

## **Chapter 3**

### **HISTORY OF URBAN TRANSPORTATION PLANNING**

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Urban transportation planning in the United States has always been conducted by state and local agencies. This is entirely appropriate since highway and transit facilities and services are owned and operated largely by the states and local agencies. The role of the federal government has been to set national policy, provide financial aid, supply technical assistance and training, and conduct research. Over the years, the federal government has attached requirements to its financial assistance. From a planning perspective, the most important has been the requirement that transportation projects in urbanized areas of 50,000 or more in population be based on an urban transportation planning process. This requirement was first incorporated into the Federal-Aid Highway Act of 1962.

The Federal-Aid Highway Act of 1962 created the federal mandate for urban transportation planning in the United States. The act was the capstone of two decades of experimentation and development of urban transportation procedures and institutions. It was passed at a time when urban areas were beginning to plan interstate highway routes through and around their areas. The 1962 act combined with the incentive of 90% federal funding for interstate highway projects caused urban transportation planning to spread quickly throughout the United States. It also had a significant influence on urban transportation planning in other parts of the world.

In some ways, the urban transportation planning process and planning techniques have changed little since then. Yet, in other ways, urban transportation has evolved over these years in response to changing issues, conditions, and values and a greater understanding of urban transportation phenomena. Urban transportation planning practice in the 1990s is considerably more sophisticated, complex, and costly than its highway planning predecessor.

Modifications in the planning process took many years to evolve. As new concerns and issues arose, changes in planning techniques and processes were introduced. These modifications sought to make the planning process more responsive and sensitive to those areas of concern. Urban areas that had the resources and technical ability were the first to develop and adopt new concepts and techniques. These new ideas were diffused by various means throughout the nation, usually with the assistance of the federal

government. The rate at which the new concepts were accepted varied from area to area. Consequently, the quality and depth of planning are highly variable at any point in time.

Other requirements have been incorporated into federal legislation and regulations over the years. At times these requirements were very exacting in their detail. At other times, greater flexibility was allowed. Many of these requirements are chronicled in this chapter. The chapter focuses on key events in the evolution of urban transportation planning, including developments in technical procedures, philosophy, processes, and institutions. Furthermore, it includes changes in legislation, policy, regulations, and technology to provide a more complete picture of the forces that have affected and often continue to affect public transportation planning. The chapter concentrates on the key events of national significance and thereby tries to capture the overall evolution of public transportation planning.

## **BEGINNINGS OF URBAN TRANSPORTATION PLANNING**

### **PIONEERING URBAN TRANSPORTATION STUDIES**

Analytical methodology began to be applied in pioneering urban transportation studies in the late 1940s and during the 1950s. Before these studies, urban transportation planning, when accomplished, was based on existing travel demands or on travel forecasts using uniform growth factors applied on an areawide basis.

in 1955 the Chicago Area Transportation Study (CATS) began, and it set the standard for future urban transportation studies. CATS used a basic six-step procedure pioneered in Detroit: data collection, forecasts, goal formulation, preparation of network proposals, testing of proposals, and evaluation of proposals. Transportation networks were developed to serve travel generated by projected land-use patterns. They were tested using systems analysis that considered the effect of each facility on other facilities in the network. Networks were evaluated based on economic efficiency — the maximum amount of travel carried at the least cost. CATS used trip generation, trip distribution, modal split, and traffic assignment models for travel forecasting. A simple land-use forecasting procedure was employed to forecast future land-use and activity patterns. The CATS staff made major advances in the use of the computer in travel forecasting.<sup>1, 2, 3</sup>

The plans resulting from early studies were heavily oriented to regional highway networks based primarily on the criteria of economic costs and benefits. Transit was given secondary consideration. New facilities were evaluated against traffic engineering improvements. Little consideration was given to regulatory or pricing approaches or new technologies. The pioneering urban transportation studies set the content and tone for future studies. They also provided the basis for later federal guidelines.

### **FEDERAL-AID HIGHWAY ACT OF 1956**

The Federal-Aid Highway Act of 1956 was passed during this early period in the development of urban transportation planning. The act launched the largest public works program yet undertaken: construction of the National System of Interstate and Defense Highways. The act was the culmination of two decades of studies and negotiation. The act authorized a 41,000-mi (66,000-km) system to link 90% of the cities with populations of 50,000 or greater and many smaller cities and towns as well. The act also

authorized the expenditure of \$24.8 billion in 13 fiscal years from 1957 to 1969 at a 90% federal share. The act provided construction standards and maximum sizes and weights of vehicles that could operate on the system. The system was to be completed by 1972.<sup>4</sup>

The companion Highway Revenue Act of 1956 increased federal taxes on gasoline and other motor fuels and excise taxes on tires and established new taxes on retreaded tires and a weight tax on heavy trucks and buses. It created a highway trust fund to receive the tax revenue, which was dedicated solely for highway purposes. This provision broke with a long-standing congressional precedent not to earmark taxes for specific authorized purposes.<sup>5</sup>

These provisions dominated urban transportation planning for years to come and eventually caused the development of countervailing forces to balance the urban highway program.

## **SAGAMORE CONFERENCE ON HIGHWAYS AND URBAN DEVELOPMENT**

A conference held in 1958 in the Sagamore Center at Syracuse University focused on the need to conduct the planning of urban transportation, including public transportation, on a regionwide, comprehensive basis in a manner that supported the orderly development of urban areas. The conference report recognized that urban transportation plans should be evaluated through a grand accounting of benefits and costs that included both user and nonuser impacts.

## **HOUSING ACT OF 1961**

The first piece of federal legislation to deal explicitly with urban mass transportation was the Housing Act of 1961, passed largely as a result of the growing financial difficulties with commuter rail services. The act inaugurated a demonstration program and a small, low-interest loan program for acquisitions and capital improvements for mass transit systems.

The act also contained a provision for making federal planning assistance available for "preparation of comprehensive urban transportation surveys, studies, and plans to aid in solving problems of traffic congestion, facilitating the circulation of people and goods in metropolitan and other urban areas and reducing transportation needs." The act permitted federal aid to "facilitate comprehensive planning for urban development, including coordinated transportation systems, on a continuing basis."<sup>7</sup>

## **URBAN TRANSPORTATION PLANNING COMES OF AGE**

## **JOINT REPORT ON URBAN MASS TRANSPORTATION**

In March 1962 a joint report on urban mass transportation was submitted to President Kennedy, at his request. This report integrated the objectives for highways and mass transit, which were comparatively independent up to that point but had been growing closer through cooperative activities. The general thrust of the congressional report, as it related to planning, can be summarized by the following excerpt from the transmittal letter:

Federal aid for urban transportation should be made available only when urban communities have prepared or are actively preparing up-to-date general plans for the entire urban area which relate transportation plans to land-use and development plans.

The major objectives of urban transportation policy are the achievement of sound land-use patterns, the assurance of transportation facilities for all segments of the population, the improvement of overall traffic flow, and the meeting of total transportation needs at minimum cost. Only a balanced transportation system can attain these goals — and in many urban areas this means an extensive mass transportation network fully integrated with the highway and street system.... We therefore recommend a new program of grants and loans for urban mass transportation.<sup>8</sup>

## **PRESIDENT KENNEDY'S TRANSPORTATION MESSAGE**

In April 1962, President Kennedy delivered his first message to Congress on the subject of transportation. Many of the ideas related to urban transportation in the message drew upon the previously mentioned joint report. The president's message recognized the close relationship between community development and the need to properly balance the use of private automobiles and mass transportation to help shape and serve urban areas.<sup>9</sup>

## **FEDERAL-AID HIGHWAY ACT OF 1962**

The Federal-Aid Highway Act of 1962 was the first piece of federal legislation to mandate urban transportation planning as a condition for receiving federal funds in urbanized areas. It asserted that federal concern in urban transportation was to be integrated with land development and provided a major stimulus to urban transportation planning.<sup>10</sup>

Two features of the act were particularly significant with respect to the organizational arrangements for carrying out the planning process. First, it called for a planning process in urban areas rather than cities, which set the scale at the metropolitan or regional level. Second, it called for the process to be carried on cooperatively by the states and local communities. Because qualified planning agencies to mount such a transportation planning process were lacking in many urban areas, the Bureau of Public Roads (BPR) required the creation of planning agencies or organizational arrangements that would be capable of carrying out the required planning process. These planning organizations quickly came into being because of the growing momentum of the highway program and the cooperative financing of the planning process by the Housing and Home Finance Administration (HHFA) and the BPR."

