

## Results of the Workshop

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The objectives of this workshop were to develop a transportation planning process that places emphasis on transportation system management (TSM) activities and to examine the important relationship between TSM and major national goals. Initial discussion focused on the three resource papers and their identifications of issues in TSM methodology—Gilbert's paper, which investigated a new approach to packaging TSM actions; Hamburg and Lathrop's paper, which proposed a methodology in which TSM is integrated into the overall transportation planning process; and Meyer's paper, which described a monitoring and evaluation system that could serve as the foundation for a TSM process. Several observations were made that served as important points of departure for the remainder of the discussion. First, we decided that measures of effectiveness (MOEs) must be considered critical components of any TSM methodology but must also be easily understood and measurable. These MOEs should be related to the goals and objectives of the transportation planning process (although some workshop participants pointed out that there is often a significant difference between stated and operative goals and objectives).

The second point considered relates to the opening comments by Orski and the somewhat different interpretation by Hamburg and Lathrop. We agreed that regionalism has been viewed for a long time as a panacea for the many transportation problems facing urban areas and that, in most cases, it has not served that role. However, we also believe that there are ways to deal with both regional and subarea-local concerns in a planning methodology. The methodology developed by Hamburg and Lathrop attempts to do just that.

Finally, the need to relate the methodology to the level and types of decisions to be made is an important starting point for the development of that methodology. As illustrated by Meyer, the structure of a monitoring system, when considered as a decision-support system, is very much affected by the type of decision environment assumed.

What are the problems faced by TSM planners and what are the characteristics of a methodology that could solve some of these problems? We noted that, since its introduction in 1975, TSM has had an important positive effect on urban transportation. It has taken an active role in shifting the national focus from high-capital approaches to meeting transportation needs to greater consideration of low-capital solutions to such needs. In this way, it has emphasized the better management of existing transportation resources as a new focus for dealing with urban transportation problems. This focus on management has brought new options to the transportation planner and given new life to actions that have been little used in the past. Such actions as pricing, ride sharing in various forms, parking constraints, and priority treatment of high-occupancy vehicles allow us to make better use of existing facilities. The need to consider these and other management-oriented transportation actions has required new professional skills in the transportation field, and traffic engineers, transit operators, transportation planners, and others have learned to work together more closely, which has produced a better appreciation of others' abilities.

Because of its emphasis on management of resources, TSM has led to greater sensitivity to the need of working within a context of continually changing goals and limited resources. TSM has involved new agencies and interest groups in a coordinated approach to transportation problem solving. Government agencies at the local, state, regional, and federal levels are working with private interests in such areas as ride sharing and transit operations on a scale unforeseen a few years ago. Finally, TSM has created new constituencies for supporting transportation programs through the new services it provides and its emphasis on resource management.

There are problems, however, that compromise the potential effectiveness of TSM and that must be addressed. The TSM process is still plagued by institutional conflicts concerning the relative roles of the various agencies involved and their competing directives. Related to this problem of roles is the frequent lack of metropolitan leadership and effective implementation of actions. Inadequate funding and barriers to effective programming have caused many promising TSM actions to be shelved. Some agencies continue to complain of the lack of personnel adequately trained for working in a multimodal-system management-oriented context. Similarly, administrative red tape is cited by many as a serious impediment. Others cite the problem of effectively monitoring implemented TSM actions to determine their workability and worth. Perhaps the most vexing problem has been that of defining the limits of TSM as a planning process and its appropriate relationship to the broader comprehensive transportation planning process. Questions that need to be asked in this regard include, How are short-range actions differentiated from long-range ones? Are there geographical limits on TSM planning? How do the short- and long-range planning processes mesh?

To take advantage of the benefits that have accrued from the TSM experience and to help address the problems cited above, we propose the following reorientation of the urban transportation planning process. This includes

1. Identification of the requirements for a comprehensive transportation planning process in which TSM actions play a major role;
2. Description of the specific elements of the overall program development process—planning, programming, implementation, operations, and monitoring and feedback—in relation to the characteristics of the new process; and
3. Discussion of the implications of this proposed process on existing processes, the types of actions considered, the ability of a metropolitan area to respond to constraints imposed on the transportation system, and the institutional relationships for transportation management.

