteful duplication and harmful competition.

As a result, the London Passenger Transport Board was established in 1933 to take over all publicly-owned transport operations listed above. A revenue pooling system was set up combining this system with the London area railway operations, and a Standing Joint Committee was established to coordinate planning.

The next important reorganization occurred in 1947-48 when the first London Transport Executive (LTE) was set up by Parliament. From then until 1963 LTE was an arm of the central government. Its chairman and commission members were appointed by the Ministry of Transport. England's railway system was nationalized at this time, so that both the suburban rail and urban Underground and bus system were under the same ministry. The British Transport Commission then controlled the entire national system.

In 1962, the national system was decentralized and a London Transport Board set up to control all urban public transport in the London area and the Railways Board to control the national railway system including the suburban railways. The two boards were required to follow specified statutory procedures to coordinate planning, fares and other common interests. London Transport remained the owner and operator of the London system until 1969.

Meanwhile, road transport planning had remained quite fragmented while metropolitan congestion grew to serious proportions. A total of 109 highway authorities existed at the several levels of government in the 6 county London region. For this and other reasons, the need for regional coordinating mechanisms came to be increasingly recognized. After a long period of study by a Royal Commission (1957-1961), and a great deal of heated public debate and legislative maneuvering (including a total of 1,500 proposed amendments and the longest single session ever in the House of Lords), the London Government Act was passed in 1963, setting up the

Greater London Council. 1/ Transport planning coordination was the issue of greatest concern, although several other functions were incorporated in the GLC's structure.

GLC is a limited purpose metropolitan government covering 1,500 square kilometers, parts of six counties, 32 boroughs and the City of London. It is governed by 92 councilors elected every four years. GLC prepares all "strategic" long range transportation plans and capital improvement programs for all modes. The Borough Councils must produce their own plans within its framework. Thus, GLC is very similar in most respects to the Metro Council in the Twin Cities area.

GLC's power to coordinate urban transportation was greatly enhanced in 1970 when responsibility for policy and financial control of the London Transport Executive was transferred from the central government. A Joint Standing Committee was set up to coordinate LTE and national transportation. LTE remains the legal owner and controls the management and operation of the system, but must conform with the general policies established by GLC including the capital program, the revenue budget and general level of service and fares. However, GLC cannot politically manipulate specific routes or fares.

London Transport is able to cover a substantially greater proportion of its underground operating costs out of fares (89% for 1976-77) than U.S. rail systems, but its performance with the bus system (53% from fares) is in the middle of the range for large U.S. systems. Bus fares are kept lower than rail fares because experience shows that changes in bus fare cause greater shifts to and from auto usage.2/

National fiscal policy requires that, in the future, fares should cover a higher propotion of operating costs to reduce the impact of deficits on the budget. Thus, greater emphasis by GLC and London Transport will have to be put on non-fare-box measures to make public transport relatively more attractive than the auto, i.e. through auto use restraints, parking policies and transit priorities such as bus lanes.

1/ From a draft report on European urban traffic management prepared by Harbridge House for the Office of Technology Assessment, Topic C1, pages 1-11.

2/ Based in part on an unpublished OECD Case Study on London by a "Group of Experts on Traffic Policies for the Improvement of the Urban Environment," 29th November to 1st December, 1976, Organization for Economic Cooperation and Development, Environment Directorate, Paris, France page 4; and on Integration of Transit Systems, Volume 2, Integrated European Transit Systems, prepared for U.S. DOT, UMTA, by Interplan Corp., May 1973, pages 40-41.

In the last few years a broad parking policy has been applied to restrain traffic in the congested core area. The policy includes the following measures:

- the introduction and modification of controlled parking zones (CPZ's) for on street parking;
- controls on the provision of new public car parks;
- similar controls on the continued use of existing temporary public car parks;
- controls on the operation of public car parks; and
- controls on the provision of new private parking spaces.

The GLC has no powers to control the use of existing private parking space.

London Transport and British Railways have a coordinating committee for all service and improvement planning and have a standing financial agreement for sharing revenues based on amount of travel over each system as determined from sample surveys. A very high proportion (about 25%) of travellers on the Underground use season tickets.

