

# organization for continuing urban transportation planning

a report of a conference held by the Highway Research Board on November 14-18, 1971, at Mt. Pocono, Pennsylvania, under the sponsorship of the Office of the Assistant Secretary for Environment and Urban Systems, the Federal Highway Administration, and the Urban Mass Transportation Administration of the U.S. Department of Transportation; the Highway Users Federation for Safety and Mobility; and the Automotive Safety Foundation.

### contents

Tribute to Frederick T. Aschman 1

#### Summary 2 organization for metropolitan planning planning process plan implementation citizen participation environmental impact funding Introduction 4 Organization for Metropolitan Planning 7 conclusions and recommendations discussion metropolitan planning state role federal role Planning Process 13 conclusions and recommendations discussion wider range of alternatives spreading peak-period travel changing the travel mode reducing the amount of travel increasing street capacity through traffic engineering less restrictive funding subarea planning monitoring implemented plans Plan Implementation 19 conclusions and recommendations discussion Citizen Participation 21 conclusions and recommendations discussion Environmental Impact 22 conclusions and recommendations discussion Funding 25 conclusions and recommendations discussion Participants 26 Committees, Speakers, and Authors 29

### a tribute to frederick t. aschman

One of Ted Aschman's last activities before his death in October 1971 was serving as chairman of the committee that arranged the Conference on Continuing Urban Transportation Planning. The conference and this report are dedicated to his memory. The dedication is marked by the following statement that was prepared and presented at the opening of the conference by Israel Stollman.



Ted Aschman was a natural planner. His turn of mind, his skills, his personality, his interests all merged into his moving effectively through the processes of planning with the grace of an Olympic swimmer.

Ted began putting his skills to work after his discharge from the Air Force at the end of World War II. As research director for the Illinois Housing Board, he was invited to share ideas on postwar housing programs by Ira Bach, then newly appointed executive director of the Cook County Housing Authority. During their meeting, Ted had so many ideas that Bach had to take voluminous notes. He finally gave up and asked Ted to set them down on paper. Then he thought that what he really needed was Ted to implement the ideas. Before that meeting ended, Ted had agreed to start the following week as Bach's deputy.

When Bach left for a new assignment, Ted was appointed executive director of the authority at the age of 29. He was 32 when he became executive director of the Chicago Plan Commission.

By the time he opened a consulting practice at the age of 38, his executive qualities had attracted high-salaried offers to switch to the business world. He chose to remain, however, with the smaller financial rewards of the planning field.

He and George Barton formed the firm of Barton-Aschman Associates in 1958. The firm established itself successfully with a wide-ranging, quickly growing practice that took Ted into many communities of the United States and Canada advising government officials and private organizations.

He saw politics as the machinery we have devised to achieve more general satisfaction and not as the obstacle in the way of the experts with the real answers. Once he gave Mayor Daley a table-cloth sketch of the planning process as an aid to making policy. Later he heard Daley use the lesson to ask about projects: "What are the alternatives? What would be the consequences of each?"

In his housing responsibilities in the 1940's, he put forward such ideas as using old stunted subdivisions for housing sites to economize by salvaging unused investment in sewer and water lines. He anticipated some of today's "breakthroughs" then by putting prefabricated housing on those suburban sites. In his dedication to searching out the comprehensive linkages among housing, transportation, and other elements, he came up with proposals for coordinating industrial land site creation with expressway land purchase and recreational developments—an approach now dignified as the "joint development concept." But he was not one who reminded you, "Why, I developed that idea 20 years ago."

Ted Aschman had a gift for balancing the upto-heaven tendency in objectives with the downto-earth tendency in how to reach them.

### summary

#### ORGANIZATION FOR METROPOLITAN PLANNING

To chart the course for more orderly urban development requires that comprehensive areawide planning be strengthened as a public function. Metropolitan planning organizations should integrate or coordinate all functional planning, including transportation, with comprehensive planning and ensure adequate and equitable representation of the people in the local metropolitan area.

Metropolitan planning must be a legally constituted process carried out by an official body established by state legislation and organized according to the legal, political, and geographic characteristics of the area.

The federal government should establish a policy of systematically promoting the development and the improvement of continuing comprehensive planning at all government levels and should establish a central focal point for the promotion of that policy. In administering its assistance programs, the federal government should develop and apply consistent criteria for evaluation and certification of state, regional, and local planning.

### PLANNING PROCESS

If the transportation planning process is to achieve a level of transportation service consistent with overall metropolitan goals, a wide range of alternatives must be conceived and evaluated.

Federal funding arrangements should be developed such that local decisions among alternative plans and programs can be made in accordance with metropolitan goals and not be unnecessarily constrained by unbalanced funding arrangements.

Metropolitan planning agencies should promote the continuing refinement of the long-range regional transportation plan at the subarea scale so that area-wide systems planning becomes more relevant to programming and project implementation. Planning at the subarea level should focus on an intermediate 5- to 15-year forecast period.

The impact of transportation plan implementation or lack of implementation needs to be continually monitored and evaluated. This effort will serve to increase understanding and appreciation of transportation programs and will help to confirm or to deny assumptions, forecasts, and system plans on which transportation projects are based.

### PLAN IMPLEMENTATION

Area-wide planning agencies should be empowered by state legislation to suspend significant proposed changes in local land use controls that could clearly impair the integrity of legally adopted area-wide land use and transportation plans or that would require modification of such plans.

Area-wide planning agencies should be similarly empowered by legislation to suspend the execution of transportation or other public facility projects that are inconsistent with legally adopted land use and transportation plans. Conversely, they should be able to stimulate the timely undertaking of needed and planned projects.

Metropolitan housing policies and transportation plans must be related in order to allow transportation planning to foster the achievement of metropolitan goals. Area-wide relocation planning should be integrated at the metropolitan level with comprehensive and transportation planning functions. The housing element in the regional comprehensive planning process should include provisions for anticipating the needs of those who are displaced in the process of transportation and other facility development.

### CITIZEN PARTICIPATION

Citizen participation must be continual throughout the comprehensive and transportation planning processes. The focus should be on making this participation

fully representative and effective rather than on conforming to any particular methodology. Effective citizen participation requires adequate and continuing commitment of resources, impartial technical aid, and free access to all available information. Citizen participation is not a substitute for decision-making by elected officials or their designated representatives, but it is an essential contribution to such decision-making.

### ENVIRONMENTAL IMPACT

Environmental protection and the formulation of goals for such protection are essential responsibilities of the comprehensive and transportation planning processes. Area-wide planning agencies should develop capability for evaluating environmental effects to a degree comparable to their capability in other areas.

#### **FUNDING**

Demands for greater comprehensiveness and detail of analysis, sensitivity to community and environmental values, and multimodal transportation programs increase planning costs. To undertake planning of such breadth and depth, areawide planning agencies must have adequate and continuing resources.

Funding for expanded training and research programs is required to train manpower and to develop new procedures, methods, and technology.

### introduction

The Conference on Organization for Continuing Urban Transportation Planning was developed in response to increasingly widespread recognition of the urgent need to coordinate planning efforts for the orderly development and functioning of metropolitan regions and to relate such planning efforts more closely to the decision-making process of government at all levels.

The conference was not concerned with urban transportation planning for planning's sake. It was concerned with transportation planning as a major element in metropolitan development. The emphasis was on a planning process that would serve public officials and governing bodies by providing a solid foundation for decision-making.

Calling of the conference resulted from widespread awareness that urban transportation planning had not kept pace with changing conditions. Among these changes were the following:

- 1. Regional planning agencies being established in a growing number of metropolitan areas:
- 2. States expanding their roles in comprehensive planning and development, and many creating departments of transportation to correlate planning for the different modes;
- 3. Elected officials insisting on systematic participation in area-wide transportation planning;
- 4. Resistance to highway building and improvements in urban areas becoming strong and widespread because of unacceptable levels of traffic density, air pollution, and disruption;
- 5. Insufficient public funds being allocated to transit development so that transit can be a realistic alternative to highway construction; and
- 6. Citizens demanding the opportunity to be heard at all stages of planning.