## **IMPLEMENTATION OF THE 1962 FEDERAL-AID HIGHWAY ACT**

The BPR moved quickly to implement the planning requirements of the 1962 Federal-Aid Highway Act. Instructional Memorandum 50-2-63, published in March 1963<sup>12</sup> and later superseded by Policy and Procedure Memorandum 50-9,<sup>12</sup> interpreted the act's provisions related to a "continuing, comprehensive, and cooperative" (3C) planning process. Cooperative was defined to include not only cooperation between the federal, state, and local levels of government but also among the various agencies within the same level of government. Continuing referred to the need to periodically reevaluate and update

a transportation plan. Comprehensive was defined to include the basic 10 elements of a 3C planning process for which inventories and analyses were required:

1. Economic factors affecting development.
2. Population.
3. Land use.
4. Transportation facilities including those for mass transportation.
5. Travel patterns.
6. Terminal and transfer facilities.
7. Traffic control features.
8. Zoning ordinances, subdivision regulations, building codes, and the like.
9. Financial resources.
10. Social and community-value factors, such as preservation of open space, parks, and recreational facilities; preservation of historical sites and buildings; environmental amenities; and aesthetics.

## **URBAN MASS TRANSPORTATION ACT OF 1964**

The first real effort to provide federal assistance for urban mass transportation development was the passage of the Urban Mass Transportation Act of 1964. The objective of the act, still in the spirit of President Kennedy's Transportation Message, was "to encourage the planning and establishment of areawide urban mass transportation systems needed for economical and desirable urban development."<sup>13</sup>

The act authorized federal capital grants for up to two-thirds of the net project cost of construction, reconstruction, or acquisition of mass transportation facilities and equipment. Net project cost was defined as that portion of the total project cost that could not be financed readily from transit revenues. Furthermore, the federal share was to be held to 50% in those areas that had not completed their comprehensive planning process, that is, had not produced a plan. All federal funds had to be channeled through public agencies. Transit projects were to be initiated locally.

## **WILLIAMSBURG CONFERENCE ON HIGHWAYS AND URBAN DEVELOPMENT**

By 1965, there was concern that planning processes were not adequately evaluating social and community values. Few planning studies had developed goal-based evaluation methodologies. A second conference on Highways and Urban Development was held in Williamsburg, Virginia, to discuss this problem.<sup>14</sup> The conference concluded that transportation must be directed toward raising urban standards

and enhancing aggregate community values. Transportation values such as safety, economy, and comfort are part of the total set of community values and should be weighted appropriately.

## **IMPROVED INTERGOVERNMENTAL COORDINATION**

### **HOUSING AND URBAN DEVELOPMENT ACT OF 1965**

The Housing and Urban Development Act of 1965 created the Department of Housing and Urban Development (HUD) to better coordinate urban programs at the federal level. In addition, the act amended the Section 701 urban planning assistance program established under the Housing Act of 1954 by authorizing grants to be made to "organizations composed of public officials whom he (the Secretary of HUD) finds to be representative of the political jurisdictions within a metropolitan area or urban region" for the purposes of comprehensive planning.<sup>15</sup>

### **1966 AMENDMENTS TO THE URBAN MASS TRANSPORTATION ACT**

To fill several gaps in the 1964 Urban Mass Transportation Act, a number of amendments were passed in 1966. One created the technical studies program, which provided federal assistance up to a two-thirds federal matching share for planning, engineering, and designing of urban mass transportation projects or other similar technical activities leading to application for a capital grant.

Another section authorized grants to be made for management training. A third authorized a project to study and prepare a program of research for developing new systems of urban transportation. This section resulted in a report to Congress in 1968, *Tomorrow's Transportation: New Systems for the Urban Future*, which recommended a long-range balanced program for research on hardware, planning, and operational improvements.<sup>16</sup> It was this study that first brought to public attention many new systems such as dial-a-bus, personal rapid transit, dual mode, pallet systems, and tracked air-cushioned vehicle systems. This study was the basis for numerous research efforts to develop and refine new urban transportation technologies that would improve on existing ones. (See Chap. 4 and 24 for definitions of these systems.)

### **DEPARTMENT OF TRANSPORTATION ACT OF 1966**

In 1966 the Department of Transportation (DOT) was created to coordinate transportation programs and to facilitate development and improvement of coordinated transportation service utilizing private enterprise to the maximum extent feasible. The Department of Transportation Act declared that the nation required fast, safe, efficient, and convenient transportation at the lowest cost consistent with other national objectives, including the conservation of natural resources. DOT was directed to provide leadership in the identification of transportation problems and solutions, stimulate new technological advances, encourage cooperation among all interested parties, and recommend national policies and programs to accomplish these objectives.

### **DEMONSTRATION CITIES AND METROPOLITAN DEVELOPMENT ACT OF 1966**

With the growth in federal grant programs for urban renewal, highways, transit, and other construction projects, there was a need for a mechanism to coordinate these projects. The Demonstration Cities and Metropolitan Development Act of 1966 was enacted to ensure that federal grants were not working at cross purposes. Section 204 of that act was significant in asserting federal interest in improving the coordination of public facility construction projects to obtain maximum effectiveness of federal spending and to relate such projects to areawide development plans.

Section 204 required that all applications for the planning and construction of facilities be submitted to an areawide planning agency for review and comment. The areawide agency was required to be composed of local elected officials. The objective was to encourage the coordination of planning and construction of physical facilities in urban areas. In response to these review requirements, many urban areas established new planning agencies or reorganized existing agencies to include elected officials on their policy boards. By the end of 1969, only six metropolitan areas lacked an areawide review agency.<sup>17</sup>

### **FEDERAL-AID HIGHWAY ACT OF 1968**

The Federal-Aid Highway Act of 1968 established the Traffic Operations Program to Improve Capacity and Safety (TOPICS). The program was designed to reduce traffic congestion and facilitate the flow of traffic in urban areas. Prior to the act, the Bureau of Public Roads had initiated TOPICS as an experimental program.

In addition to launching the TOPICS program, the Federal-Aid Highway Act of 1968 incorporated several provisions designed to protect the environment and reduce the negative effects of highway construction. The act repeated the requirement in Section 4(f) of the Department of Transportation Act of 1966 on the preservation of public park and recreation lands, wildlife and waterfowl refuges, and historic sites to clarify that the provision also applied to highways. Moreover, the act required public hearings on the economic, social, and environmental effects of proposed highway projects and their consistency with local urban goals and objectives. The act also established the highway beautification program. In addition, a highway relocation assistance program was authorized to provide payments to households and businesses displaced by construction projects.