The interagency Greater London Transport Group has been set up as a continuing mechanism to coordinate regional transportation and land development. It has a two-tiered sub-committee structure composed of top staff from GLC, LTE, the Department of the Environment and British Railways.

The GLC governmental structure has been effective in achieving staggering of working hours in both the public and private sectors through periodic campaigns. The current view is that the maximum benefit has probably already been achieved, so that the objective is essentially to hold the status quo -- i.e. to avoid "de-staggering of existing job centers and to achieve optimal staggering in all major newly developing areas."

At the national level the process of preparing and funding the implementation of plans has been greatly enhanced as a result of the establishment of the Department of the Environment, which brings together the former Housing and Transportation departments, and tends to further ensure that transportation is an integral element of comprehensive planning. Local grants for all types of community development including transportation are now handled by one "wing" of the Department called Local Government and Development.

PARIS

Construction of the Paris Metro began in 1900 shortly after the Boston and New York subway systems and well after the London system. The national and city governments had long fought over control of its development and construction priorities. The municipal council was finally delegated responsibility in 1895 when, as in Montreal two-thirds of a century later, the impetus for a major transit development program came with a commitment to a World Exposition. The drive continued at a pace like contemporary San Francisco and Washington, D.C., system building -- by 1914, 60 miles, or nearly 60% of today's Metro system was in place. By 1942, most of its current extent had been achieved.1/

The process of institutional integration was a slow and evolutionary one, however, much like in London. In 1921 a multitude of franchised private surface operations were brought together under single private ownership, publicly directed by the Department (similar to a county) of Paris and the Paris Municipal Council. The two private subway franchises, who had been rivals from the competitive beginning of the system, remained independent rivals for 25 years until merger in 1929. It wasn't until war-time conditions in 1940 caused the loss of most of the bus system that the central government and the City recognized the need to integrate the surface bus, streetcar and subway system. An operator-government committee was set up to develop such a plan and a merger within the framework of the private subway operator was legislated in 1941. A unified fare system was also established for all bus and Metro services.

The Post World War II period found the system in about as bad or worse condition as U.S. transit systems of the time in terms of financial situation, age of equipment, lack of coordination of service, and condition of maintenance. However, despite priorities that had to be given to other economic redevelopment matters, some attention was given to transit. A temporary commission was set up to help the private subway operator rebuild a coordinated system with buses serving largely as feeders and as a supplementary system.

Finally, in 1949, the Regie Autonome des Transports Parisiens (RATP or Paris Transport Administration) was created by the national government as a public corporation. In 1959, the corporation's ownership became jointly held by the national government, the City of Paris and the three surrounding departments, about the time that development of the new high speed regional express rail (RER) service began as an integral part of the plan for suburban/new town corridor development.

1/ Interplan Corporation, Integration of Transit Systems, Volume 2, Integrated European Transit Systems, prepared for U.S. DOT, UMTA, May, 1973, pages 97-117.

During the last two decades, RATP's accomplishments demonstrate that it has developed into a model urban public transportation organization. The new RER system is impressively well planned by comparison with any of the new U.S. regional rail systems. It links the airports, the new town centers, older outlying growth centers, almost all of the national rail stations which ring the City core, and ties in at many key points with the Metro system. Its design excels in aesthetics, in the convenience and ease of movement for users, and in the cost effectiveness with which pre-existing railway rights-of-way, tunnels and other facilities were utilized.

France has a staged planning process in which the national government leads the first phase which is broad, flexible and quite long range in planning horizon, up to 40 years. A formal approval process sets the framework for any further public or private development. The national government also participates with department and local authorities in the more detailed 15 to 20 year planning of the second phase. Finally, there are five year plans, which are extremely precise and rigorously implemented. 1/

The recent period has also seen continuing modernization and extension of the old Metro system, making it more attractive, comfortable and convenient for users. Integration with the suburban and national rail systems has been improved. The maps, and other passenger information systems are well-recognized as being the state-of-the-art in terms of clarity and ease of use.

