This paper discusses how the Federal Highway Administration arrived at the policy of transportation system management, why FHWA thinks TSM is important, and just how it will contribute to improving urban transportation.

In the past 25 years, the federal and state governments have jointly responded to the nation's need for increased mobility by constructing more roads for automobiles, trucks, and buses to get into, through, and around urban centers. The result is that Americans today are the most mobile people in history and have many choices of where to live, work, or relax. But the effort has not been an unqualified success, especially in many urban areas. Traffic congestion still exists on urban streets and has recently become compounded by the twin problems of environmental pollution and unrestrained energy consumption. Obviously, relying solely on the "more-roads" approach to give urban areas some moving space is not the answer.

At the Federal Highway Administration, we have come to realize (as have the people in the Urban Mass Transportation Administration) that we can no longer say that we will solve urban transportation problems in the future and expect people to endure those problems in the present. While doing long-range planning, we must also direct our attention, skills, and resources to the daily problems encountered now by people who live, work, shop, and move around in urban centers. As managers of a transportation network that is impressive both in terms of size and cost, transportation professionals, transit operators, and public officials must cope directly with the problems resulting from the inefficient use of this public and private investment.

We cannot settle for a posture that looks only to the distant future for capital-intensive, long-term methods of improving urban transportation. Rather, acting together, we have the responsibility—and the capability—to take the initiative in implementing short-range as well as long-range solutions to transportation problems. And in doing so, the objectives of mobility improvements, energy conservation, and urban environment enhancement must be weighed, not as competing pressures to be dealt with independently or traded off against one another, but as the mutually related forces they indeed are.

FOCUS OF TSM

Many individual TSM strategies are not new and, in fact, are the bases of good traffic engineering. Techniques such as channelization, signalization, and computerized traffic control systems can significantly help to accommodate traffic demand. Progress has been good in improving highway efficiency by using these techniques and further improvement will certainly be made, but our accomplishments will be limited if we take only those actions that improve the capacity of the highway to handle the ever-growing traffic.

We must also concentrate on ways to decrease that traffic. Several TSM strategies, such as preferential treatments for transit and car pools, have convincingly demonstrated their effectiveness to do this. For example, the reversible exclusive bus and car-pool lanes on the Shirley Highway (I-95) in northern Virginia during rush hours serve three times the number of persons per lane at an excellent level of service as the normal lanes do at a badly congested service level. Before being suspended (a court ruled that environmental assessment procedures had not been followed properly), the controversial Diamond Lane in the Santa Monica Freeway was serving the same number of persons in approximately 10 percent fewer vehicles.

These accomplishments were brought about by dramatic increases in car-pool and bus riders. Other preferential treatment projects for car pools and buses in places as diverse as Honolulu, Seattle, Portland, San Francisco, Miami, and Boston are confirming our conviction that such efforts can reduce traffic congestion and thus increase the efficiency of urban highways.

AUTOMOBILE-RESTRICTED ZONES

I would like to single out one particular TSM strategy—a relative newcomer to the American urban transportation scene—that can also change the nature of user demand and that, I believe, will become a common feature in many of our cities. That strategy is the automobile-restricted zone (ARZ).

Automobile-restricted zones in downtown areas have a special appeal to a large number of people for many reasons. Redesigning the use of urban space and making walking a more pleasant experience can help resolve
a variety of urban problems: air and noise pollution, traffic congestion, deteriorating retail sales, and loss of an ambience that can only be found in dynamic city centers.

I have seen many pedestrian malls that some 70 or so American cities have created on one or two blocks of a downtown shopping street, but the real positive impact of downtown automobile restriction did not strike me until I saw what the Germans had accomplished in Munich. They have closed off an extensive portion of a major urban thoroughfare and have established a network of attractive, pedestrian-only streets well served by public transit.

More than 300 other European cities have implemented similar automobile restrictions in carefully selected areas; in fact, this measure has become an integral part of comprehensive urban transportation planning. Several U.S. cities have taken similar action by restraining automobile and truck traffic from certain areas while granting free entry to public transit and taxis. These "transitways" are becoming increasingly popular as cities follow the lead set in Minneapolis with Nicollet Mall, Philadelphia with Chestnut Street Mall, and now Chicago with State Street Mall.