The conference brought together approximately 100 representatives from public, private, and academic organizations. At the opening conference session, they were given the following assignments:

1. Evaluate the urban transportation and the comprehensive planning processes in their current forms, and identify their strengths and weaknesses;





- 2. Examine and assess proposed innovations and revisions in transportation and comprehensive planning policies, procedures, techniques, administrative practices, and organizational structure: and
- 3. Recommend ways to update and augment the urban transportation planning process to accommodate changed conditions, to remedy the less-than-satisfactory elements, and to improve the overall effectiveness of the process.

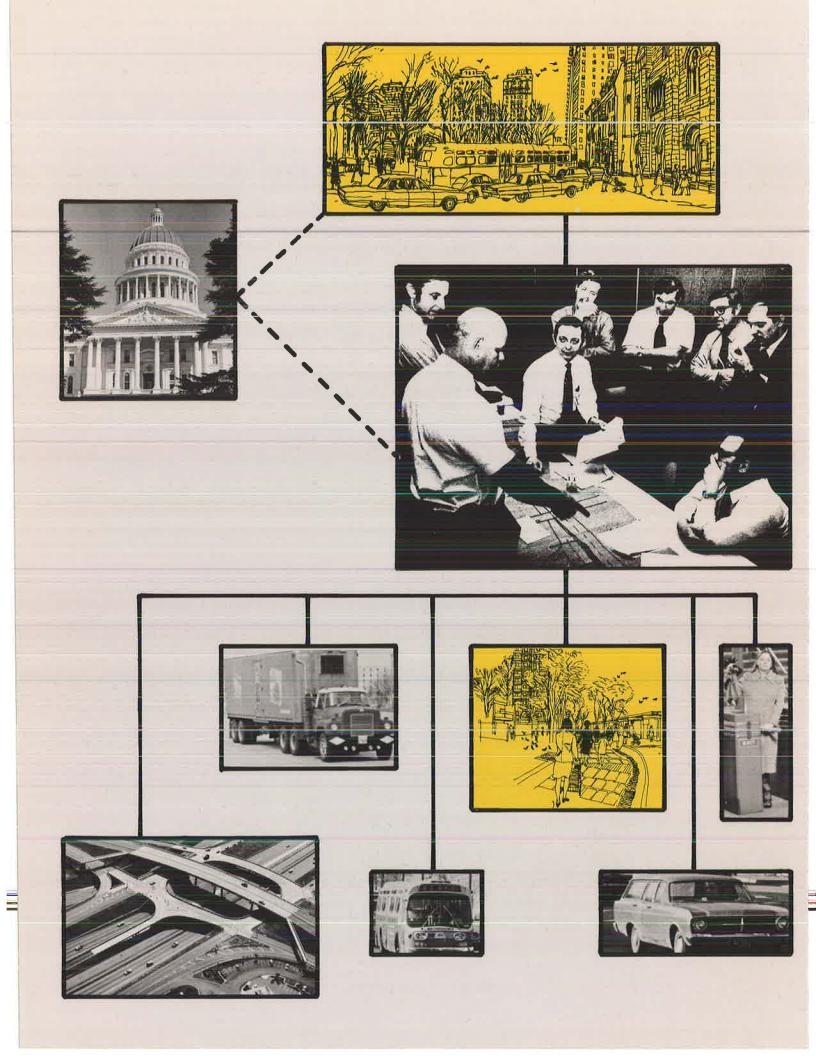
For 3 days conferees met in working sessions to debate, discuss, and reach agreement on the issues assigned. Workshop deliberations were based partly on the knowledge and expertise of the conferees and partly on keynote and commissioned papers that were presented during general sessions on the following subject areas:

- 1. Current status of urban transportation planning and metropolitan decision-making and ways to strengthen and improve that process;
- 2. Administration of planning at federal, state, and local levels; and
- 3. Current and emerging patterns of planning and decision-making at the metropolitan levels.

The reports of the workshops were summarized by the Resolution Committee in a final document containing the conference findings and recommendations that were presented to and adopted by the conference. The primary intent of this report is to publish those conclusions and recommendations for information and use by officials, technicians, and citizens throughout the country. In addition, the report summarizes briefly the thrust of the discussions and presentations out of which those findings were distilled.

The conference at Mt. Pocono was another in a series of events that have initiated, directed, and shaped the policy and structure of the present urban transportation process for nearly half a century. Periodically, those who make the policy and build the structure must reflect on what they have done, judge the consequence of their work, and chart some course for the future. This conference provided the opportunity and stimulus for such a periodic evaluation.





### organization for metropolitan planning

### CONCLUSIONS AND RECOMMENDATIONS

To carry out programs for orderly growth and development requires that comprehensive area-wide planning be strengthened as a public function. A metropolitan planning organization should integrate or coordinate comprehensive planning with all functional planning, including transportation planning, and ensure adequate and equitable representation of the people in the local metropolitan area.

menting urban transportation plans and in providing transportation planning with the proper foundation of comprehensive planning arise from weaknesses in funding, technical operation, or ability to implement land use and other area-wide plans. Other difficulties arise because comprehensive planning is not coordi-

Many difficulties in imple-

nated with transportation planning.

To perform planning as a continual function, each major metropolitan area should adopt an organization design that is best fitted to the special requirements

acteristics.

To be effective, metropolitan planning must be a legally constituted process carried out by an official body estab-

of its legal, political, and geographic char-

lished by state legislation. The official body may be a single organization that has the combined responsibilities for comprehensive planning, transportation planning, and other functional planning. Or it may be a cooperative arrangement among several governmental entities that share responsibilities for those planning assignments. In any case, the basic organizational structure should be one that

- 1. Has a single organizational policy board or a single policy board representative of the boards of separate organizations;
- 2. Has coterminous boundaries for all planned functions with few variations for exceptional purposes (political boundaries and units should be used whenever reasonably appropriate);
- 3. Is responsible for preparation of comprehensive plans sufficiently encompassing to meet at least the A-95 review requirements (see p. 8);
- 4. Has the capability to assume preproject planning responsibilities such as programming, priority setting, and general corridor or site selection;
- 5. Is staffed from all disciplines represented by its professional responsibilities;
- Has adequate funding to prepare all needed studies and plans, to conduct coordinative activities, and to determine compliance with all applicable planning and environmental policy requirements; and
- 7. Identifies and periodically consults with all major interest groups in the area on all aspects of planning.

It is essential to the preservation of the continuity and development of comprehensive planning at state, regional, and local levels that

the federal government establish a central focal point for responsibility for the systematic promotion and development of comprehensive planning as a conscious process of government. Vigorous federal leadership in performing the educational and technical assistance role among state, local, and regional elements of government will assist in providing for a consistent federal voice, the lack of which now limits the effectiveness of both comprehensive planning and functional transportation planning.

That recommendation is intended to underscore the necessity for a competent and stable source of continuing policy and funding for state, regional, and local comprehensive planning efforts in relation to functional planning activities.

The federal support role for comprehensive planning should include performance of the following functions:

1. Providing financial and technical assistance to state, regional, and local agencies responsible for comprehensive planning;

2. Developing consistent criteria, applicable throughout the federal establishment, for the certification and evaluation of state, regional, and local comprehensive planning programs and for the determination of conformance with the comprehensive planning requirements established for categorical grant-in-aid programs;

3. Fostering the development and the application of principles and methods of comprehensive planning by state, regional, and local agencies and their application to all modes of transportation and transportation-related factors in national growth; and

4. Fostering consistent and compatible federal planning requirements and their administration by all federal agencies.

#### SECTION 134 HIGHWAY PLANNING FUNCTION

From the Federal-Aid Highway Act of 1962 [Sec. 9(a), 76 Stat. 1145, 23 U.S.C. sec. 134]:

It is declared to be in the national interest to encourage and promote the development of transportation systems, embracing various modes of transport in a manner that will serve the states and local communities efficiently and effectively. To accomplish this objective the secretary shall cooperate with the states, as authorized in this title, in the development of long-range highway plans and programs which are properly coordinated with plans for improvements in other affected forms of transportation and which are formulated with due consideration to their probable effect on the future development of urban areas of more than fifty thousand population. After July 1, 1965, the secretary shall not approve under section 105 of this title any program for projects in any urban area of more than fifty thousand population unless he finds that such projects are based on a continuing comprehensive transportation planning process carried on cooperatively by states and local communities in conformance with the objectives stated in this section.