### **BUREAU OF THE BUDGET'S CIRCULAR NO. A-95**

The 1968 Intergovernmental Cooperation Act required that the areawide planning agency be established under state enabling legislation. To implement the act, the Bureau of the Budget issued Circular No. A-95 in July 1969. This circular required that the governor of each state designate a clearinghouse at the state level and for each metropolitan area. The function of these clearinghouses was to review and comment on projects proposed for federal aid in terms of their compatibility with comprehensive plans and to coordinate among agencies having plans and programs that might be affected by the projects. The clearinghouses had to be empowered under state or local laws to perform comprehensive planning in an area.

Circular No. A-95 provided the most definitive federal statement of the process through which planning for urban areas should be accomplished. Its emphasis was not on substance but on process and on the intergovernmental linkages required to carry out the process.

The various acts and regulations to improve intergovernmental program coordination accelerated the creation of broader multifunctional agencies. At the state level, 39 departments of transportation had been created by 1977. Most of the departments had multimodal planning, programming, and coordinating functions. At the local level, there was a growing trend for transportation planning to be performed by comprehensive planning agencies, generally those designated as the A-95 clearinghouse.<sup>18</sup>

## **THE ENVIRONMENT AND CITIZEN INVOLVEMENT**

### **NATIONAL ENVIRONMENTAL POLICY ACT OF 1969**

The federal government's concern for environmental issues dated back to the passage of the Air Quality Control Act of 1955, which directed the U.S. Surgeon General to conduct research to abate air pollution. Through a series of acts since that time, the federal government's involvement in environmental matters has broadened and deepened.

In 1969 a singularly important piece of environmental legislation was passed, the National Environmental Policy Act of 1969 (NEPA). This act presented a significant departure from prior legislation in that it enunciated for the first time a broad national policy to prevent or eliminate damage to the environment. The act stated that it was national policy to "encourage productive and enjoyable harmony between man and his environment."<sup>19</sup>

Federal agencies were required under the act to use a systematic interdisciplinary approach to the planning and decision making that affected the environment. It also required that an environmental impact statement (EIS) be prepared for all legislation and major federal actions that would affect the environment significantly. The EIS was to contain information on the environmental impacts of the proposed action, unavoidable impacts, alternatives to the action, the relationship between short-term and long-term impacts, and irretrievable commitments of resources. The federal agency was to seek comments on the action and its impacts from affected jurisdictions and make all information public.

### **ENVIRONMENTAL QUALITY IMPROVEMENT ACT OF 1970**

The Environmental Quality Improvement Act of 1970 was passed as a companion to the NEPA. It established the Office of Environmental Quality under the Council on Environmental Quality. The office was charged with assisting federal agencies in evaluating present and proposed programs and with promoting research on the environment.

These two acts marked the first reversal in over a decade of the trend to decentralize decision making to the state and local levels of government. It required the federal government to make the final determination on the trade-off between facility improvements and environmental quality. Furthermore, it created a complicated and expensive process by requiring the preparation of an EIS and the seeking of comments from all concerned agencies. In this manner, the acts actually created a new planning process in parallel with the existing urban transportation planning process.

### **CLEAN AIR ACT AMENDMENTS OF 1970**



The Clean Air Act Amendments of 1970 reinforced the central position of the federal government to make final decisions affecting the environment. This act created the Environmental Protection Agency (EPA) and empowered it to set ambient air quality standards. In 1971, the EPA promulgated national ambient air quality standards and proposed regulations on state implementation plans (SIPs) to meet these standards.

The preparation, submission, and review of the SIPs occurred outside the traditional urban transportation planning process and, in many instances, did not passage of the Air Quality Control Act of 1955, which directed the U.S. Surgeon General to conduct research to abate air pollution. Through a series of acts since that time, the federal government's involvement in environmental matters has broadened and deepened.

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involve the planning agencies developing transportation plans. This problem became particularly difficult for urban areas that could not meet the air quality standards even with new automobiles that met the air pollution emission standards. In these instances, transportation control plans (TCPs) were required that contained changes in urban transportation systems and their operation to effect the reduction in emissions. Rarely were these TCPs developed jointly with those agencies developing urban transportation plans. It took several years of dialogue between these air pollution and transportation planning agencies to mediate joint plans and policies for urban transportation and air quality.

## **BEGINNINGS OF MULTIMODAL URBAN TRANSPORTATION PLANNING**

### **URBAN MASS TRANSPORTATION ASSISTANCE ACT OF 1970**

The Urban Mass Transportation Assistance Act of 1970 was another landmark in federal financing for mass transportation. It provided the first long-term commitment of federal funds. Until the passage of this act, federal funds for mass transportation had been limited. It was difficult to plan and implement a program of mass transportation projects over several years because of the uncertainty of future funding.

This act also established a strong federal policy on transportation for elderly and handicapped persons:

Elderly and handicapped persons have the same right as other persons to utilize mass transportation facilities and services; that special efforts shall be made in the planning and design of mass transportation facilities and services so that the availability to elderly and handicapped persons to mass transportation which they can effectively utilize will be assured...20

### **FEDERAL-AID HIGHWAY ACT OF 1970**

The Federal-Aid Highway Act of 1970 established the federal-aid urban highway system. The system in each urban area was to be designed to serve major centers of activity and to serve local goals and objectives. Routes on the system were to be selected by local officials and state departments cooperatively. This provision significantly increased the influence of local jurisdictions in urban highway decisions. The influence of local officials in urban areas was further strengthened by an amendment to Section 134 on urban transportation planning:

No highway project may be constructed in any urban area of 50,000 population or more unless the responsible local officials of such urban area . . . have been consulted and their views considered with respect to the corridor, the location and the design of the project.<sup>21</sup>

This act also incorporated a number of requirements related to the environment.

One required the issuance of guidelines for full consideration of economic, social, and environmental impacts of highway projects. A second related to the promulgation of guidelines for assuring that highway projects were consistent with SIPs developed under the Clean Air Act.

As a result of the 1970 highway and transit acts, projects for both modes would have to meet similar criteria related to impact assessment and public hearings.

### **MT. POCONO CONFERENCE ON URBAN TRANSPORTATION PLANNING**

In recognition of the widespread awareness that urban transportation planning had not kept pace with changing conditions, a conference on Organization for Continuing Urban Transportation Planning was held at Mt. Pocono, Pennsylvania, in 1971. The focus of this conference was on multimodal transportation planning, evolving from the earlier conferences that had focused on highway planning, and the separation between planning and implementation.<sup>22</sup>

The conference recommended close of planning efforts as a means of achieving orderly development of urban areas and relating the planning process more closely to decision-making processes at all levels of government. It urged that urban planning be strengthened through state enabling legislation and bolstered by equitable local representation. Furthermore, citizen participation should occur continually throughout the planning process but should not be considered as a substitute for decision making by elected officials.<sup>23</sup>

### **WILLIAMSBURG CONFERENCE ON URBAN TRAVEL DEMAND FORECASTING**

By the latter part of the 1960s, policy issues and options had changed, but travel demand forecasting techniques had not. This was addressed at a conference on Urban Travel Demand Forecasting held at Williamsburg, Virginia, in December 1972. The conference concluded that there was a need for travel forecasting procedures that were sensitive to the wide range of policy issues and alternatives to be considered, quicker and less costly than conventional methods, more informative and useful to decision makers, and in a form that nontechnical people could understand.<sup>24</sup>

### **FEDERAL-AID HIGHWAY ACT OF 1973**

The Federal-Aid Highway Act of 1973 contained two provisions that increased the flexibility in the use of highway funds for urban mass transportation in the spirit of the Mt. Pocono conference. First, federal-aid urban system funds were to be used for capital expenditures on urban mass transportation projects. This provision took effect gradually, but was unrestricted starting in fiscal year 1976. Second, funds for interstate highway projects could be relinquished and replaced by an equivalent amount from the

general fund and spent on mass transportation projects in a particular state. The relinquished funds reverted back to the highway trust fund.