Successful ARZs are positively influencing pedestrian and commercial activity. Traffic-free areas attract and appeal to people as pleasant places to be because the conflict with vehicles has been reduced or eliminated; there is less air and noise pollution, and the design of the area can be on a human scale. Greater numbers of pedestrians lead to increases in retail sales for almost all merchants. Frequently, it is the once-skeptical merchant that becomes the ardent advocate of the ARZ and the chief supporter for enlarging the area, as is the case in Chicago. The ARZ, in effect, acts like a magnet for people and business. In Minneapolis, Nicollet Mall and Skyway network are credited with helping to attract the $350 million in new building that has occurred in the area.

Paying careful attention to the needs of pedestrians can change the demand placed on urban highway facilities by making walking an attractive alternative to the private or public vehicle, especially for short trips.

Pedestrian improvements and traffic restraints must go hand in hand with efforts to improve public transport services. It is unlikely that totally vehicle-free urban centers are going to spring up in the immediate future, nor is this necessarily the intent of automobile-restriction measures. However, a reduction in nonessential vehicle traffic could be achieved in stages that would include selected expansion of traffic restrictions, better transit service, and improved capacity on adjoining streets. In short, an effective areawide traffic-restricted zone depends on successfully joining a variety of TSM actions: preferential treatment for transit, rational parking policies, signal control, and capacity improvements on alternate routes.

At FHWA, we are encouraging states and local areas to actively consider ARZs. We have notified state transportation agencies and local planning agencies that federal-aid urban system funds can be used for both planning and constructing ARZs. In line with our procedures that give local government options on how these urban system funds are to be spent, local elected officials can work through their appropriate local forum and with the state agency to propose such projects for funding. When we began to stress the eligibility of ARZs for urban system funding, we have been encouraged by the interest and enthusiasm that we have encountered. Some 30 urbanized areas across the country are in the process of considering or planning a traffic management strategy that includes an ARZ. For example, Chicago is using $2.2 million in federal-aid highway funds to help construct the State Street Mall, and I expect many other cities will tap this funding resource in order to give substance to their desire to improve the downtown environment. I personally am pleased that states and cities are beginning to exercise the flexibility of federal-aid funding that many of us worked hard to get written into the 1973 Federal-Aid Highway Act.

LOCAL INITIATIVE VERSUS FEDERAL ACTION

I am pleased to see an increasing number of local areas taking the initiative in making the really tough decisions that have to be made if energy consumption is to be reduced and air quality standards achieved. I believe that most people do not want further intrusion by any agency of the federal government into the affairs that can—and should—be solved in the local forum. So it is really up to state and local officials to take full advantage of these opportunities to improve transportation-related air quality and energy conservation efforts. This local initiative can make it unnecessary for the federal government to prescribe to local areas the methods by which these objectives must be met. The flexibility of federal-aid highway funds to be used to support a wide range of local chosen TSM actions is just such an opportunity, and we stand committed to assist state and local agencies to use this funding flexibility.

INSTITUTIONAL FRAMEWORK FOR TSM

What is really new about TSM is not the techniques themselves, but the institutional framework, the cooperative way the individual techniques are put together to form a package of strategies by the various partners in the urban transportation business. In the past, urban transportation management was characterized by a number of disparate groups, each acting more or less independently and each more or less influencing the efforts of the others. Traffic engineers tackled the day-to-day operational problems of the highway system, planners wrestled with the problems of 20 years into the future, and transit operators tried to keep their fleets on the road—or the track. How much more effective it would be if all these partners would sit down together, discuss their problems, and agree on specific actions each could take that would complement the action of the others so that mutual problem solving is achieved.

We believe that metropolitan planning organizations can serve as appropriate forums for such problem solving. We know they are controversial, and we hear complaints about the presumed rigidity of the institutional aspects of our urban planning regulations. In fact, however, our recently completed urban system study shows that extremely wide variety and flexibility do exist in actual operations. It appears that, where state and local officials are committed to cooperation, MPOs can and do work well.