#### A-95 REVIEW FUNCTION

From Part I, Attachment A, Circular A-95, issued by the U.S. Bureau of the Budget, July 24, 1969:

The purpose of this Part is to further the policies and directives of Title IV of the Intergovernmental Cooperation Act of 1968 by encouraging the establishment of a network of state, regional, and metropolitan planning and development clearinghouses which will aid in the coordination of federal or federally assisted social, economic, and physical development projects and programs with state, regional, and local planning for orderly growth and development.

After September 30, 1969, any agency of state or local government or any organization or individual undertaking to apply for assistance to a project under a federal program . . . will be required to notify the planning and development clearinghouse of the state (or states) and the region, if there is one, or of the metropolitan area in which the project is to be located, of its intent to apply for assistance. Notifications will be accompanied by a summary description of the project for which assistance will be sought.

A...clearinghouse will have 30 days after receipt of a project notification to inform appropriate... agencies and to arrange to confer and consult with the applicant.... The...clearinghouse, in addition, will have the 30-day period prior to the date on which the application is expected to be filed to submit any comments... to accommpany the application, where the clearinghouse has notified the applicant of the intent... to do so.

#### DISCUSSION

#### **Metropolitan Planning**

The existing apparatus for metropolitan planning consists, in general, of the following agencies and functions:

1. Agencies that have both the A-95 review function and the Section 134 highway planning function;

2. Agencies that have only the A-95

review function;

3. Ad hoc organizations that have the Section 134 highway planning function; and

4. Other area-wide or regional agencies that have neither of these functions.

Planning agencies that have both A-95 review and Section 134 highway planning functions exist in only about 30 percent of the urban areas; those are usually the large urban areas that contain most of the U.S. metropolitan population. As a rule, agencies that have the combined functions tend to be strong metropolitan planning institutions.

Ad hoc organizations that have the Section 134 planning function are usually local arms of state government departments, and their strength is associated with the support they receive from those various state departments (or the fact, in some cases, that they are actually a part of the department), their technical expertise, and their unique political situation.

It has long been accepted that urban transportation planning is area-wide in scale and scope and that it transcends jurisdictional boundaries. As a speaker at the conference stated, "The street in front of one's house has no real beginning or ending, for it connects with others in munici-

pal, county, state, and national systems."

The established procedures of urban transportation planning encompass the gathering and analysis of data on the public's daily travel by various modes and for various purposes and the development of system alternatives to serve present and anticipated area distribution of travel, land use, population, and economic growth. The planning must rely on continual inputs from other related functional programs that pertain to water and sewer systems, schools and recreational facilities, natural resources (including land, air, and fuel), housing and relocation, and urban renewal and development.

Because of the scale of those programs and public services and the limited financial resources available, local governments find it increasingly difficult to carry out programs that meet rapidly mounting consumer demands and that at the same time protect the health and well-

being of the community.

The planning and programming of such essential metropolitan public services must be administered by or through some form of intergovernmental arrangement in which responsible officials of both state and local governments are represented. Such an approach to handling metropolitan matters would in no way replace or abrogate the responsibility and the authority vested in elected local officials for planning, programming, and financing local public services within their jurisdictions. It does mean, however, that the state and the local governments recognize that the provision of essential public services on a metropolitan scale is a problem separate from that of providing those services to meet primarily local needs. The type of organization necessary to ensure effective planning, programming, and financial management of such legitimate metropolitan public services must be suited to the particular needs of the area.

A state-created or authorized metro-

politan agency that performs all planning functions is a concept that was endorsed by the conferees. Their recommendation is aimed at ensuring a degree of continuity to the planning process and to its organizational structure. Also, if created by the legislature, the planning agency can be vested with powers that it could not exercise as an unofficial body. It should be authorized to carry out the Section 134 highway planning and the A-95 review functions.

The area-wide agency should be supported by both local and state funds in sufficient amounts to permit it to perform the planning functions required rather than to provide mere pro forma review or clearinghouse services.

Conferees representing cities were cautious in their support of metropolitan planning agencies. One participant from a large city stated, "A point that is sometimes missed is that city and county governments are very close to the people—the ones who elect and 'unelect' them. It is they who must determine whether a comprehensive plan is good or bad."

Others emphasized that in the planning process cities have always been adequately represented but that the interests of the metropolitan area and of the neighborhoods have not been.

A federal spokesman, while endorsing the principle of area-wide planning, declared that the federal government has already moved toward ensuring that local views are heard and that local responsibilities are met. As an example of federal policy, he cited a requirement of the Federal-Aid Highway Act of 1970 [Sec. 143(a), 84 Stat. 1713, 23 U.S.C. sec. 134]: "No highway project may be constructed in any urban area of 50,000 population or more unless the responsible public officials of such urban area in which the project is located have been consulted and their views considered with respect to the corridor, the location, and the design of the project."

#### State Role

The role of the state in metropolitan transportation planning has consisted primarily of the involvement of state transportation or highway departments in the Section 134 highway planning process. The state may provide financial assistance to metropolitan planning, provide technical assistance, represent the interest of the state in the formulation of metropolitan plans, and often play the dominant decision-making role in plans for highways.

Opinions of the conferees ranged widely on the degree of authority that state government should exert in urban transportation planning. One view was that federal funds for certain programs should bypass the state and go directly to local or area agencies. A directly opposite view was that the state should administer all federal funds for transportation planning and implementation programs.

To defend their position, supporters of a substantial degree of state guidance pointed out that basic authority for local governments and regional agencies comes from the state. That authority, vested in the state by legislative action, carries with it responsibility. The state must be assured that the agencies to which it delegates authority have the staff, the capabilities, and the resources to perform. Moreover, the state must ensure that local and regional plans are compatible with statewide plans just as state plans must be compatible with those for the nation as a whole.

#### Federal Role

The federal role in metropolitan planning has not been one of plan-making. Generally, it has consisted of providing financial and technical assistance to the states and metropolitan planning agencies, conducting training programs in the plan-

ning process, and reviewing projects that involve federal capital assistance. Although it is not directly involved in the making of local plans, the federal government determines in a major way the process followed and significantly constrains decisions made in local areas.

Nearly 4 decades ago the federal government formally established transportation planning as an integral part of its highway program by creating the "1½ percent" funds. Today, multiplied in scale and expanded in scope, the federal program involves

- 1. Continuing of the established financing, with matching state funds, for highway planning and research and for programs related to planning for transit, airports, and railroads;
- 2. Development of improved technical planning procedures in urban transportation planning and provision of continual technical assistance and training programs;
- 3. Interdepartmental cooperation in funding comprehensive land use planning studies; and
- 4. Coordination of transportation planning programs by an area-wide agency.