This opening up of the highway trust fund for urban mass transportation was a significant breakthrough sought for many years by transit supporters. These changes provided completely new avenues of federal assistance for funding urban mass transportation.

The 1973 Federal-Aid Highway Act took a significant step toward integrating and balancing the highway and mass transportation programs. It also increased the role of local officials in the selection of urban highway projects and broadened the scope of transportation planning by metropolitan planning organizations (MPOs), which were to be designated by the states to perform this planning function.

### **NATIONAL MASS TRANSPORTATION ASSISTANCE ACT OF 1974**

The National Mass Transportation Assistance Act of 1974 authorized for the first time the use of federal funds for transit operating assistance. It thereby continued the trend to broaden the use of federal urban transportation funds and provide state and local officials more flexibility. This act was the culmination of a major lobbying effort by the transit industry and urban interests to secure federal operating assistance for transit.

Section 105(g) of the act required applicants for transit projects to meet the same planning statute as Section 134 of the highway act. Finally, highway and transit projects were subject to the same long-range planning requirement. Although many urbanized areas already had a joint highway-transit planning process, this section formalized the requirement for multimodal transportation planning.

The act also required transit systems to charge elderly and handicapped persons fares that were half regular fares when they traveled in off-peak hours. This was a further condition to receiving federal funds.

The act created a new Section 15 that required the U.S. Department of Transportation to establish a data-reporting system for financial and operating information and a uniform system of accounts and records. After July 1978 no grant could be made to any applicant unless it was reporting data under both systems.

### **TRANSITION TO SHORT-TERM PLANNING**

### **EMERGENCY ENERGY LEGISLATION**

In October 1973 the Organization of Petroleum Exporting Countries (OPEC) embargoed oil shipments to the United States and, in doing so, began a new era in transportation planning. The importance of oil was so paramount to the economy and, in particular, the transportation sector that oil shortages and price increases gradually became one of the major issues in transportation planning.

The Emergency Highway Energy Conservation Act, signed on January 2, 1974, established a national 55 mi/h speed limit to reduce gasoline consumption. It was extended indefinitely on January 4,

197525 (and rescinded in 1988, allowing 65 mi/h in rural areas). It also provided that federal-aid highway funds could be used for ridesharing demonstration programs. As the immediate crisis abated, the focus shifted to long-term actions and policies to reduce the nation's dependence on oil, especially imported oil.

## **JOINT HIGHWAY—TRANSIT PLANNING REGULATIONS**

The Urban Mass Transportation Administration (UMTA) and the Federal Highway Administration (FHWA) had worked for several years on joint regulations to guide urban transportation planning. Final regulations were issued to take effect in October 1975.<sup>26</sup> They superseded all previous guidelines, policies, and regulations issued on urban transportation planning by UMTA and the FHWA.

The regulations provided for the joint designation of MPOs to carry out urban transportation planning and required agreements on the division of responsibility where the MPOs and A-95 agencies were different. The MPO was intended to be the forum for cooperative decision making by principal elected officials of general-purpose local government. A multiyear prospectus and annual unified work program had to be submitted specifying all transportation-related planning activities for an urban area as a condition for receiving federal planning funds.

The urban transportation planning process was required to produce a long-range transportation plan, which had to be reviewed annually to confirm its validity. The transportation plan had to contain a long-range element and a shorter-range transportation systems management element (TSME) for improving the operation of existing transportation systems without new facilities.

A multiyear transportation improvement program (TIP) also had to be developed consistent with the transportation plan. The TIP had to include all highway and transit projects to be implemented within the coming 5 years. It thereby became the linkage between the planning and programming of urban transportation projects. It also brought together all highway and transit projects into a single document that could be reviewed and approved by decision makers. The TIP had to contain an annual element that would be the basis for the federal funding decisions on projects for the coming year.

These joint regulations applied to all urban highway and transit programs, including those for transit operating assistance. They represented the most important action up to that time to bring about multimodal urban transportation planning and programming of projects and change the emphasis from long-term planning to shorter-range transportation system management, thus providing a stronger linkage between planning and programming. These regulations were another turning point in the evolution of urban transportation planning that set the tone for the next several years.

## **POLICY ON MAJOR URBAN MASS TRANSPORTATION INVESTMENTS**

The level of federal funds for urban mass transportation increased dramatically after 1970. However, the requests for federal funds from urban areas outpaced that increase. In particular, there was a resurgence of interest in rail transit systems, which many argued could help solve the problems of congestion and petroleum dependence while promoting efficient development patterns. (See Chap. 5.) Consequently, the need to assure that these funds were used effectively and productively became apparent.

UMTA set forth its views on this issue in the document, Preliminary Guidelines and Background Analysis.<sup>27</sup> The guidelines embodied a number of principles. First, areawide transportation improvement plans should be multimodal and include regionwide and community-level transit services. Second, major mass transportation investment projects should be planned and implemented in stages to avoid premature investment in costly fixed facilities and to preserve maximum flexibility to respond to future unknowns. Third, full consideration should be given to improving the management and operation of existing transportation systems. Fourth, the analysis of alternatives should include a determination of which alternative meets the local area's social, environmental, and transportation goals in a cost-effective manner. And fifth, full opportunity should be provided for involvement of the public and local officials in all phases of the planning and evaluation process.<sup>28</sup>

UMTA stated that the level of federal funding would be based on a cost-effective alternative that would meet urban area needs and goals in a 5- to 15-year time frame and that was consistent with the long-range transportation plan.

In February 1978, UMTA provided further elaboration in its "Policy Toward Rail Transit."<sup>29</sup> The policy stated that new rail transit lines or extensions would be funded in areas where population densities, travel volumes, and growth patterns indicated the need. Preference would be given to corridors serving densely populated urban centers. It reaffirmed the principles of analysis of alternatives, including transportation system management (TSM) measures, incremental implementation, and cost-effectiveness analysis. The policy added the requirement that the local area had to commit itself to a program of supportive actions designed to improve the cost effectiveness, patronage, and prospect for economic viability of the investment. This requirement included automobile management policies; feeder service; plans, policies, and incentives to stimulate high-density private development near stations; and other measures to revitalize nearby older neighborhoods and the central business district. With this policy supplement, rail transit was to become a tool for urban redevelopment.

## **CLEAN AIR ACT AMENDMENTS OF 1977**

The Clean Air Act Amendments of 1977 increased the flexibility and local responsibility in the administration of the Clean Air Act. The amendments required state and local governments to develop revisions to state implementation plans (SIPs) for all areas where the national ambient air quality standards had not been attained. The revised SIPs were to be submitted to the EPA by January 1, 1979, and approved by May 1, 1979.

The revised plans had to provide for attainment of national ambient air quality standards by 1982 or, in the case of areas with severe photochemical oxidant or carbon monoxide problems, no later than 1987. In the latter case, a state had to demonstrate that the standards could not be met with all reasonable stationary and transportation control measures. The plans also had to provide for incremental reductions in emissions ("reasonable further progress") between the time the plans were submitted and the attainment deadline. If a state failed to submit a SIP or if the EPA disapproved the SIP and the state failed to revise it in a satisfactory manner, the EPA was required to promulgate regulations establishing a SIP by July 1, 1979. If, after July 1, 1979, the EPA determined that a state was not fulfilling the requirements under the act, it was to impose sanctions.<sup>30</sup>

In many major urbanized areas the revised SIPs required the development of transportation control plans (TCPs) that included strategies to reduce emissions from transportation-related sources by means of structural or operational changes in the transportation system. Since state and local governments implement changes in the transportation system, the act strongly encouraged the preparation of transportation elements of the SIP by MPOs. These local planning organizations were responsible for developing the transportation control measure element of the SIP.

