Performance measures should be developed to encourage total effective utilization of transportation suppliers. Often performance measures are limited to a particular set of conditions that may exclude many of the transportation suppliers in a given urban area. It is the effective utilization of all transportation suppliers that tends to make the transportation system perform efficiently, effectively, and economically. The public sector must be cognizant of the new environment under which it is to operate and must attempt to integrate the private and public sectors where appropriate.

Performance measures should be developed for the planning process itself. Planning has been under a lot of criticism in the past several years. Some of the criticism is well deserved. Few, if any, performance measures have been adopted for the planning process in order to evaluate the process from other than an internal viewpoint. The planning process must be oriented toward client needs and cannot view itself purely as an end in and of itself. Therefore, performance measures for the planning process are needed that would view the process from both internal and external points of view.

STRATEGIES FOR ALLOCATION OF RESOURCES

More emphasis will be placed on the efficient allocation of resources in the 1980s than has been done for many years. This is due for the most part to the reduction of available resources for transportation activities. It will be important for the urban transportation planner to be cognizant of the need to allocate resources efficiently. It is important for the urban transportation planner to have skills in the areas discussed above. If the above functions can be completed successfully by utilizing appropriate skills, there should be a proper allocation of resources. Unless the urban transportation planner is willing to attain the skills needed for the successful completion of the above functions, he or she most likely will not be successful in the management and operations area of the transportation field. There is a need for the urban transportation planner in the management and operations area, but he or she must acquire new skills in order to function appropriately.

Planning for Financing, Implementation, and Evaluation

Paul N. Bay

The overall objectives of the workshop on planning for financing, implementation, and evaluation were (a) to define the major planning needs of the 1980s in planning, programming, budgeting, and implementing projects or services; (b) to define the tools or methods needed for financial planning, implementation, and ongoing evaluation; and (c) to recommend changes in the federal regulations that would improve the processes of financial planning, programming, budgeting, implementation, and evaluation. This workshop as a whole reviewed and determined the general findings and major planning needs of the 1980s. However, two subcommittees or task forces were formed to separately address tools and methods and federal regulations. The recommendations of these two task forces were then reviewed, modified, and adopted by the workshop as a whole. In addition, the workshop identified nine issue areas during the course of discussion, and these are summarized below.

ISSUES IDENTIFIED

During the past 10 years, significant changes have taken place in transportation costs. Those changes require some entirely new approaches to planning, budgeting, and implementing projects and services. Better evaluation of completed projects and ongoing services is increasingly being demanded by a public concerned about cost effectiveness. Some new tools are beginning to be used, but more are needed. The following nine areas were considered.

1. *Uncertainty and shortfalls in funding.* In years past, highway revenues had a high degree of predictability from year to year, and costs were reasonably stable. Transit operating revenues came primarily from farebox receipts, and, in the early years of federal capital funding for transit, basic capital needs were assured of being met. For many reasons, these statements are no longer true. Traditional financial planning and programming methods—largely still in use—do not allow for the dynamics of year-to-year fluctuations in revenues, nor for the evaluation of risk and uncertainty inherent in cost estimation, nor yet for the probability of greatly straitened circumstances in the future.

2. *Analysis of trends in prices and revenues.* Much greater sophistication is necessary in methods for forecasting tax revenues and their relationship to the economy and to fuel prices. Similarly, techniques for pricing transit services must take into account many more complex factors than the simple price/demand elasticity curves of the past, including consumer price index (CPI), labor contracts, the cost of money, issues of equity, and long-term strategy for dealing with price increases. Estimating construction costs will also require better analysis of the construction cost index, the CPI, and labor contract dates.

3. *Capital costs versus rehabilitation versus long-term maintenance.* Two recent trends run counter to each other—the high cost of labor tends to call for more capital-intensive solutions, and the shortage of capital funds tends to call for "fix-it-up, wear-it-out" solutions. It is clear, however, that a significantly larger share of the transportation budget in both highway and transit is going toward maintenance and operations, and more management attention must be given to reducing total costs. Thus, improved engineering economy methods applied to life-cycle costing appear to be badly needed.

4. *Implementation in a multiple-jurisdiction setting.* Changing roles of federal, state, regional, and local governments in transportation finance have fractionalized and diffused the decisionmaking process. Most major projects must pass at least three levels of government no matter who the implementing agency is. Together with funding uncertainties, this setting makes the traditional, rather static methods of programming project implementation too cumbersome. New programming approaches that avoid costly delays by coordinating approvals and funding are highly desirable. Programming involving both highway and transit modes and

multiple funding sources for a single project especially need attention.