Program coordination is being achieved through the Department of Transportation's Program for Improved Intermodal Planning. It was established in August 1971 as a trial program in all Federal Standard Regions by the Federal Highway Administration, the Urban Mass Transportation Administration, the Federal Aviation Administration, the Federal Railroad Administration, and the U.S. Coast Guard, all acting together as a field Intermodal Planning Group. The goals of the trial program were as follows:

- 1. Intermodal agreement and recognition of a single recipient agency for areawide (system or pre-project) planning grants in each metropolitan area;
- 2. A unified planning work program from the recipient agency or agencies within the metropolitan area, resulting in

the preparation of a single annual planning work program for the area to serve as the basis for application for federal funds;

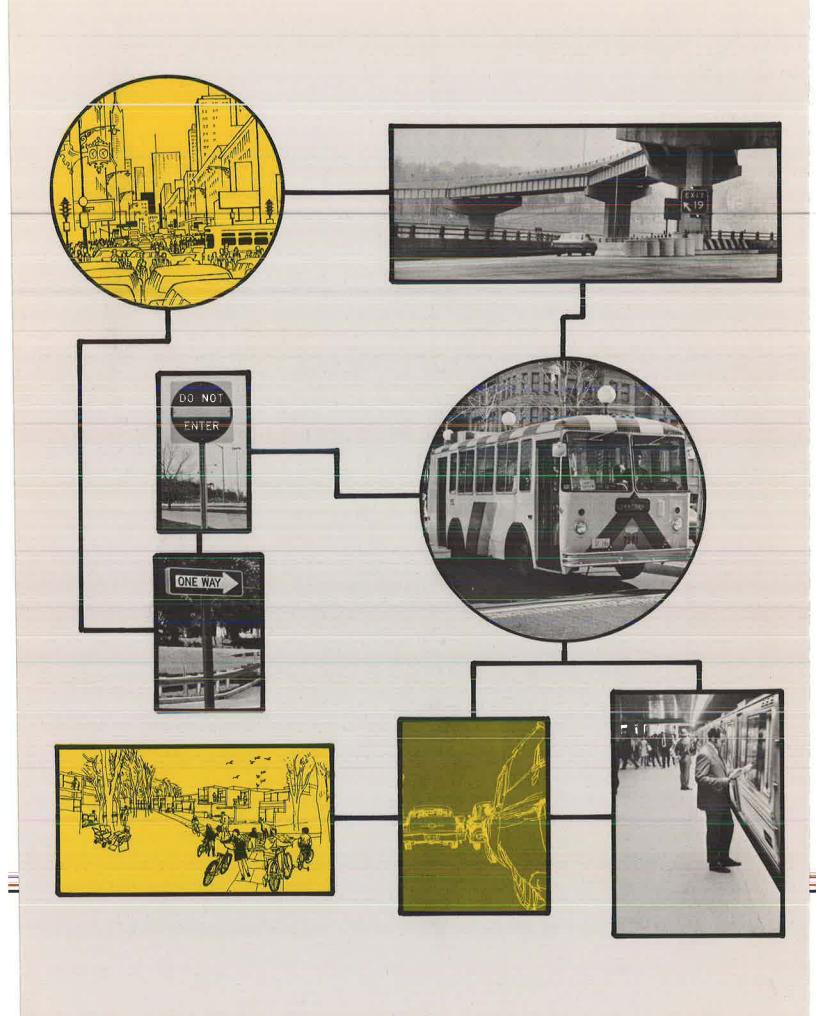
3. Short-term (3 to 5 years) transportation capital improvement programs consistent with long-range development goals from each recipient agency; and

4. Comprehensive planning, including transportation planning, funded jointly by the cooperating operating administrations of the Department of Transportation through the officially designated area-wide planning agency in each metropolitan area.

By July 1, 1972, some 36 urbanized areas had developed unified work programs for transportation planning, and some included comprehensive planning elements. As a result of that progress, the Intermodal Planning Program has been continued on a more formal basis as a permanent and integral part of the department's transportation planning activities.

Since June 1972 regional administrators of the Federal Highway Administration have been required to review annually the quality of the transportation planning process in each urban area and to ensure that each urban project serves to implement an area-wide plan. Some conferees were critical of the federal government's performance of its review function, and the conference made recommendations to improve what were felt to be basic shortcomings.

Conferees indicated that local planning agencies must now follow a multiplicity of federal planning guidelines that are inconsistent if not conflicting. The problem is particularly acute in transportation planning and is caused by the inconsistencies between the requirements of the Urban Mass Transportation Administration and those of the Federal Highway Administration. The inconsistencies in application, in content, and in the evaluation criteria used for certification create confusion and disagreement among the many participants in the planning process.



### planning process

### CONCLUSIONS AND RECOMMENDATIONS

Because of the rapid change in human values and environmental concerns in recent years, it has become increasingly difficult to provide adequate levels of transportation service in urban areas solely by construction of transportation facilities.

If the transportation planning process is to achieve a level of transportation service consistent with the overall planning and development goals of the metropolitan community, a wide range of alternative strategies must be conceived and evaluated. The range of options and approaches should include economic and land development policies and programs for altering or reducing excessive travel demands and major programs for increasing capacity of travel facilities. Innovative strategies are needed that combine various approaches and programs with flexible design and funding options and that are designed to maximize benefits to affected communities and to provide desirable transportation service consistent with overall community development goals.

Funding arrangements for urban transportation should be developed such that local decisions among alternative plans and programs can be made in accordance with metropolitan goals and not be unnecessarily constrained by unbalanced funding arrangements.

Metropolitan planning agencies should promote the continuing refinement of the long-range regional transportation plan at the subarea scale so that area-wide systems planning is more relevant to programming and project implementation. Planning at the subarea level should focus on an intermediate 5-to 15-year forecast period.

The impacts of transportation plan implementation or lack of implementation need to be continually monitored and evaluated. Dissemination of information is of primary importance to ensure continued acceptance of transportation plans. This effort will increase understanding and appreciation of transportation programs and will help to confirm or to deny assumptions, forecasts, and systems plans on which transportation projects are based.

Although many transportation plans and programs have been implemented, insufficient data have been accumulated about the effects of such programs on land development patterns, levels of transportation service, social well-being, and the environment. Similarly, data and documentation have not been assembled about the effects of delay or failure in implementing such plans and programs. Because of this lack of knowledge, neither the planners nor the members of the community can dispel or confirm their concerns about transportation proposals.

#### DISCUSSION

#### Wider Range of Alternatives

Officials and citizens alike are aware that transportation requirements in urban areas cannot be met solely by construction of major facilities. Environmental and social concerns have sharpened this awareness.

Conferees agreed that a level of transportation service consistent with overall metropolitan goals can be achieved only by widening the range of alternatives that are conceived and evaluated by the transportation planning process. Rising concern by local officials that growth and development are more costly than beneficial, insensitive building of many facilities in the past, legislative and court decisions that have halted facility construction, and worsening traffic-related problems in urban areas—all suggest that the transportation planning process does not or has not been used to reflect changing community values and public attitudes.

Conferees suggested several stategies that should be considered in developing and evaluating alternatives for the provision of transportation services.

#### Spreading Peak-Period Travel

Because transportation facilities are subjected to greatest strain during peak periods, strategies for reducing the load during those periods can contribute toward holding peak volumes within the capacities of the existing street network and of the transit facilities.

One strategy is to rearrange work schedules so that starting and closing hours are spread over a longer time period. Variations of this strategy include spreading the work week over a 7-day period, having employees work four 10-hour days in a 5-day week so that a fifth of them are not at work each day, and allowing em-

ployees to use a scheme called "gliding time" in which they choose (within certain limits) the 8 hours they want to work within a 12-hour day.

Other proposals aimed at reducing peak-period urban travel are car pools, vehicle tolls, requirement of permits for vehicles in specified high-traffic areas, parking taxes, curb-parking prohibition, and prohibition of truck deliveries during peak periods.

#### Changing the Travel Mode

Many people argue that spreading vehicular travel during the day does nothing to solve the urban transportation problem and, if anything, makes it worse. At least the temporal concentration helps to dramatize the magnitude of the amount of travel and the direction that past planning has taken to serve that travel. Merely to adopt measures to distribute travel more evenly throughout the day does not deal with the wisdom of that planning direction. Neither does it alleviate any of the social and environmental concerns. Instead, it would prolong the periods and perhaps increase the amounts of noise, noxious gases, congestion, and disruptive vehicular roadways that degrade the quality of living in urban areas.

Those conditions can be improved by a reduction in the use of private vehicles and a corresponding increase in the use of public transportation or car pools, especially for work trips, which account for approximately 80 percent of peak-hour traffic. Programs that will divert work trips from private automobiles to public transit will require full exploitation of the planning process, broad institutional support, and heavy funding so that transit systems can be improved both in capacity and in service ubiquity. Parking taxes and restrictions and vehicle tolls and permits referred to earlier will be required to deter the use of private vehicles so that public transit vehicles can operate efficiently.