### REQUIREMENTS FOR A COMPREHENSIVE NEW PROCESS

A successful comprehensive transportation planning pro-

cess must respond to the problems discussed above and have at least the following characteristics:

1. The constraints on mobility must be recognized: As discussed by Deen, the overall goals of transportation planning in the United States are dominated by mobility as a central objective—which is supported by Americans at so many levels to be virtually a cultural objective. Other concerns—energy, air quality, the environment, safety, and so forth—are principally constraints in the quest for mobility. But they are increasingly important constraints and could become much more so on short notice. The process must be able to cope with this.
2. The scope of the process must be comprehensive: The planning and implementation of TSM actions should be a part of the total, areawide transportation planning process, not a separate process. This helps to force real trade-offs among options and eliminates artificial distinctions about what is or is not short- or long-range and what is capital-intensive and what is not.
3. TSM-type actions should be prominent among all options considered: The process must not drown TSM in planning, but rather should infuse the entire process with the action-oriented spirit and the kinds of actions that are the thrust of TSM.
4. The process must not be a top-down approach: The operators and the private sector often have the clearest ideas of where the problems are. These groups must be intimately involved in the process of defining problems and evaluating candidate solutions. Indeed, the process should be characterized by consensus building among a wide variety of actors and should concentrate on local and corridor needs, as well as including area-wide needs.
5. The process must start with the existing system and its problems: Devising massive, regionwide alternatives, as some older planning processes have tended to do, will not work. We must start with what we have and work from there.
6. Solutions and analysis levels must be scaled to problem levels: Many problems can best be dealt with at the regional scale, but many others are more appropriately handled at the local or corridor level. The solutions and the analysis methodologies used to evaluate the problems must be at the scale that will best serve, and be used by, the appropriate agency.
7. The process must encourage nonconventional actions and implementors: The focus should be on management of system elements, with operational improvements and entrepreneurial initiatives considered along with conventional capital projects. Management of travel demand by positive response to consumer needs is as important as supply of transportation facilities.
8. Other federal programs must be tied into the process: Many of the constraints under which the planning process must operate are embodied in the requirements of federal agencies unrelated to transportation (e.g., U.S. Departments of Energy and of Housing and Urban Development, Environmental Protection Agency). These planning requirements need to be melded into a comprehensive transportation planning process.

#### ELEMENTS OF THE PROCESS

In discussing the development of a methodological approach to transportation planning, we determined that such a methodology must not be divorced from other important elements of the overall process, i.e., programming, implementation, operations, and monitoring and feedback. The characteristics of these elements and the problems faced by transportation professionals in

each element must therefore be considered in developing the process.

#### Planning

The suggested process unifies regional and subarea demands, long-range and short-range needs and capital-intensive and low-cost improvements, actions, and policies. It is the means by which our stated requirements can be met.

The approach has three kinds of activities:

1. Establishment of a regional context within which detailed subarea plans can be developed (this activity involves several tasks—the articulation of regional goals and objectives; an assessment of the urban setting, including an examination of growth in population, employment, and transportation-sensitive variables; and the identification of regional TSM actions);
2. Development of subarea transportation policies, plans, and actions within the constraints of regional growth, funding opportunities, and transportation actions (these include initiatives by local governments, operating agencies, and private interests, as well as subarea planning by the regional agency); and
3. Synthesis of an overall regional transportation plan from the policies and plans developed for each of the subareas of the region and their reconciliation with regional actions.

The layout of the activities of the process is simple, but the content is ultimately complex. Clearly, successful linkage of regional and local actions requires activities that to some extent occur in sequence. In reality, however, many subprocesses occur simultaneously. The need to stimulate positive actions and cope with their need for prompt attention when opportunities are presented has to be respected. Responsive programming is particularly necessary.

We believe that this approach could represent a significant extension of the planning process. Earlier approaches to regional transportation planning have proposed construction programs that have ignored detailed traffic engineering alternatives and other complementary actions for coping with local transportation problems. These capital programs were typically to be implemented by the state with the major share of funds coming from the federal government. A specific town or jurisdiction was expected to solve its local transportation problems on its own, but the ability of a jurisdiction to handle its own transportation needs without considering its setting within the region and the impacts that regional growth and transportation plans could have on its transportation system was at best limited.

The major tasks in each of the three activities are summarized in Table 1 of Hamburg and Lothrop's paper.

#### Programming

Guidance of the programming step may need development beyond that offered by the transportation improvement plan because the process proposed here makes special demands. Candidate projects, in line with the expanded participation, will be presented by a wide variety of local agency and private-sector sponsors. It will be necessary to consider trade-offs very carefully and with a view toward their consequences to these numerous institutional participants. The funding pattern that determines which of the projects are in competition will be a complex one. In addition, many important proposals will lack strong sponsors or interested constituencies.

### Implementation

Implementation is also complicated by the plurality of the process. There are many different implementors participating at the same time. Types and scales of projects will be substantially different from one to the next. Under these circumstances, the monitoring of implementation is particularly important and must be adjusted to the different project objectives and the sensitivity of regional goals to project achievements. It must also be considered that some options will require quick action if benefit is to be obtained from them. This is particularly true of opportunities made possible by private-sector interests.