From 1978 to 1980, DOT and the EPA, after long negotiations, jointly issued several policy documents to implement the Clean Air Act's transportation requirements. One of these, signed in June 1978, was a "Memorandum of Understanding" that established the means by which DOT and the EPA would assure the integration of transportation and air quality planning. A second document issued also in June 1978, "Transportation Air Quality Planning Guidelines," described the acceptable planning process to satisfy the requirements.

In January 1981, DOT issued regulations on air quality conformance and priority procedures for use in federal highway and transit programs. The regulations required that transportation plans, programs, and projects conform with the approved SIPs in areas that had not met ambient air quality standards, termed nonattainment areas. In those areas, priority for transportation funds was to be given to transportation control measures (TCMs) that contributed to reducing air pollution emissions from transportation sources. Where an area's transportation plan or program was not in conformance with the TCP, "sanctions" were to be applied that prohibited the use of federal funds on major transportation projects.<sup>31</sup>

## **URBAN ECONOMIC REVITALIZATION**

### **SURFACE TRANSPORTATION ASSISTANCE ACT OF 1978**

The Surface Transportation Assistance Act of 1978 was the first act that combined highway, public transportation, and highway safety authorizations in one piece of legislation. Title III of the act expanded the Section 5 formula grant program. The basic program of operating and capital assistance was retained with the same population and population density formula at higher authorization levels. A "second tier" program was authorized with the same project eligibility and apportionment formula. A third tier was established for routine purchases of buses and related facilities and equipment. A new fourth tier replaced the Section 17 and 18 commuter rail programs. The funds could be used for commuter rail or rail transit capital or operating expenses. The act changed the availability of funds for transit from 2 to 4 years. It formalized the "letter of intent" process whereby the federal government committed funds for a transit project in the Section 3 discretionary grant program. Public hearings were required for all general increases in fares or substantial changes in service. A small formula grant program for nonurbanized areas (Section 18) was established for capital and operating assistance. Apportioned on nonurbanized area population, it authorized an 80% federal share for capital projects and 50% for operating assistance. The act also established an intercity bus terminal development program, intercity bus service operating subsidy program, and human resources program for urban transit systems.

### **NATIONAL ENERGY ACT OF 1978**

In October 1978 the Congress passed the National Energy Act, which was composed of five bills. The National Energy Conservation Policy Act of 1978 extended two state energy conservation programs that required states to undertake specific conservation actions, including the promotion of carpools and vanpools. Further legislation and an executive order extended energy conservation efforts. In August 1980, DOT issued regulations requiring that all phases of transportation projects be conducted in a manner that conserved fuel. It also incorporated energy conservation as a goal into the urban transportation planning process and required an analysis of alternative TSM improvements to reduce energy consumption.

## **COUNCIL ON ENVIRONMENTAL QUALITY'S REGULATIONS**

The Council on Environmental Quality (CEQ) issued final regulations on November 29, 1978, establishing uniform procedures for implementing the procedural provisions of the National Environmental Policy Act of 1969. They applied to all federal agencies and took effect on July 30, 1979. They were issued because the 1973 CEQ guidelines for preparing environmental impact statements (EISs) were not viewed consistently by all agencies, leading to differences in interpretations.<sup>32</sup>

The regulations embodied several new concepts designed to make the EIS more useful to decision makers and the public and to reduce paper work and delays. First, the regulations created a scoping process to provide for the early identification of significant impacts and issues. It also provided for allocating responsibility for the EIS among the lead agency and cooperating agencies. The scoping process was to be integrated with other planning activities.

Second, the regulations permitted tiering of the EIS process. This provided that environmental analyses completed at a broad scale (for example, regional) need not be duplicated for site-specific projects; the broader analyses could be summarized and incorporated by reference. The purpose of tiering was to eliminate repetition and allow discussion of issues at the appropriate level of detail.

Third, in addition to the previously required EIS, which discussed the alternatives being considered, a record of decision document was required. It had to identify, the "environmentally preferable" alternative, the other alternatives considered, and the factors used in reaching the decision. Until this document was issued, no action could be taken on an alternative that would adversely effect the environment or limit the choice of alternatives.

In October 1980 the FHWA and UMTA published supplemental implementing procedures. They established a single set of environmental procedures for highway and urban transit projects. They also integrated UMTA's procedures for alternatives analysis under its major investment policy with the new EIS procedures. This permitted the preparation of a single draft EIS/alternatives analysis document. These regulations were an important step toward integrating highway and transit planning and reducing duplicative documentation.<sup>33</sup>

## **DECENTRALIZATION OF DECISION MAKING**

### **AIRLIE HOUSE CONFERENCE ON URBAN TRANSPORTATION PLANNING IN THE 1980s**



Concern had been growing in the planning community about the future of urban transportation planning. On the one hand, planning requirements had become more complex, new planning techniques had not found their way into practice, and future changes in social, demographic, energy, environmental, and technological factors were unclear. On the other hand, fiscal constraints were tight and the federal government was shifting the burden of decision making to state and local governments and the private sector. The future of planning was in doubt.

To address these concerns, a conference was held at Airlie House, in Virginia, November 1981, on Urban Transportation Planning in the 1980s. The conference reaffirmed the need for systematic urban transportation planning, especially to maximize the effectiveness of limited public funds. But the planning process needed to be adjusted to the nature and scope of an area's problems.<sup>34</sup>

The conferees also concluded that the federal government had been overly restrictive in its regulations, making the planning process costly, time consuming, and difficult to administer. It was concluded that the regulations should be streamlined, specifying goals to be achieved and leaving the decisions on how to meet them to the states and local governments. The conference recommendations reflected the new mood that the federal government had overregulated and was too specific in its requirements. The planning process was straining under this burden and finding it difficult to plan to meet local needs.

## **EXECUTIVE ORDER 12372**

Office of Management and Budget's Circular A-95 (which replaced Bureau of the Budget Circular A-95) had governed the consultation process on federal grant programs with state and local governments since its issuance in July 1969. Although the A-95 process had served a useful function in assuring intergovernmental cooperation on federal grant programs, there were concerns that the process had become too rigid and cumbersome and caused unnecessary paper work. To respond to these concerns and to delegate more responsibility and authority to state and local governments, the president signed Executive Order 12372, "Intergovernmental Review of Federal Programs," on July 14, 1982.<sup>35</sup>

The objectives of the executive order were to foster an intergovernmental partnership and strengthen federalism by relying on state and local processes for intergovernmental coordination and review of federal financial assistance and direct federal development. The executive order had several purposes. First, it allowed states, after consultation with local officials, to establish their own process for review and comment on proposed federal financial assistance and direct federal development. Second, it increased federal responsiveness to state and local officials by requiring federal agencies to "accommodate" or "explain" when considering certain state and local views. Third, it allowed states to simplify, consolidate, or substitute state plans for federal planning requirements. The order also revoked OMB Circular A-95, although regulations implementing this circular remained in effect until September 30, 1983.

## **WOODS HOLE CONFERENCE ON FUTURE DIRECTIONS**

A diverse group of conferees met at the Woods Hole Study Center in Massachusetts in September 1982 to discuss future directions of urban public transportation.<sup>36</sup> The conference addressed the role of public transportation, present and future, the context within which public transportation functioned, and strategies for the future.

The conferees agreed that "strategic planning for public transportation should be conducted at both the local and national levels." The transit industry should be more aggressive in working with developers and local governments in growing parts of metropolitan areas to capitalize on opportunities to integrate transit facilities into major new developments. The industry needed to improve its relationship with highway and public works agencies as well as state and local decision makers. Financing transit had become more complex and difficult but had created new opportunities<sup>1</sup>.