#### Reducing the Amount of Travel

Conferees expressed the need for economic and land development policies and programs that will reduce the need for travel. Those policies include

- 1. Locating consumer goods and services so that they are easily accessible to residences by walking,
- 2. Making cities and other highemployment areas more habitable so that people can live closer to their work places, and
- 3. Using land better to serve growing residential and nonresidential needs so that workers, employers, or suppliers of consumer needs do not dictate the provision of costly transportation facilities by their decisions to locate in an unplanned, ever-widening circle around urban centers.

### Increasing Street Capacity Through Traffic Engineering

In many urban areas, the trafficmoving capacity of existing streets has been increased through application of traffic engineering measures. Those include 1-way streets, reversible streets and lanes, left-turn bays, parking controls, and signalization.

Financial assistance has been available through the Traffic Operations Program for Increasing Capacity and Safety (TOPICS) of the Federal Highway Administration. The following specific kinds of improvements were programmed under TOPICS:

- 1. Control systems to make traffic signals responsive to traffic conditions;
  - 2. Channelization of intersections;
- 3. Additional traffic lanes on approaches to signalized intersections;
- 4. Pedestrian or highway grade separations at complex intersections;
- 5. Addition and upgrading of lighting, traffic control signs, pavement markings, and signals;

- 6. Separate traffic lanes for passenger loading and unloading at surface transit terminals and other intermediate transit stops as well as exclusive bus lanes for transit vehicles; and
- 7. Truck loading and unloading facilities where necessary to enhance traffic movement.

#### Less Restrictive Funding

Local decisions on transportation alternatives are often influenced by the amount of federal or state financial assistance that is available and the degree of assurance that the assistance will continue.

Currently, for example, freeways that are part of the Interstate System may cost a city no more than 5 percent of the capital cost because the federal Highway Trust Fund covers 90 percent and state funds often cover the rest. Other highway improvements may require only 50 percent local funding, depending on the state, the type of highway facility, and the type of improvement.

Capital improvements for public transportation are eligible for as much as two-thirds federal funding if the transit program is based on long-range area-wide planning. No federal funds are available for transit operation, and operational improvements and losses must be covered 100 percent by local funds.

Whether funds will continue to be available also varies by fund source. So far, money from the Highway Trust Fund has generally been predictable. Funds from annual congressional appropriations are much less certain. And those that require referenda on large local or statewide bond issues are so fraught with uncertainties that planning is often influenced more by fund-raising considerations than by long-range benefits and costs.

Funding availability often prejudices the planning program. In some instances, total available funds are inadequate to meet transportation needs. In other instances, total available funds may be adequate but, because of funding restrictions, are inadequate for particular modes, purposes (for example, maintenance and operation), or functional classes proposed by the planning program. Sometimes, needed improvements to privately operated transportation systems cannot be achieved because they do not qualify for public assistance.

Plans that would most effectively accommodate future travel and support community goals must often be adjusted to reflect fiscal restrictions. Federal funding arrangements for urban transportation should include certain constraints to ensure that local decisions are consonant with broad national interests. At the same time, ways have to be found to avoid funding programs that encourage the selection of transportation alternatives that do not contribute to the attainment of metropolitan goals.

#### **Subarea Planning**

Area-wide urban transportation planning at present is too far removed from programming and project planning in its level of detail and time frame. It has been primarily concerned with long-range plans (20 to 30 years) that provide the framework and overall policy guidance for achievement of transportation goals in harmony with other objectives of the area-wide comprehensive plan.

Traditionally, the next stage in planning has been the project stage, at which time the actual location of a facility is specified and plans for it are developed. Conferees expressed the need for an inbetween stage that would be a bridge between the general and the specific, between the long term and the short term. That need would be met by subarea planning, during which a wide range of alternatives could be developed and evaluated in sufficient detail so that transportation programs could be integrated with

other functional programs.

Subarea planning also requires that the general area-wide plan be tailored to the character and the needs of all the subareas or neighborhoods within the metropolitan region. These areas have been poorly represented in the planning process, and too frequently their quality and integrity have been sacrificed by the policy of providing regional highways through urban areas.

A common reaction among citizens of subareas is that highways that cut through their neighborhoods only provide benefits to others who drive through on their way to somewhere else. One way to prevent or at least to minimize that reaction is to combine transportation programs with other programs to create direct and visible benefits to neighborhoods. Subarea planning allows that kind of analysis to be made.

The joint development approach has not been widely used in connection with highways because of the high costs of depressing and covering highways and because vehicle pollution and noise create an undesirable environment for many activities. However, conferees pointed out that studies indicate that, in some situations where the city can buy blocks of property for only slightly more than the cost of a freeway right-of-way and the compensation payments, it could sell the highway department what it needed for the freeway and have the rest available for development at a fraction of the cost of acguiring it alone. Supporters of the plan stated that, if desired, the previous land uses could be reestablished.

Subarea planning also provides the opportunity to implement short-term or pilot projects that may have potential for area-wide application, for example, the establishment of exclusive or preferential bus lanes on freeways and arterial streets. Not only do those projects serve to advance transportation planning, but also they are important to elected officials

who need visible evidence that transportation is currently producing benefits to their constituents.

Subarea planning is a bridge between project proposals and the area-wide comprehensive planning program. The area-wide planning agency should be responsible for subarea planning, but citizen counsel and support should come from the subarea involved. Financing should come from a combination of highway planning and research funds, urban transit technical study funds, and preliminary engineering funds.

#### **Monitoring Implemented Plans**

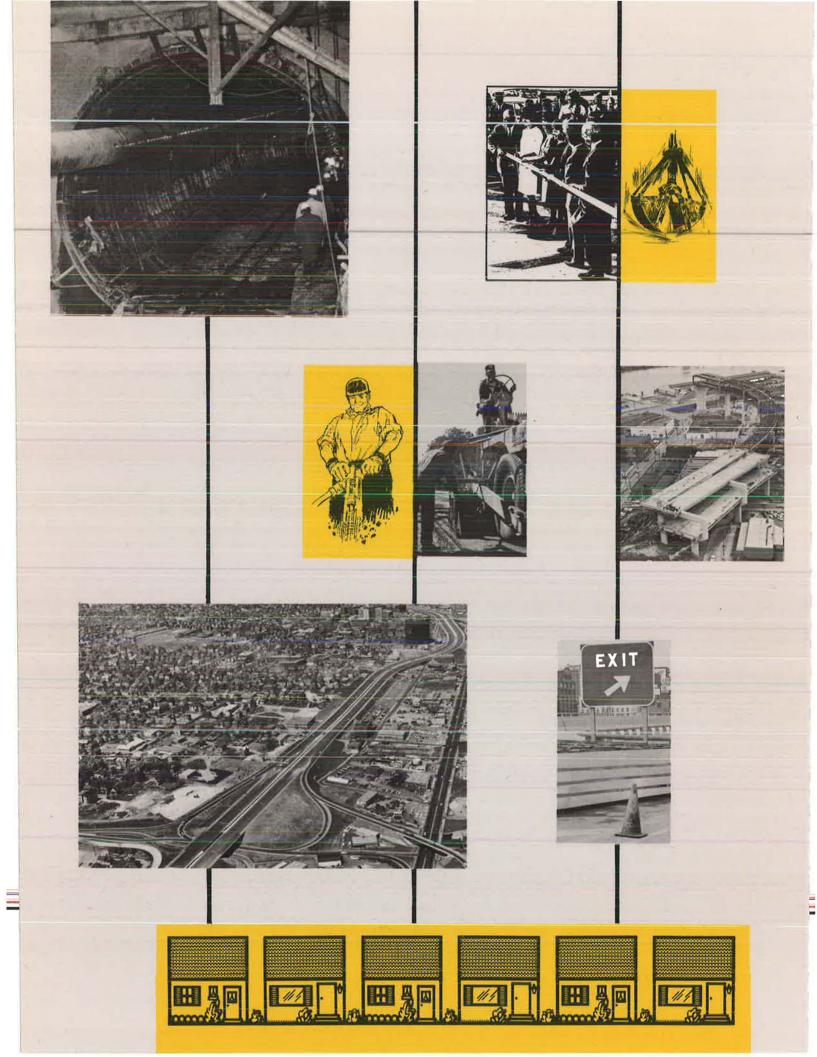
If public officials and private citizens are to support the implementation of transportation plans, they need to know what the existence or nonexistence of transportation facilities means to their communities.