5. *Management of program implementation.* As construction inflation drastically affects the cost of completed projects, and approval and regulatory constraints affect the time needed to implement them, there is need for more careful application of cost and schedule controls and other program management techniques. Especially needed are some less-sophisticated techniques than those used on very large, multiyear programs—techniques amenable to use by smaller agencies or individuals not highly trained in EDP methods. Implementation of TSM and transit productivity improvements are a special challenge.

6. *Innovative financial planning.* As traditional funding sources dry up, new approaches to financing capital and operating requirements are being sought, especially those that involve the private sector. Methods of developing such potential new sources of funds and still protecting the public interest require skills not usually expected in the traditional transportation manager.

7. *Evaluation and monitoring of expenditures and performance.* Greater public cost-consciousness requires continuing reassessment of how well completed projects and ongoing services meet the needs of the public in the total transportation system. Evaluation methods that are ongoing, pragmatic, understandable, and provide a feedback loop into the programming cycle are needed. Improved evaluation measures and performance indicators, together with better methods of acquiring and using the data, are needed.

8. *Improved cost responsibility allocation.* As new sources of financing are considered, more effort needs to be directed toward identifying benefits and beneficiaries and direct and indirect impacts of taxes and user charges on segments of the regional economy.

9. *Strategic planning.* Assessment of transportation decisions in the public sector might benefit from use of the strategic planning techniques used in the private sector, including evaluation of risks, opportunities, and uncertainty, as well as development of management control strategies for financing, pricing, programming, and implementation. Many of the preceding eight issues have components that are included in the concept of strategic planning.

MAJOR PLANNING NEEDS

The workshop identified eight major planning needs of the 1980s. They are as follows:

1. Transportation managers familiar with the fields of engineering economy, finance, program and project management, pricing theory, risk and uncertainty, decisionmaking, and with classical transportation planning methods and operations;
2. A planning process that is directly tied to decisions on investments, services, and pricing;
3. Greater flexibility in financing approaches, including public-sector/private-sector sharing of costs, loosening up of present modal and categorical funding constraints, borrowing and tax-incentive approaches, and new looks at the traditional split between capital funding and maintenance/operations funding;
4. Some stable, predictable level of funding, with an appropriate mix of categorical funds and discretionary funds;
5. Development and application of new tools for management control of transportation decisions, including financial forecasting models, engineering economy models, pricing and cost-allocation models, decision support systems, and program and project management control systems;
6. Improved performance indicators and measurements to provide realistic monitoring and evaluation of implemented services and projects, with feedback into the programming and budgeting process;
7. Better understanding of the direct and indirect impacts of alternative taxes, user fees, and financing plans on the regional economy and its various segments; and
8. A stable, intergovernmental decision structure, with roles defined, understood, and developed as appropriate within each urban area.

FEDERAL REGULATIONS (Harvey Haack, Task Force Chairman)

The task force on federal regulations agreed that urban transportation planning regulations should be as simple and straightforward as possible. Toward this goal it recommends that the regulations be organized into three parts: (a) a statement of national goals, (b) urban transportation planning requirements, and (c) guidelines and advisory information.

The task force attempted to separate those elements and/or products of the planning process that should be a part of federal law from those elements/products of the process that are important to the process but should *not* be made a part of the law through rule and regulation. To do otherwise opens the door to judicial decisionmaking based on regulations/requirements developed at the national level rather than more sensitive decisionmaking at the regional level.

Current urban planning requirements were separated into (a) national goals, (b) requirements to carry out Section 134 of Title 23 and Section 8 of Title 49, and (c) elements of the planning process that are important to the process but should not be given the stature of federal law through regulatory requirement.

National Goals

The following federal requirements were identified as national goals:

1. Consider social, economic, and environmental effects in planning, programming, and implementing transportation improvements;
2. Improve air quality through various transportation control measures;
3. Ensure public involvement in the transportation planning, programming, and implementation process;
4. Ensure that no person shall on the grounds of race, color, sex, national origin, or physical handicap be excluded from participation in, be denied benefits of, or be otherwise subjected to discrimination through the urban transportation planning process;

5. Include special efforts to plan public transportation facilities and services that can effectively be utilized by elderly and handicapped persons; and
6. Provide for consideration of energy conservation.