### **EASTON CONFERENCE ON TRAVEL ANALYSIS METHODS FOR THE 1980s**

A conference was held at Easton, Maryland, in November 1982 to discuss how well travel analysis methods were adapted to the issues and problems of the 1980s. This conference on Travel Analysis Methods for the 1980s focused on defining the state of the art versus the state of practice, describing how the methods have been and can be applied, and identifying gaps between art and practice that needed more dissemination of current knowledge, research, or development.<sup>37</sup>

The new mathematical techniques and theoretical bases from econometrics and psychometrics had been difficult for practitioners to learn. Moreover, the new techniques were not easily integrated into conventional planning practices. The conferees concluded that the travel demand community should concentrate on transferring the new travel analysis methods into practice. A wide range of technology transfer approaches was suggested.

### **SURFACE TRANSPORTATION ASSISTANCE ACT OF 1982**

Through the decade of the 1970s there was mounting evidence of deterioration in the nation's highway and transit infrastructure. Money during that period had been concentrated on building new capacity, and the transition to funding rehabilitation of the infrastructure had been slow. By the time the problem had been faced, the cost estimate to refurbish the highways, bridges, and transit systems had reached hundreds of billions of dollars.<sup>38</sup>

The Surface Transportation Assistance Act of 1982 was passed to address this infrastructure problem. The act extended authorizations for the highway, safety, and transit programs. In addition, the act raised the highway user charges by 5 cents (to 9 cents) a gallon on fuel. Other taxes were changed, including a substantial increase in the truck user fees. Of the revenues raised from the 5-cent increase (about \$5.5 billion annually), the equivalent of a 4-cent raise in fuel user charges was to increase highway programs, and the remaining 1 cent was for transit programs.

The act authorized the administration of highway planning and research (HP&R) funds as a single fund. As a result of the large expansion in the construction program, the level of funding increased substantially for the HP&R program and urban transportation planning purposes.

The act restructured federal urban transit programs. No new authorizations were made for the Section 5 formula grant program. Instead, a new Section 9 formula grant program was created that allowed expenditures on planning, capital, and operating items. Substantial discretion was given to state and local governments in selecting projects to be funded using formula grants with minimal federal interference. There were limitations, however, on the use of the funds for operating expenses.

The revenue from the 1-cent increase in highway user charges was to be placed into a mass transit account of the highway trust fund. The funds could only be used for capital projects. They were to be allocated by a formula in fiscal year 1983, but were discretionary in later years. The definition of capital was changed to include associated capital maintenance items. The act also provided that a substantial number of federal requirements be self-certified by the applicants and that other requirements be consolidated to reduce paper work.

A requirement was also included for a biennial report on transit performance and needs, with the first report due in January 1984. In addition, the act provided that regulations be published that set minimum criteria on transportation services for the handicapped and elderly.

## **HISTORY OF URBAN TRANSPORTATION PLANNING 65**

The Surface Transportation Assistance Act of 1982 was passed under considerable controversy about the future federal role in transportation, particularly the administration's position to phase out of federal transit operating subsidies. Debates on later appropriations bills demonstrated that the issue remained controversial.

## **NEW URBAN TRANSPORTATION PLANNING REGULATIONS**

The joint FHWA—UMTA urban transportation planning regulations had served as the key federal guidance since 1975. During 1980, there was an intensive effort to amend these regulations to ensure more citizen involvement, to increase the emphasis on urban revitalization, and to integrate corridor planning into the urban transportation planning process.<sup>39</sup>

The result of this effort was reviewed under the criteria set forth in Executive Order 12291. The revised regulations, issued on June 30, 1983, had been rewritten to remove items that were not actually required. The regulations contained new statutory requirements and retained the requirements for a transportation plan, a transportation improvement program (TIP) including an annual element (or biennial element), and a unified planning work program (UPWP), the latter only for areas of 200,000 or more in population. The planning process was to be self-certified by the states and MPOs as to its conformance with all requirements when submitting the TIP.<sup>40</sup>

The regulations drew a distinction between federal requirements and good planning practice. They stated the product was required but left the details of the process to the state and local agencies, so the regulations no longer contained the elements of the process nor factors to consider in conducting the process.

The revised regulations marked a major shift in the evolution of urban transportation planning. Up to that time, the response to new issues and problems was to create additional federal requirements. These regulations changed the focus of responsibility and control to the state and local governments. The federal government remained committed to urban planning by requiring that projects be based on a 3C planning process and by continuing to provide funding for planning activities. But it would no longer specify how the process was to be performed.

## **PRIVATE SECTOR PARTICIPATION**

### **REVISED MAJOR TRANSIT CAPITAL INVESTMENT POLICY**

By the early 1980s there had been a huge upsurge of interest in building new urban rail transit systems and extensions to existing ones. Beginning in 1972, new urban rail systems had begun revenue service in the United States in San Francisco, Washington, D.C., Atlanta, Baltimore, San Diego, Miami, and Buffalo. Construction was underway for new systems in Portland (Oregon), Detroit (Michigan), and Sacramento and San Jose (California). A total of 32 urban areas were conducting studies for major new transit investments in 46 corridors. It was estimated by UMTA that if all of those projects were carried out, the cost to the federal government would be at least \$19 billion.

The federal funds for rail projects came, for the most part, from the Section 3 a discretionary grant program. This program was funded by the revenue from 1 cent of the 5-cent increase in the user charge on motor fuels that was included in the Surface Transportation Assistance Act of 1982 and amounted to \$1.1 billion annually. UMTA, however, was giving priority to projects for rehabilitation of existing rail and bus systems. Only \$400 million annually was targeted for use on new urban rail projects. The resulting gap between the demand for federal funds for major transit projects and the available funds was, therefore, very large.

In an attempt to manage the demand for federal funds, UMTA issued a revised "Urban Mass Transportation Major Capital Investment Policy" on May 18, 1984.<sup>41</sup> It was a further refinement of the evaluation process for major transit projects that had been evolving over a number of years. (See Chap. 11.) Under the policy, UMTA would use the results of local planning studies to calculate the cost effectiveness and local financial support for each project. These criteria would be used to rate the projects. UMTA would fund only those projects that ranked high on both criteria to the extent that they did not exceed the available funds. The lower-ranked projects were still eligible for funding if additional money became available.

The project development process involved a number of stages. After each completed stage, UMTA would make a decision on whether or not to proceed to the next stage. The most critical decision occurred after the alternatives analysis and draft environmental impact statement (AA/DEIS) were completed. During this stage, the cost effectiveness of new fixed-guideway projects was compared to a base system called the "transportation system management" alternative. Projects were rated on cost effectiveness and local fiscal effort after the AA/DEIS was completed.

The pressure for federal funds for new urban rail projects was so great, however, that the matter was often settled politically. Starting in fiscal year 1981, Congress began to earmark Section 3

discretionary grant funds for specific projects, thereby preempting UMTA from making the selection. UMTA continued to rate the projects and make the information available to congressional committees.

In 1987, the Surface Transportation and Uniform Relocation Assistance Act established grant criteria for new fixed-guideway projects along the lines that UMTA had been using. The projects had to be based on alternatives analysis and preliminary engineering, be cost effective, and be supported by an acceptable degree of local financial commitment.

## **PRIVATE PARTICIPATION IN THE TRANSIT PROGRAM**

The Reagan administration (1981-1989) was committed to a greater private sector role in addressing the needs of communities. Consequently, the Department of Transportation sought to remove barriers to greater involvement of the private sector in the provision of urban transportation services and in the financing of these services. To promote increased involvement of the private sector in the provision of public transportation services, UMTA issued a "Policy on Private Participation in the Urban Mass Transportation Program."<sup>42</sup> It provided guidance for achieving compliance with several sections of the Urban Mass Transportation Act. Section 8(e) required maximum participation of the private sector in the planning of public transportation services. Section 9(f), which was added by the Surface Transportation Assistance Act of 1982, established procedures for involving the private sector in the development of the transportation improvement program as a condition for federal funding.