Few data and little knowledge have been accumulated about the effects that transportation facilities have had on land development patterns, levels of transportation service, social well-being, and the environment. Nor do we know what the effects would have been had the facilities not been constructed or had other facilities or services been provided.

This kind of information would tremendously aid planners, legislators, and citizens in evaluating proposed alternatives and would help to dispel or confirm their concerns about transportation proposals.

Conferees agreed that both the shortand long-term impacts of transportation programs should be monitored and carefully documented. Those data will make it possible to understand the implications of changing community attitudes and values and to determine the costs and benefits to different segments of the population. Neither of these conditions is adequately treated now in the planning process.





### plan implementation

### CONCLUSIONS AND RECOMMENDATIONS

Effective transportation service relies on the successful application of land use controls. Changing the basic land use patterns on which transportation plans rest may well result in existing and proposed transportation improvements being unable to do the job required of them. In such an event, either the basic land use decisions must be reaffirmed or the transportation plans and programs must be adjusted. In either case, both time and area-wide agreement are required to resolve the issues.

A way is needed for arresting such unplanned changes in regional land use control. At the same time, some guidelines, such as upper and lower critical levels of development densities, are needed that would make it possible to judge quickly and accurately whether unplanned or unanticipated changes in land use controls are, indeed, significant. Such guidelines should be agreed to as part of area-wide planning policy.

Conversely, making transportation system improvements inconsistent in type or timing with the service needs of planned land development can be equally damaging to the effective implementation of area-wide land use and transportation plans.

Area-wide planning agencies should be empowered by state legislation to suspend significant proposed changes in local land use controls that could clearly impair the integrity of legally

adopted area-wide land use and transportation plans or that would require modification of such plans.

Area-wide planning agencies should be similarly empowered by legislation to suspend the execution of transportation or other public facility projects that are inconsistent with legally adopted land use and transportation plans. Conversely, they should be able to stimulate the timely undertaking of needed and planned projects.

Metropolitan housing policies and transportation plans must be related in order to enable transportation planning to foster the achieve-

ment of metropolitan goals. Successful implementation of transportation plans is frequently related to satisfactory relocation of people displaced by construction. A continuing relocation planning and assistance process is needed on an area-wide basis in almost every metropolitan area. Accordingly, area-wide relocation planning should be integrated at the metropolitan level with comprehensive and transportation planning functions, and the housing element in the regional comprehensive planning process should include provisions for anticipating the needs of those who are displaced in the process of transportation and other facility development. Relocation policies should be consistent for all public works programs.

#### DISCUSSION

Federal legislation is being considered to require states to assume greater authority for land use control where state and national interests are involved. That concept was voiced at the conference by a representative of state government, who proposed, "Quite possibly the states should reclaim some of the authority over land use control historically delegated to local government. The first state action would be provision of guidelines. More positive control would come only in instances of local inaction."

As alternatives, he suggested that states might create new levels of government or assign additional review and approval powers to area-wide planning agencies. Another speaker urged the U.S. Department of Transportation to require every locality to establish acceptable land development policies as the quid pro quo for approval of requests for financial assistance.

Most conferees, however, took cognizance of political realities and of the deeply rooted acceptance of local authority in land use matters. They proposed no regulatory straitjackets but did call for legislative action that would ensure a "look-before-you-leap" interlude before proposed land use changes are initiated.

Federal agencies already have the power to suspend execution of federally funded projects that receive an unfavorable A-95 review. Area-wide agencies should be given similar power by state

legislation for projects that receive state or local funds. In the meantime, areawide agencies should maintain a continuing inventory of land use and transportation developments so that they may review and comment on the effects and the effectiveness of local land use controls and on the impacts of transportation and other functional projects on economic activities, including changes in travel patterns.

At present, review and comments by area-wide agencies are confined generally to proposals for specific facilities. Of far greater concern are proposed land use changes of area-wide significance that would either support or impair the realization of adopted area-wide land use and transportation plans.

Conferees called for increased attention to social and environmental matters that are affected by transportation planning. Their recommendations emphasized the need for relating housing and relocation policies and transportation planning. Relocation assistance has been handicapped by deficiencies in funds and in qualified staff, by absence of area-wide agreements, and by lack of authority in some cases.

Centering the relocation responsibility in the area-wide comprehensive planning agency will help to ensure that the relocation process does not become an afterthought of planning or project development. In addition, improvement in relocation policies and actions can serve to diminish some of the hostility that citizens have toward proposals for new transportation facilities.





# citizen participation





### CONCLUSIONS AND RECOMMENDATIONS





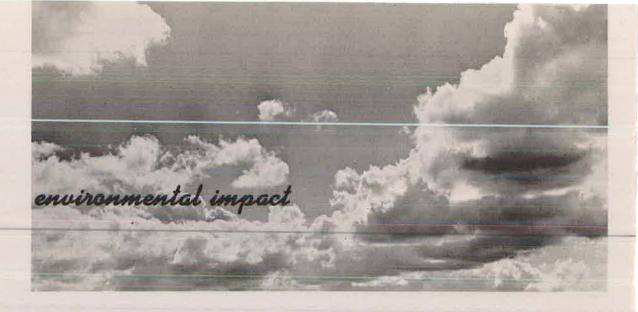
Citizen participation must be continual throughout the comprehensive and transportation planning processes from goal formulation to project planning. The provision for citizen participation should focus on making such participation fully representative and effective rather than on conforming to any particular methodology. Effective citizen participation requires adequate and continuing commitment of resources, impartial technical aid, and free access to all available information. Citizen participation is not a substitute for decisionmaking by elected officials or their designated representatives, but it is an essential contribution to such decision-making.

#### DISCUSSION

Widespread citizen opposition to highway programs indicates not that citizens insist on participating in the functions of their hired professionals and elected officials merely for the sake of participating but that they will step in when they feel strongly enough that community problems and attitudes are being ignored by plans that serve obsolete purposes or special interests and not the general well-being of the community.

Citizens sometimes find themselves in the position of having their tax money used for planning studies that result in programs that they feel have proved to be ineffective solutions to transportation problems and then of having to spend additional money for their own studies, for litigation costs, and so on. When public officials and planning professionals demonstrate that their programs are sensitive and responsive to changing social problems and attitudes, then citizen participation is not a major issue. When they do not, it is.

Transportation planning agencies must employ positive methods for active participation of citizens in evaluating alternative transportation improvements in relation to other public values. Their evaluations, constituting expressions of public attitudes, can provide practical guidance to those who are empowered to make the decisions. Thus, the purpose of citizen participation should be the development of better plans and not simply a means of clearing the way for implementation.



### CONCLUSIONS AND RECOMMENDATIONS

Environmental protection and the formulation of goals for such protection are essential responsibilities of planning agencies and are integral parts of the comprehensive and transportation planning processes. Planning agencies should, therefore, develop a capability or acquire competent assistance for studying and evaluating environmental effects to a degree comparable to their capability in other areas.

#### DISCUSSION

The assessment of the environmental impacts of alternative land use and transportation development proposals must be made an integral part of the comprehensive, area-wide land use-transportation planning process. The performance to be expected from a proposed transportation facility can be expressed quantitatively in relation to operating costs, capacity, travel time, safety, and land use. Some

environmental effects, however, cannot be stated quantitatively because there are currently no means of assigning such values to them.

A method is needed for quantifying the environmental effects to be expected from implementing transportation plans. Those effects would include not merely the primary impact of the construction of the roadway but the secondary and cumulative impacts from the induced growth, including traffic, population, and land development. Devising such a method is already the target of federal agencies. Under the National Environmental Policy Act of 1969, these agencies have been called upon to "develop methods... which will ensure that presently unquantified environmental amenities and values may be given appropriate consideration in decision-making along with economic and technical considerations."

The act also instructs the agencies to "utilize a systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences and the environmental design arts in planning and decision-making."