The national goal of energy conservation has particular significance to issues associated with planning for financing, implementing, and evaluating urban transportation improvements. Gasoline consumption is a basic determinant of motor fuel tax revenues. Both the price of gasoline and the price of asphalt provide examples of energy-related factors of transportation critical to planning finance, implementation, and evaluation. Other financial, implementation, and evaluation issues related to national energy goals and policies are (a) capital cost versus rehabilitation versus long-term maintenance, (b) implementation in multijurisdictional settings, (c) financial planning, (d) cost-allocation studies, and (e) overall strategic planning.

Urban Transportation Planning Requirements

After separating federal requirements into national goals and those elements of the planning process important to planning but not requiring the stature of federal regulation, the task force identified four current federal requirements especially important to planning for financing, implementation, and evaluation:

1. Development of a transportation plan that has both a short-range and a long-range element.
2. Development of a transportation improvement program that includes an annual element (the program shall be a staged multiyear program of transportation improvement projects consistent with the transportation plan);
3. Establishment of a forum for cooperative decisionmaking by principal elected officials of general purpose local government; and
4. Involvement of appropriate public and private transportation providers.

While not so directly related to issues associated with planning for financing, implementation, and evaluation of transportation improvements, the task force believed that the following requirements were essential to a continuing, cooperative planning process:

1. A memorandum of understanding that describes roles and defines responsibilities for carrying out transportation planning and programming;
2. A unified planning work program that describes all urban transportation and transportation-related planning activities scheduled for the area; and
3. A federal certification procedure for the evaluation of the transportation planning process to determine if the process meets federal requirements.

Guidelines/Advisory Information

It was the consensus of the task force that six of the elements of the planning process as described in Section 450.120 should be deleted as federal requirements. These elements were identified as being important elements of the planning process but did not necessarily follow from Section 134 of Title 23 and Section 8 of Title 49. These are as follows:

1. 450.120(a)(8)(i)—an analysis of existing conditions of travel, transportation facilities, vehicle fuel consumption, and systems management;
2. 450.120(a)(8)(ii) A, B, and C—relationship to an evaluation of alternative TSM improvements in the development of the transportation plan;
3. 450.120(a)(8)(iii)—relationship to projections of urban area economic, demographic, and land use activities and transportation demand forecasts;
4. 450.120(a)(8)(iv)—relationship to analysis of alternative transportation investments or strategies and to developing the long-range element of the transportation plan;
5. 450.120(a)(8)(v)—relationship to conduct of corridor, transit technology, and staging studies.
6. 450.120(a)(8)(iv)—relationship to monitoring and updating basic travel and network data, as well as plan reappraisal.

It was assumed that a plan would be a matter of federal regulation, and that all six elements would be necessary to the development and continuous or periodic update of the plan. Therefore it appeared to be unnecessary for federal regulations to require each element as described. Federal regulations would be too prescriptive and reduce the ability of each area to judge and accommodate its own needs in providing data and analysis needed to develop the plan. Furthermore, if these elements were to continue as a matter of regulation (in effect have the force of law), some of the plans would be determined in the courts.

Therefore the regulations (when revised) should include guidelines or advisory information that touch on each of the elements deleted from the planning process described in Section 450.120 of the Rules and Regulations (August 6, 1981).

Guidelines and advisory information should describe the six elements, discuss possible scope of data collection or analysis activities, and discuss possible roles and responsibilities of participating agencies.

Other Federal Regulations

While the workshop did not review and specifically address federal requirements beyond those for transportation planning (Section 134 of Title 23 and Section 8 of Title 49), it was acknowledged that a large number of regulations exist that have great impact on transportation financing and implementation decisions. The workshop felt that many of these other regulations need to be carefully reviewed and overhauled. In some cases, legislative changes may be required. Examples include those regulations relating to EIS preparation and review, procurement and life-cycle costing, and labor protection [Section B(c) of the UMTA Act].