The fare has been kept low (now about 30¢) as a matter of public policy, and today fares pay for less than half of operating costs. Free tickets or reduced fares are available to everyone. An orange card (Carte Orange), good for one month, allows unlimited trips on any mode of public transportation in defined sectors of the Paris region, and can be purchased by anyone. A payroll tax (1.9% of total salaries) is paid by all employers in the Paris region with 10 or more employees. The proceeds of this tax are used solely to compensate for revenue losses due to reduced fares and to provide for other public transport investments. 2/ The revenues from this tax have proven to be a strong inducement for coordination of services among the operators eligible to share these funds.

1/ Edward H. Holmes, Consultant to the International Road Federation, Coordination of Urban Development and the Planning and Development of Transportation Facilities, Final Report to U.S. DOT, FHWA, March, 1974, page 51.

2/ Group of Experts on Traffic Policies for the Improvement of the Urban Environment, "Case Study on Paris and Its Region," Orbanization for Economic Co-Operation and Development, Paris, April 27, 1977, page 17.

One aspect of integration which is striking in Paris is the strong tie between the Metro subway system, urban culture, and national identify. All Parisian places of national importance are linked with particular Metro stations (Etoile, Louvre, Invalides, Place de la Bastille, Ile de Cite', etc.), and many Parisians who use the system, identify their addresses by the Metro stops. The Metro system is one of the few in the world which itself provides such integrated and comprehensive service that it is thought of as road systems are thought of in other places.

One of the more impressive accomplishments in recent years has been the effectiveness of the bus lane program on the major boulevards of Paris. 1/ The care with which the bus lane program was prepared and implemented is impressive. The Paris City Council had to approve each route and section. The implementation was staged so that the most readily workable 15 kilometers were successfully implemented before continuing to other sections of the 111 kilometer program. A promotion campaign continued for six months with posters and signs stressing the improved speed and reliability of the bus service. Buses were able to increase by 9% the distance covered and were able to decrease total delay beyond schedule times by 37%. Ridership appears to have increased about 16% over trends for the bus system as a whole.

A significant part of the success can be attributed to the enforcement program which included deputization of RATP officials to complement police enforcement and authorization for private garages to tow away cars parked in the bus lanes. As a result of this program, Parisians have rediscovered the bus service and its implementation is being expanded.

1/ Organization for Economic Cooperation and Development, Environment Directorate, "Evaluation of Traffic Policies for the Improvement of the Urban Environment," Chapter VIII, unpublished document prepared for the first meeting of the Group on Traffic Policies, Paris, February 16-17, 1976, pages 153-176.

SINGAPORE

Singapore has received considerable attention in the transportation press over the past two years for the innovative auto restraint program the City implemented in 1975. With a goal of reducing peak hour traffic by 25 to 30 percent, an interministerial Road Transport Action Committee developed an approach to auto restraint known as the Area License Scheme. Under this approach a restricted zone was defined in the area of the Singapore CBD, and entry to this zone by autos or taxis between the hours of 7:30 a.m. and 10:15 a.m. was restricted to taxis or carpools with four or more occupants, and to vehicles displaying a colored permit purchased by the owner from the government. No restrictions were placed on buses, goods vehicles or motorcycles.

Singapore's decision to restrict peak period auto access to the CBD through a licensing scheme was arrived at after two major long range planning studies between 1967 and 1974, and the analysis and rejection of alternative measures, such as import duties or gasoline taxes, vehicle metering or the collection of tolls on city streets.

Singapore, a modern city-state (hence, with no need to coordinate its actions with other levels of government) of about 2.3 million people, is an island about 36 miles long and 12 miles across at its widest point. Singapore has a parliamentary form of government, and has been led by the same Prime Minister since achieving independence from Malaysia in 1963. Singapore has the highest standard of living in Asia outside of the Persian Gulf, and during the period from 1962 to 1973, the average annual growth rate of private cars was 8.8%. In 1973 the rate of increase was 15% over the previous year, and by the end of 1975 there were more than 143,000 private cars in Singapore.1/

Singapore's Finance Minister, one of the two most important decisionmakers in government, was an early and influential supporter of auto restraints. His opposition to auto dependence stemmed from his concerns about the public works cost of building enough highways for an auto dependent city, the foreign exchange commitments for importing all the fuel, tires, and parts, and the potential land use problems of a spread city. 2/

1/ Edward P. Holland and Peter L. Watson, Urban Project Department of the World Bank, "Measuring the Impacts of Singapre's Area License Scheme," presented at the World Conference on Transport Research, April 2, 1977, page 2.