The Federal Highway Administration requires that every application for federal-aid funds be accompanied by an environmental statement setting forth the effects of the proposed section of highway, alternatives to the proposed action, and any irreversible or irretrievable commitments of resources that would be involved if the proposed action should be implemented. It has been observed that dealing with environmental impact of highway sections is

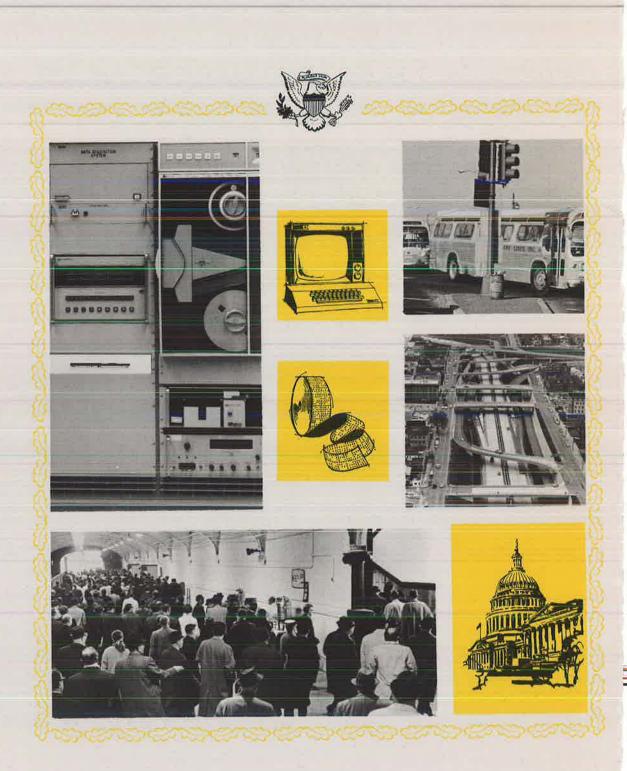


a less than satisfactory approach and one that has caused many difficulties for governmental agencies and citizens alike. A better approach would be to deal with the environmental impact of the entire proposed highway system, or at least an entire corridor, and of the possible alternatives to that system. The Council on Environmental Quality has indicated its preference for such an approach.

The Federal Highway Administration is developing highway noise standards and air pollution control guidelines for use by states in meeting the requirements of the Federal-Aid Highway Act of 1970.

Conferees recommended that attention be given to those new elements in transportation planning and that agencies develop special professional competence in this area comparable to that now existing in other planning disciplines.





# funding

### CONCLUSIONS AND RECOMMENDATIONS

13

Area-wide planning agencies should be funded in such a way that adequate and continuing resources are available for all continuing compre-

hensive and functional planning purposes. Increased demands for greater comprehensiveness and finer detail of analyses, the need and public demand for greater sensitivity to community and environmental values, and the need to plan for multimodal transportation programs all contribute to greater funding requirements.

14

technology.

Funding for an expanded training and research program is required to train manpower and develop new procedures, methods, and

#### DISCUSSION

Acceptable urban transportation planning must now undertake analysis in greater breadth and depth than that undertaken in the past. Although a decade has passed since federal law declared it

"to be in the national interest to promote ... the development of ... various modes of transport" and required that a "comprehensive transportation process" be carried in large urban areas, public planning for modes other than highways has been largely neglected. As a result, the need for multimodal planning has become critical. All reasonable alternatives must now be given serious attention, and the evaluation of alternatives must embrace both local and metropolitan considerations.

The plan review must include an examination of factors such as displacement of homes, businesses, and other institutions; interruption of local circulation patterns; disruption and division of neighborhoods; noise and air pollution; and other environmental deterioration.

Planning that responds constructively to these urgent demands cannot be accomplished in an atmosphere of uncertainty and discontinuity. The enlistment, training, and organization of technical staffs require sustained efforts year after year under stable working conditions. Funding on an annual basis is neither appropriate nor sufficient. To maintain an unbiased planning process, planning agencies must be assured of adequate and continuing resources that can be used without undue restriction to prepare plans for meeting the transportation needs of their particular metropolitan areas.

In addition, funds are needed for education and research to ensure that planning efforts do not founder for lack of manpower or technology.

# participants

- ALAN ALTSCHULER, Executive Office of Transportation, Boston
- WILLIAM S. ALLISON, Urban Mass Transportation Administration, Washington, D.C.
- BRUCE ANDERSON, Highway Users Federation, East Stroudsburg, Pennsylvania
- ROBERT E. BACON, Federal Aviation Administration, Washington, D.C.
- JOHN BAILEY, Northwestern University, Evanston, Illinois
- KURT W. BAUER, Southeastern Wisconsin Regional Planning Commission, Waukesha
- ROBERT C. BLENSLY, Columbia Region Association of Governments, Portland, Oregon
- CHARLES A. BLESSING, City Planning Director, Detroit
- RICHARD J. BOUCHARD, U.S. Department of Transportation, Washington, D.C.
- DAVID BOYCE, University of Pennsylvania, Philadelphia
- JAMES B. BRAMAN, JR., Director of Community Development, Seattle
- WILLIAM BUNKLEY, Ohio Department of Highways, Columbus
- WESLEY J. BURMEISTER, Wisconsin Department of Transportation, Madison
- E. WILSON CAMPBELL, New York State Department of Transportation, Albany
- WILLIAM N. CAREY, JR., Highway Research Board, Washington, D.C.
- J. DOUGLAS CARROLL, JR., Tri-State Transportation Commission, New York
- FRANK COLCORD, Tufts University, Medford, Massachusetts
- LEON M. COLE, University of Texas at Austin KENNETH E. COOK, Highway Research Board, Washington, D.C.

- RICHARD COWDERY, Federal Highway Administration, Kansas City, Missouri
- LYNN DAFT, U.S. Department of Agriculture, Washington, D.C.
- L. D. DAHMS, San Francisco Bay Area Rapid
  Transit District
- HARMER E. DAVIS, Institute of Transportation and Traffic Engineering, Berkeley, California
- THOMAS B. DEEN, Alan M. Voorhees and Associates, Inc., McLean, Virginia
- R. O. DRANGE, Howard, Needles, Tammen and Bergendoff, Haverford, Pennsylvania
- NEIL DUNHAM, California Division of Highways, Sacramento
- WILLIAM EALY, Tucson Area Transportation Study
- ROBERT EINSWEILER, consultant, Minneap-
- NORMAN ERBE, U.S. Department of Transportation, Des Plaines, Illinois
- JOHN FOWLER, National Academy of Engineering, Washington, D.C.
- WILLIAM B. FROEHLICH, Southwestern Pennsylvania Regional Planning Commission, Pittsburgh
- WILLIAM GOODMAN, U.S. Department of Transportation, Washington, D.C.
- W. CAMPBELL GRAEUB, Highway Research Board, Washington, D.C.
- ALBERT A. GRANT, Metropolitan Washington Council of Governments, District of Columbia
- SAM C. GUESS, State Senate Transportation Committee, Olympia
- E. N. HAASE, Colorado Department of Highways, Denver

- DOUGLAS HAIST, Wisconsin Department of Transportation, Madison
- EDWARD M. HALL, Deputy City Manager,
  Phoenix
- IRWIN PETER HALPERN, U.S. Department of Transportation, Washington, D.C.
- JOHN R. HAMBURG, Creighton, Hamburg, Inc., Bethesda, Maryland
- IRVING HAND, Pennsylvania State Planning Board, Harrisburg
- PAUL HAYES, Milwaukee Journal
- STUART HILL, California Division of Highways, Sacramento
- JOHN HIRTEN, U.S. Department of Transportation, Washington, D.C.
- EDWARD H. HOLMES, Kingston, Massachusetts ROGER F. HONBERGER, Deputy Administrative Officer, San Diego County
- WALTER K. JOHNSON, Delaware Valley Regional Planning Commission, Philadelphia
- GARRED JONES, Chicago Area Transportation Study
- HARVEY JOYNER, Barton-Aschman Associates, Washington, D.C.
- LOUIS E. KEEFER, Pennsylvania Department of Transportation, Harrisburg
- STANLEY KENNEDY, National Academy of Engineering, Washington, D.C.
- JACK KINSTLINGER, Pennsylvania Department of Transportation, Harrisburg
- TED KOLDEIRE, Citizens League, Minneapolis PETER G. KOLTNOW, Highway Users Federation, Washington, D.C.
- RAY G. L'AMOREAUX, Florida Department of Transportation, Tallahassee
- THOMAS LARSON, Pennsylvania State University, University Park