This policy represented a major departure from past federal policy toward public transportation operators. Previously, public operators had had a virtual monopoly on federal funds for transit facilities, equipment, and service; now they needed to consider private sector operators as competitors for providing those services.

## **SURFACE TRANSPORTATION AND UNIFORM RELOCATION ASSISTANCE ACT OF 1987**

With five titles and 149 sections, the Surface Transportation and Uniform Relocation Assistance Act of 1987 (STURAA) was the most complicated piece of legislation up to that time on surface transportation matters. It was passed on April 2, 1987, over President Reagan's veto. The STURAA authorized \$87.6 billion for the 5-year period from fiscal year 1987 to fiscal year 1991 for the federal-aid highway, safety, and mass transportations programs. It also updated the rules for compensating persons and businesses displaced by federal development and extended the highway trust fund through June 30, 1994.<sup>43</sup>

Title I, the Federal-Aid Highway Act of 1987, authorized \$67.1 billion for highway and bridge programs over a 5-year period. The act permitted states to raise the speed limit on interstate routes outside urbanized areas from 55 to 65 mi/h. With regard to bridge tolls, the act required that they be "just and reasonable" and removed any federal review and regulation.

An allocation of 0.25% of highway authorizations was set aside for a new cooperative research program directed at highway construction materials and pavements and construction and maintenance

procedures. This Strategic Highway Research Program, (SHRP) was to be carried out with the cooperation of the National Academy of Sciences and the American Association of State Highway and Transportation Officials.

Title II, the Highway Safety Act of 1987, authorized \$795 million over 5 years for safety programs in addition to the \$1.75 billion for safety construction programs in the Federal-Aid Highway Act of 1987. It required the identification of those programs that are most effective in reducing accidents, injuries, and deaths. Only those programs would be eligible for federal-aid funds under the Section 402 state and community grant program. Safety "standards" that states must meet to comply with this program were redefined as "guidelines."

Title III, the Federal Mass Transportation Act of 1987, authorized \$17.8 billion for federal mass transit assistance for fiscal years 1987 through 1991. The act continued the Section 3 discretionary grant program at graduated authorization levels of \$1.097 billion in FY 1987, rising to \$1.2 billion in FY 1991 funded from the mass transit account of the highway trust fund. The program was to be split: 40% for new rail starts and extensions, 40% for rail modernization grants, 10% for major bus projects, 10% on a discretionary basis.

Grant criteria were established for new fixed-guideway systems and extensions. The project selection would be based on alternatives analysis, preliminary engineering, and cost-effectiveness analysis and supported by an acceptable degree of local financial commitment. A plan for the expenditure of Section 3 funds was required to be submitted to Congress annually.

With regard to planning, the act required development of long-term financial plans for regional urban mass transit improvements and the revenue available from current and potential sources to implement such improvements.

Title IV, the Uniform Relocation Act Amendments of 1987, revised and updated some of the provisions of the Uniform Relocation Assistance and Real Property Act of 1970. The act generally increased payments for residences and businesses displaced by construction of transportation projects and broadened eligibility for payments under the program. The FHWA was designated as the lead federal agency to develop regulations to implement the act.

Title V, the Highway Revenue Act of 1987, extended the highway trust fund to June 30, 1993, and extended taxes and exemptions to September 30, 1993.

## **NATIONAL CONFERENCE ON TRANSPORTATION PLANNING APPLICATIONS**

By the mid-1980s, there was a broader range of issues than ever for urban transportation planners to deal with. State and local planning agencies had to be resourceful in adapting existing planning procedures to fit individual needs. Often planning methods or data had not been available when needed to adequately support planning and project decisions. Compromises between accuracy, practicality, simplifying assumptions, quicker responses, and judgment often resulted in innovative analysis methods and applications.

To share experiences and highlight new and effective applications of planning techniques, a National Conference on Transportation Planning Applications was held in Orlando, Florida, in April 1987. The conference was attended mainly by practicing planners from state and local agencies and the consulting community who described the application of planning techniques to actual transportation problems and issues.<sup>44</sup>

Several important issues surfaced at the conference. First, the realm of urban transportation planning was no longer solely long term at the regional scale. The conference gave equal emphasis to both the corridor- and site-level scale of planning in addition to the regional level. Many issues at the local level occurred at finer scales, and planners were spending considerably more effort at these scales than at the regional scale. The time horizon too had shifted to short term, with many planning agencies concentrating on rehabilitating infrastructure and managing traffic on the existing system.

Second, the microcomputer revolution had arrived. Microcomputers were no longer curiosities but essential tools used by planners. There were many presentations about microcomputer applications of planning techniques.

Third, with tighter budgets and the increasing demands being placed on them, transportation planning agencies found it increasingly difficult to collect large-scale regional data sets such as home-interview, origin-destination surveys. Consequently, there was considerable discussion about approaches to obtain new data at minimal cost. Approaches ranged from expanded use of secondary data sources such as census data, to small stratified sample surveys, to extended use of traffic counts. Low-cost techniques for updating land-use data bases were not available.

Fourth, there was concern about the quality of demographic and economic forecasts and their effects on travel demand forecasts. It was observed that errors in demographic and economic forecasts could be more significant than errors in the specification and calibration of the travel demand models. With this observation in mind, there was discussion about appropriate techniques for demographic forecasting during periods of economic uncertainty.

Fifth, a clear need was identified to develop integrated analysis tools that could bridge between planning and project development. The outputs for regional-scale forecasting procedures could not be used directly as inputs for project development, yet there were no standard procedures or rationales for performing the necessary adjustments. Without standard procedures, each agency had to develop their own approaches to this problem.

## **NATIONAL COUNCIL ON PUBLIC WORKS IMPROVEMENT**

Concern for the nation's deteriorating infrastructure prompted Congress to enact the Public Works Improvement Act of 1984. The act created the National Council on Public Works Improvement to provide an objective and comprehensive overview of the state of the nation's infrastructure. The council carried out a broad research program.

The council's first report provided an overview of available knowledge, explored the definition of needs, and reviewed key issues, including the importance of transportation to the economy, management

and decision-making practices, technological innovation, government roles, and finance and expenditure trends.<sup>45</sup> The second report was a series of study papers assessing the main issues in nine categories of public works facilities and services, including highways and bridges<sup>46</sup> and mass transit.<sup>47</sup>

The final report of the council concluded that most categories of public works were performing at only passable levels and that U.S. infrastructure was inadequate to meet the demands of future economic growth and development. Highways were given a grade of C+, with the council concluding that, although the decline of pavement conditions had been halted, overall service continued to decline. Spending for system expansion had fallen short of need in high-growth suburban and urban areas, and many highways and bridges still needed to be replaced. Mass transit was graded at C-. The council concluded that transit productivity had declined significantly and that it was overcapitalized in many smaller cities and inadequate in large older cities. Mass transit faced increasing difficulty in diverting persons from automobiles and was rarely linked to land-use planning and broader transportation goals.<sup>48</sup>

Part of the problem was found to be financial, with investment in public works having declined as a percentage of the gross national product from 1960 to 1985. The council recommended that all levels of government increase their expenditures by as much as 100%. It endorsed the principle that users and other beneficiaries should pay a greater share of the cost of infrastructure service. The council also recommended clarification of government roles to focus on responsibility, improvement in system performance, capital budgeting at all levels of government, incentives to improve maintenance, and more widespread use of low-capital techniques such as demand management and land-use planning. The council called for additional support for research and development to accelerate technological innovation and for training of public works professionals.