2/ Notes prepared by Ralph Rechel, Consultant on urban transportation studies in Singapore between 1972 and 1973.

During the 1972-1973 period when Singapore was seriously considering a rail transit system as the solution to the area's long range public transportation needs, one of the consultants working for the City prepared a paper on motor vehicle restraints. A very active program of skyscraper construction in the early 1970's, and the development of multi-story parking garages in the already very congested CBD had helped produce very high levels of traffic congestion in the downtown by 1973. Following the consultant's report, the Singapore Cabinet took the first step in a program of auto restraint to reduce downtown congestion -- it doubled the annual road tax. The tax was graduated and following the increase ranged from $30 for a 1 litre car to about $100 for a 3 litre car. This tax was increased a second time in late 1973 or early 1974.

The traffic restraint scheme implemented in 1975 included, in addition to the area license (which costs approximately $35 per month or $1.75 per day), increased parking fees at public garages, and a park-and-ride bus transit service to provide an attractive alternative to motorists choosing not to drive into the CBD. The bus fleet was expanded to provide service to the new park-and-ride lots.

Enforcement of the restriction is accomplished by police at entry points to the restricted zone, who record the license numbers of offending vehicles and mail a notice of a $20 fine to their owners. Only about 0.25% of the vehicles entering the restricted zone each day between 7:30 a.m. and 10:15 a.m. are violators, monthly income from fines is about $6,000, and $2.5 million was realized from the sale of monthly permits in fiscal year 1976.

The results of this auto restraint program have been impressive, with the number of cars entering the restricted zone between 7:30 a.m. and 10:15 a.m. declining by 73 percent from March to October, 1975; monthly bus ridership increased by more than 200,000 during the month of June, 1975, when the area license scheme began and bus travel times improved; and, the number of carpools entering the restricted zone during the restricted hours increased by 60 percent.

Interestingly, traffic flows in the evening peak changed very little. This situation appears to result from three factors. First, many commuters who went out of their way and drove around the restricted zone on their morning journey to work to a site outside the zone took the shortest path home in the evening and passed through the restricted zone. Second, many commuters who came to work early (i.e. before 7:30 a.m.) to avoid the restriction returned home during the evening peak. Third, taxis, which were greatly reduced by the license fee in

the morning peak, appear to have increased significantly during the evening peak.

These results and others dealing with environmental effects, effects on businesses and pedestrians, as well as the impacts on persons traveling to different areas of metropolitan Singapore, are well documented by Edward P. Holland and Peter L. Watson in the paper referenced earlier.

Of interest to this research are several points related to the role of the public. First, the Government of Singapore proceeded in a deliberate fashion, starting with an attempt to restrain the growth rate of auto ownership by increasing taxes. Second, the government conducted a public education program to promote staggered work hours and carpooling, and carefully explained the rationale behind the need for more widespread use of public transport and high occupancy vehicles.1/ The failure to do this in Los Angeles was a significant contributor to closure of the Santa Monica Freeway Diamond Lane. Third, in spite of a widespread feeling on the part of Singapore residents that the auto was "the greatest boon of 20th century civilization," 2/ the area's residents have been willing to shift to public transport and carpools for the overall public good. Holland and Watson observe, however, that it may be too early to definitively say whether these changes are "short term behavior modifications or whether they represent fundamental changes in the attitudes of motorists."

There are certainly fewer intergovernmental coordination problems in a city-nation such as Singapore, but it is obvious that such an institutional arrangement is not applicable to American urban areas, although a Dade County or almost any city could implement such a restraint scheme if it chose to do so.

1/ Op cit., Holland and Watson

2/ Rechel notes.