- MICHAEL LASH, Federal Highway Administration, Washington, D.C.
- EDWARD M. LEVIN, U.S. Department of Housing and Urban Development, Chicago
- ALICE LIPSCOMB, Citizens Committee to Preserve and Develop the Crosstown Community, Philadelphia
- MARVIN L. MANHEIM, Massachusetts Institute of Technology, Cambridge
- GARLAND MARPLE, Federal Highway Administration, Washington, D.C.
- DORN C. McGRATH, JR., George Washington University, Washington, D.C.
- ELIZABETH McLEAN, Assistant Commissioner of Public Works, Chicago
- ROBERT H. McMANUS, Urban Mass Transportation Administration, Washington, D.C.
- WILLIAM L. MERTZ, Federal Highway Administration, Washington, D.C.
- THOMAS J. MONAGHAN, Mayor of Lancaster, Pennsylvania
- WALTER MONASH, Director of Planning, Santa Cruz County, California
- JACK U. MOWLL, Institute of Public Administration, Washington, D.C.
- GORDON MURRAY, Urban Mass Transportation Administration, Washington, D.C.
- THOMAS NEUSON, Southern California Rapid Transit District, Los Angeles
- WILLIAM OCKERT, Regional Planning Council, Baltimore
- HARRY L. PARRISH, Regional Transportation District, Denver
- MILTON PIKARSKY, Commissioner of Public Works, Chicago
- JOHN C. POWERS, attorney, Sudbary, Massachusetts

- JEROME C. PREMO, Urban Mass Transportation Administration, Washington, D.C.
- RONALD W. PULLING, Federal Aviation Administration, Washington, D.C.
- ARLEE RENO, Massachusetts Institute of Technology, Cambridge
- THOMAS H. ROBERTS, American Institute of Planners, Washington, D.C.
- JULIA ROBINSON, South Central Project Area Community Corporation, Philadelphia
- LEE H. ROGERS, transportation consultant, Washington, D.C.
- JAMES SALE, Urban Mass Transportation Administration, Washington, D.C.
- WALTER A. SCHEIBER, Metropolitan Washington Council of Governments, District of Columbia
- MADELINE SCHNEIDER, U.S. Department of Transportation, Washington, D.C.
- JAMES A. SCOTT, Highway Research Board, Washington, D.C.
- DEREK SCRAFTON, Ministry of Transport,
  Ottawa
- GORDON B. SHARPE, Federal Highway Administration, Washington, D.C.
- GERALD P. SHEA, Tippetts-Abbett-McCarthy-Stratton, Harrisburg
- KENNETH W. SHIATTE, New York State Department of Transportation, Albany
- PAUL SHULDINER, University of Massachusetts, Amherst
- WILBUR S. SMITH, Wilbur Smith and Associates, Columbia, South Carolina
- RICHARD M. SOBERMAN, University of Toronto, Ontario
- DAVID SPEER, Public Works Administrator, San Diego

- MAX R. SPROLES, Association of American Railroads, Washington, D.C.
- ISRAEL STOLLMAN, American Society of Planning Officials, Chicago
- ROBERT J. SUGARMAN, Dechert, Price, Rhoads, Philadelphia
- OSCAR SUTERMEISTER, U.S. Department of Housing and Urban Development, Washington, D.C.
- RICHARD SUTTER, Blair County Planning Commission, Hollidaysburg, Pennsylvania.
- R. DALE TAYLOR, Ministry of State for Urban Affairs, Ottawa
- GENE TYNDALL, U.S. Department of Transportation, Washington, D.C.
- FRANK L. VENTURA, SR., General Motors
  Research Laboratories, Warren, Michigan
- ALAN M. VOORHEES, Alan M. Voorhees and Associates, Inc., McLean, Virginia
- PAUL C. WATT, Regional Transportation Commission, Berkeley
- EDWARD WEINER, U.S. Department of Transportation, Washington, D.C.
- LOUIS B. WETMORE, University of Illinois, Urbana
- JAMES WHITE, Southwestern Pennsylvania Regional Planning Commission, Pittsburgh
- GEORGE V. WICKSTROM, Metropolitan Washington Council of Governments, District of Columbia
- HAROLD F. WISE, planning consultant, Washington, D.C.
- EDWARD W. WOOD, Real Estate Research Corporation, Washington, D.C.
- F. HOUSTON WYNN, Wilbur Smith and Associates, New Haven, Connecticut

## committees, speakers, and authors

#### **CONFERENCE COMMITTEE**

Kurt W. Bauer and Harmer E. Davis, co-chairmen
Walter J. Addison, James D. Braman, Jr., Richard H. Broun, Richard J. Bouchard, Thomas B. Deen, Edward M. Hall, John R. Hamburg, Charles M. Hill, Sr., Roger F. Honberger, Jack Kinstlinger, Peter G. Koltnow, Dorn C. McGrath, Jr., Robert H. McManus, William L. Mertz, John C. Powers, Ronald W. Pulling, Kenneth W. Shiatte, Wilber E. Smith, Louis B. Wetmore, and F. Houston Wynn

#### WORKSHOP CHAIRMEN

Louis B. Wetmore, Thomas B. Deen, and Jack Kinstlinger

#### WORKSHOP RESOURCE PAPERS

Dorn C. McGrath, Jr., John R. Hamburg, and George V. Wickstrom and Albert A. Grant

#### **GENERAL SESSION PRESENTATIONS**

Alan Altschuler, John T. Howard, Edward H. Holmes, Wesley J. Burmeister, Milton Pikarsky, Kurt W. Bauer, Robert Einsweiler, Walter A. Scheiber, and Roger F. Honberger

#### OTHER SPEAKERS AND PANELISTS

Lynn Daft, Richard Cowdery, E. Wilson Campbell, Edward M. Hall, Garland Marple, William S. Allison, Ronald W. Pulling, and John Hirten

#### **RESOLUTION COMMITTEE**

Kurt W. Bauer, Harmer E. Davis, Louis B. Wetmore, Thomas B. Deen, Jack Kinstlinger, John R. Hamburg, George V. Wickstrom, Albert A. Grant, Edward H. Holmes, and Peter G. Koltnow

### notice

The conference reported herein was held under the aegis of the National Academy of Sciences-National Research Council with the approval of the Governing Board of the NRC. Such approval indicated that the Governing Board considered that the problem is of national significance, that solution of the problem required scientific or technical competence, and that the resources of NRC were particularly suitable to the conduct of the project. The institutional responsibilities of the NRC were then discharged in the following manner: The members of the conference committee were selected for their individual scholarly competence and judgment, with due consideration for the balance and breadth of disciplines. Responsibility for all aspects of this report rests with the committee, except that opinions and conclusions attributed in the report to individuals are not necessarily those of the committee, the Highway Research Board, or the National Research Council.

Although the reports of Highway Research Board committees are not submitted for approval to the Academy membership or to the Council of the Academy, each report is reviewed by a second group of appropriately qualified individuals according to procedures established and monitored by the Academy's Report Review Committee. Such reviews are intended to determine, inter alia, whether the major questions and relevant points of view have been addressed and whether the reported findings, conclusions, and recommendations arose from the available data and information. Distribution of the report is approved, by the President of the Academy, only after satisfactory completion of this review process.

#### Subject areas

81 urban transportation administration

82 urban community values

83 urban land use

84 urban transportation systems

ISBN 0-309-02153-7 Library of Congress Catalog Card 73-5420

#### Special Report 139

Price: \$2.00; available from Highway Research Board National Academy of Sciences 2101 Constitution Avenue, N.W. Washington, D.C. 20418