PLANNING METHODS AND PRACTICES (Mike Walton, Task Force Chairman)

The workshop task force on planning methods and practices determined that the need existed to find or train transportation managers with skills in finance, engineering economy, pro-

gram management, and project control. It also maintained the need to start using some existing techniques and methods that are not typically applied in public-sector transportation decisionmaking. These include the following:

1. Engineering economy comparisons of capital investments under alternative life-cycles, rehabilitation and maintenance schedules, labor-cost assumptions, and operating costs — all crucial now for both highway and transit;
2. Risk and uncertainty analyses of major investments or programs with uncertain funding streams, e.g., evaluation of costs of delay or abandonment;
3. The MIS and decision support systems for program management, budget and schedule control, and performance monitoring; and
4. Pricing analyses, including elasticity and direct and indirect impacts.

Some specific new methods and techniques need to be developed and applied including the following:

1. Financial forecasting models to project trends in tax revenues, user fees, costs and cash flows under various assumptions of changes in external variables (such as the economy) and policy variables (such as pricing, levels of service, rate of program expenditures, start-up and finish schedules of construction contracts, etc.);
2. Ways to plug into regional or national econometric models, where available, to better forecast local changes in CPI, construction cost index, labor costs and tax revenues (these then can serve as inputs to agency forecasts);
3. Improved methods to get reliable life-cycle cost data for pavements, bridges, transit rolling stock, and other capital facilities and equipment (needed for sound engineering economy decision analyses about investment, procurement, rehabilitation, and maintenance programs);
4. Innovative financing techniques, including private-sector participation in funding through mutual interest negotiations, borrowing and bonding, cash management, tax incentives, and leasebacks, etc.; and
5. Cost responsibility allocation models to better identify direct and indirect impacts of various new financing and tax or user charge alternatives under consideration (who pays and who gets, and how does it affect the regional economy or segments of it).

The group also noted an urgent need for simplified methods of doing the things listed above, both for existing tools and for needed new tools. In addition, research and development of these tools should be supported by federal assistance, but assigned to implementing agencies who will actually use them.

Future of the Urban Transportation Planning Process

Joseph L. Schofer

The workshop on the future of the urban transportation planning process explored the general attributes of the urban transportation process as it is most likely to, and as it should most desirably, evolve in the coming decades. Particular concern was devoted to the broad issues and problems associated with the process today. These include apparent mismatches between planning products and decisionmaker needs, deficiencies in planning methods and the uncertainty associated with future transportation system requirements and performance (and forecasts of that performance), characteristics of the emerging market for planning products, and appropriate styles and modes of behavior for transportation planners.

Because of the size of this workshop and the complexity of issues it faced, the group first met as a whole to refine its objectives and then reassembled into three smaller workshops with the following discussion topics: Future Institutional Responsibilities for Transportation Planning, Including the Federal Role (Robert E. Paaswell, Chairman); Emerging Clients, Markets, Strategies, Tactics, and Products of Transportation Planning (David F. Schulz, Chairman); and Role of Methods and Models in Future Urban Transportation Planning Activities (Joel Horowitz, Chairman). The small group discussions focused initially on matching clients with existing and future planning products as a function of the level and scale of planning; exploration of potential roles and styles for planning professionals; and assessment of the current and potential applications of quantitative models and other tools and methods in transportation planning. These discussions broadened in scope as the conference proceeded. The results of the small group deliberations were brought back to the entire workshop for discussion, refinement, and consensus. This report presents the integrated recommendations and observations of the full workshop.

GENERAL FINDINGS

The workshop concluded that the environment of, and thus the market for, urban transportation planning is changing. The federal effort to regulate, and thus control, the detailed attributes of urban transportation planning has begun to be reduced. Non-federal decisionmakers are likely to play an increasingly important role in determining planning process and product requirements. Such decisionmakers will be more concerned with meeting their own, short-range perceived needs, rather than federally specified requirements. This suggests the demand for more diversity in planning activities among cities, but not the absolute decline in the demand for transportation services. Indeed, in the face of scarce resources and increasing costs, the need for careful planning will probably increase. Yet the issues and problems, as well as the clients, to which transportation planning responds are changing at the national scale and are increasingly varied among cities.

To survive, and to be effective in supporting transportation management and investment choices, planners must not only recognize the changing market for their products, they must also adapt their efforts in important ways. In general terms, this adaptation must take the form of modifying products, processes, and tools to meet the issues of today and tomorrow. These issues include rehabilitation and cutback management in older cities, and managing continued growth in newer cities. Serving the market, however, does not mean abandoning our more traditional products that no longer seem to be of interest to some decisionmakers (e.g., 3-C long-range planning).