CLOSING REMARKS

As this nation enters its third century, I think it is obvious that our thinking and habits will have to change if we are to create more livable urban centers. The future of our cities will depend on how well we accept today's challenges:

1. To produce increments of growth that are less hostile to humans and their environment;
2. To extract more and more from dwindling resources, including financial and natural resources, or
This paper seeks to evaluate TSM within the larger context of the problems and characteristics of transportation and other public facility systems. Necessary to this are two other objectives: identifying the problems and characteristics of public facility systems and identifying strategies for improving their performance. The discussion is cast at the level of a class of systems. No attempt is made to evaluate the degree to which each public facility holds to the characteristics of the class of systems, although particular systems will be referred to in order to illustrate points or where an exception is illuminating. TSM is addressed at the end of the paper to provide a perspective on the problems it seeks to solve and on our expectations from it.

The term public facility systems refers to public and private transportation systems, electric and gas utilities, telephone utilities, water supply and sewage systems, public schools, welfare programs, health services, and other goods and services supplying activities that are either in the public sector or in the private sector in a public utility format. The systems appear in diverse forms. They have differing histories and differing institutional forms; some are completely within the public sector, and others have certain private sector features. Their similarity is in the extent to which they exist within a strong context of public sector rules, organizations, and decision making.

Public facility systems are not the only entities affected by government actions. Governments provide legal context for free markets—including providing for property rights and their transfer and assuring competitive conditions. The public sector affects the distribution of the income and wealth; its actions express social preferences for good things (preservation of historical artifacts, for example) and against bad things (elimination of unsightly billboards); and it attempts to stabilize the economy. Public facility systems are not uniquely related to governments; government interaction is everywhere.

Economists distinguish usefully, but not absolutely, between private goods and public goods. Private goods are privately consumed and the consumption of the good by one person excludes consumption by all others. Public goods are those for which the principle of exclusion fails for one reason or another. In some cases exclusion may not be desirable either for public or efficiency goals. Although it would be possible to exclude some children from the education system, it would not be socially desirable. Although it would be possible to keep some licensed drivers from using the roadway system, no efficiency would be gained as long as roadway capacity is available. The results of some activities, such as the cleaning of the air, are so widely diffused that there is no way to exclude individuals from enjoying them. As a result of these features of public goods, voting is substituted for the market mechanism, and the public expresses its preferences in a collective way.

Distinguishing between public and private goods is useful. It is one cornerstone for the theory of public finance, which enables economists to apply normative economic principles to public sector matters while recognizing the differences between the public and the private sectors. But while useful, the distinction between public and private goods does not neatly distinguish public facility systems from other systems. Many public goods are provided by the private sector (armorments, for example), and many private goods are provided by the public sector (lumber from the national forests).

Another point to be considered in approaching public facility systems is the potential for spatial monopoly combined with the efficiencies to be gained from spatial monopolies: in a service area, one water supply facility is less expensive than many, one highway system is less expensive than many, and one electric utility is less expensive than many. The spatial monopoly potential and government activities to deal with that potential are another consideration bearing on public facility systems. Again, however, this is not a distinguishing dimension, for there is potential monopoly in most if not all forms of endeavor. The neighborhood drugstore or a steel rolling mill serving a regional market enjoy degrees of monopoly power from their spatial location.

So when considering public facility systems, one should bear in mind that their common feature is the degree to which they perform within the context of public sector rules and organizations. On other dimensions, some of which were mentioned, they are quite different. This context of public organizations and processes should not be dismissed as an accident of history or as incidental to other major dimensions. Each facility system was brought into a strong public format for good reasons. Attentive publics claimed rights, and politicians responded to these rights as political imperatives. Politicians crystallize claims, and they use those claims to rights as a basis for political power and political action. Although not all rights recognized by attentive publics result in the creation of public facility systems, all public facility systems were knit in a response to claims to rights. The systems' past, present, and future turn on the manner in which those rights are viewed by the public and treated in the political process.

The right of access to the transportation system was