### Operations

In this process, operations is in a single context in which high- and low-capital projects occur as part of a managed system change. The need is to keep an accounting of the changing costs of services and of the changing constraints on resources available. Services must be kept in perspective with other uses of funds.

### Monitoring and Feedback

The suggested planning process investigates alternative investments, policies, or courses of action in a manner responsive to public goals, welfare, and needs. Monitoring, both of systems performance and the consequences of individual transportation actions, is a vital component of this process; it provides the information necessary for making decisions on future investments, policies, or courses of action or in altering those that have already been undertaken. Yet, it is especially difficult because the variety of types of actions, the numerous implementors, and the widely different scales of application mean that an intricate set of measures, actors, and ways of summarizing the monitoring data will be required.

Many TSM actions are implemented in a localized context for which regional level monitoring is impractical or simply so coarse that any detectable effects are obscured. The choice of monitoring technique and procedural design must therefore be adapted to the action and to the anticipated results. The sheer scale of the monitoring efforts for such diverse and numerous actions and policies mandates a shared (and coordinated) responsibility for monitoring, as well as a clear procedure for summarizing or aggregating the effects of these policies.

If planning, analysis, and evaluation of disparate projects are to be successful, a small number of meaningful MOEs must be identified and presented for each action or policy. These MOEs must recognize different kinds of objectives for the transportation system. The efficiency of operation (e.g., revenue service hours per vehicle), the effectiveness of the system (e.g., passengers per revenue service hour, delay at intersections), and the performance of the system relative to nonsystem objectives (e.g., energy consumption relative to other activities, total cost, safety, emissions) must all be carefully monitored.

Finally, the monitoring process must be carefully designed to provide feedback to each of the steps in the overall process: operations, implementation, programming, and planning.

### IMPLICATIONS OF THE PROPOSED PROCESS

This is a process intended to integrate TSM into a comprehensive transportation planning process. We feel

that it meets the need to expand and intensify the effect of TSM as it matures and improves the way in which the transportation planning process is approached. Although it retains the thrust and spirit of the TSM program and the content of actions presented to the field, it puts these actions into direct relationship with others, packaged as best to meet the needs of the problem to be solved. The new process includes a bottom-up emphasis in which local actions are synthesized with regional level actions and is guided by regional objectives in the selection of particular actions by local government, operating agency, and private-sector actors. It integrates the long and short ranges into a flexible activity, where evaluations of performance can be addressed to any time horizon. It extends the planning process to a number of actions not normally included in such processes, e.g., transit operations and flextime, and deals with them in a management context. The management focus of TSM is projected into the entire planning process. It is a process that is flexible with respect to the incorporation of new balances between goals and between goals and constraints and in line with anticipated requirements arising from issues such as energy conservation. In knitting the whole transportation process together again, it is prepared to respond to change in a way that a more segmented process could not.

### IMPLICATIONS FOR CHANGES IN STATUTES AND REGULATIONS

The proposed process also has implications for the federal statutes and regulations that now govern TSM and other aspects of transportation planning. Although conclusions were not reached in this workshop on whether and how these statutes and regulations should be changed, the following important questions were raised.

1. Should there be a change in the roles of federal, state, metropolitan, and local governments and the private sector in the planning process (as defined in the statutes and regulations)?
2. Should the statutes and regulations governing non-transportation programs (e.g., energy use) be revised to require designation of the metropolitan planning organization (MPO) as the planning institution?
3. Should the regulations be simplified to reduce documentation and procedural requirements and so facilitate undertaking a process such as we propose?
4. Should the funding for planning now coming from several categorical programs (e.g., U.S. Department of Transportation, Environmental Protection Agency, Housing and Urban Development) be consolidated into a single federal program to fund comprehensive planning? Or, conversely, should a new categorical planning funding program for TSM be created?
5. Should the channels of funding for capital programs (e.g., highways and transit) be revised, e.g., sending all funds through the MPO to ensure plan implementation, channeling more of the capital funding directly to local agencies, channeling more (or all) of the funding through the states?
6. Should the current regulatory distinction of TSM and long-range planning as separate elements be dropped?
7. Should all federal agencies issuing regulations affecting TSM be required to issue a single comprehensive regulation?
8. Should certification acceptance replace federal procedural requirements?
9. Should national goals be translated into quantified objectives (e.g., there are national ambient air quality standards, but no nationally fixed energy reduction targets)? This might make them more satisfactory as input into a planning process responsive to several at once.