## **SUMMARY**

Urban transportation planning evolved from highway and transit planning activities in the 1930s and 1940s. These efforts were primarily intended to improve the design and operation of individual transportation facilities. The focus was on upgrading expanding facilities.

Early urban transportation planning studies were primarily systems oriented with a 20-year horizon and regionwide in scope. This perspective was largely the result of legislation for the National System of Interstate and Defense Highways, which required that these major highways be designed for traffic projected 20 years into the future. As a result, the focus of the planning process through the decade of the 1960s was on this long-range time horizon and broad regional scale. Gradually, starting in the early 1970s, planning processes turned to shorter-term time horizons and the corridor-level scale. This change came about as the result of a realization that long-range planning had been dominated by concern for major regional highway and transit facilities, and little attention had been paid to facility modifications that offered opportunity to improve the efficiency of the existing system. This shift was reinforced by the increasing difficulties and cost in constructing new facilities, growing environmental concerns, and the Arab oil embargo.

Early efforts with programs such as TOPICS and express bus priorities eventually broadened into the strategy of transportation system management. A period of learning and adaptation was necessary to



redirect planning processes so that they could perform this new type of planning. As the 1980s dawned, urban transportation planning had become primarily short-term oriented in most urbanized areas.

Major new issues began affecting urban transportation planning in the latter half of the 1960s and on through the 1970s. The list of issues included safety, citizen involvement, preservation of park land and natural areas, equal opportunity for disadvantaged persons, environmental concerns (particularly air quality), transportation for the elderly and handicapped, energy conservation, and revitalization of urban centers. Most recently, these have been joined by concerns for deterioration of the highway and transit infrastructure. By 1980 the federal requirements to address all these matters had become extensive, complex, and sometimes conflicting.

During this same period, various transportation options were advocated as solutions to this vast array of problems and concerns. The solutions included new highways, express buses, rail transit systems, pricing, automated guideway transit, paratransit, brokerage, and dual-mode transit. It was difficult at times to determine whether these options were advanced as the answer to all the problems or for just some of them. Transportation system management was an attempt to integrate the short-term, low-capital options into reinforcing strategies to accomplish one or more objectives. Alternatives analysis was designed to evaluate trade-offs among various major investments options as well as transportation system management techniques.

Transportation planning techniques also evolved during this time. Procedures for specific purposes were integrated into an urban travel forecasting process in the early urban transportation studies in the 1950s. Through the 1960s, improvements in planning techniques were made primarily by practitioners, and these new approaches were integrated into practice fairly easily. The FHWA and UMTA carried out extensive activities to develop and disseminate analytical techniques and computer programs for use by state and local governments. The Urban Transportation Planning System (UTPS) became the standard computer battery for urban transportation analysis by the mid-1970s.

During the 1970s, new travel forecasting techniques were developed for the most part by the research community, largely in universities. These disaggregate travel forecasting approaches differed from the aggregate approaches being used in practice at the time. They used new mathematical techniques and theoretical bases from econometrics and psychometrics that were difficult for practitioners to learn. Moreover, the new techniques were not easily integrated into conventional planning practices. Communication between researchers and practitioners was fitful. While researchers were developing more appropriate ways to analyze this complex array of issues and options, practitioners stayed wedded to the older techniques. The gap between research and practice was only gradually being closed.

The 1980s brought a new challenge to urban transportation planning, the decentralization of authority and responsibility. The national mood shifted, and centralized approaches were no longer considered to be the appropriate means for dealing with national problems. The federal government reduced its involvement, leaving the states and local governments more flexibility to respond in whatever manner they chose. The federal statutes remained in force, but additional federal guidance or elaboration was reduced and eliminated.

Reduction in federal regulation and prescription offered expanded opportunities to fashion planning procedures and institutions to local problems and needs. More time and effort could be used to produce information for local decisions rather than to meet federal requirements. Urban areas experiencing growth in population and employment, for example, could focus on long-range development plans to expand their transportation systems. Stable or declining urban areas could deal with redevelopment issues and infrastructure rehabilitation. Less regulation resulted in more flexibility in the elements of the planning process and in the division of responsibilities to perform them.

On the other hand, planning had to be more responsive to the needs of local decision makers and citizens and adjust to the realities of long-term budget constraints in many urban areas. The urban transportation planning processes had been attuned to federal requirements. It was, therefore, difficult to realign procedures and institutional arrangements to address local issues and needs.

Many of the issues that were debated in the 1970s are being revisited in the 1990s. One issue is the appropriate balance between long-range and short-term planning. A second is the level of effort devoted to system expansion, infrastructure rehabilitation, system management, and possibly even system retrenchment (for example, removal of certain facilities or routes) to match declining population, travel demand, and financial resources. The issues of changing institutional arrangements and locus of decisionmaking are being raised in a number of urban areas.

Some urban areas are struggling with using transportation to foster economic development while still providing mobility. The use of innovative financing techniques such as joint development and increased participation by the private sector has increased to offset shortfalls in public sector funds. The matters of environmental quality, transportation for special groups, and energy conservation are being revalued differently across the spectrum of urban areas and are affecting planning processes in these areas in different ways.

The level of detail and complexity of planning procedures is being reassessed. Smaller urban areas are opting for a simpler planning process that is commensurate with their fewer problems and less complex planning context. The larger areas have many more problems to address, options to evaluate, and organizational arrangements and procedures to use. Greater emphasis in transportation planning is being placed on both the corridor- and site-level scale of planning, in addition to the regional scale. Transportation analysis is beginning to become better integrated with land-use planning, at least at the site level.

The planning community is being challenged to further adapt its technical procedures, and it is responding. State and local planning agencies have become more resourceful in tailoring planning procedures and techniques to fit local requirements. Often, planning methods have not been available when needed to adequately support planning and project decisions. Compromises between accuracy, practicality, simplifying assumptions, quicker responses, and judgment are resulting in innovative analysis methods and applications. New transportation options and travel analysis methods that were researched in the past are being applied in at least a limited fashion.

With tighter budgets and the increasing demands being placed on them, transportation planning agencies are finding it increasingly difficult to collect large-scale regional data sets such as home-interview, origin-destination surveys.

Planning agencies are seeking alternative data sources to fill this gap.

Clearly, the microcomputer revolution has arrived. The microcomputer is no longer a revolutionary tool. It has become firmly entrenched in the planning process, and is now an essential tool without which planning could not be done.

All of this demonstrates that urban transportation planning is going through another evolutionary stage to reshape planning processes to changing needs.

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## **EXERCISES**

3-1 In the conventional urban transportation planning process, discuss the meaning of the 3Cs, and name the ten elements in the process.

3-2 Discuss the developments that lead up to the federal government requiring urban transportation planning as a condition for federal-aid highway funds in the Federal-Aid Highway Act of 1962.

3-3 Discuss the shift in urban transportation planning emphasis from long-term planning to shorter-term planning during the 1970s. Identify the causes of this change and the responses by the federal government and state and local agencies.

3-4 How has urban transportation policy evolved over the last 25 years? What have been the primary forces causing these changes and what has been their effects on urban transportation?

3-5 What historically has been the role of the private sector in urban transportation? How has this role changed since 1970?

3-6 What are the current legislative proposals at the federal level affecting urban transportation? Discuss their advantages and disadvantages.

3-7 What are the current legislative proposals in your state affecting urban transportation? Discuss their advantages and disadvantages.

3-8 What are the major forces affecting urban transportation today and into the foreseeable future? What has been the response to these forces? Has this response been adequate and, if not, what further needs to be done?