

# COMMUNITY VALUES: A STRATEGY FOR PROJECT PLANNING

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A proposed strategy for project planning, location, and design, with emphasis on the approach to community values and other related social and environmental factors, is described. Five aspects of the strategy are discussed: (a) the objective of the location-design process; (b) the desired process dynamics and a recommended 4-stage process strategy of initial survey, issue analysis, design and negotiation, and ratification; (c) the principal roles, activities, and organizational structure implied for the team of individuals having responsibility for a project study; (d) the dangers of the approach as perceived by a highway agency and a community; and (e) the applicability of the approach to system (network) planning and other public policy problems.

•THERE is today a widespread professional and public desire to improve current approaches to the planning, location, and design of transportation projects. This feeling is a result of several factors: recent national environmental legislation and court rulings; changes in people's values and priorities; and changes in the range of options that the public perceives as being open to them for decisions about transportation and the use of land and other resources. The desire for improved procedures, and thereby improved "products," is increasingly important to all of us: to community residents, as reflected in the number of highway conflicts and the increasing difficulty of obtaining design approvals; to elected and appointed officials, as reflected in recent legislation such as the National Environmental Policy Act and the Federal-Aid Highway Act of 1970; and to transportation professionals, as evidenced by the efforts within national, state, and local transportation agencies directed at improving procedures for dealing with social and environmental impacts.

This call for change is typified by Section 136(b) of the Federal-Aid Highway Act of 1970 calling for:

... guidelines designed to assure that possible adverse economic, social, and environmental effects relating to any proposed project on any Federal-aid system have been fully considered in developing such project, and that the final decisions on the project are made in the best overall public interest, taking into consideration the need for fast, safe and efficient transportation, public services, and the costs of eliminating or minimizing such adverse effects. . . .

Section 102(2)(C) of the National Environmental Policy Act of 1969 regarding environmental impact statements has received much attention because of its immediate effect on state highway agencies with regard to reporting requirements. Perhaps more significant parts of this Act, however, are 102(2)(A), calling for "... a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking which may have an impact on man's environment"; and 102(2)(B), "... identify and develop methods and procedures, in consultation with the Council on Environmental Quality

established by title II of this Act, which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations; . . ."

The conclusion to be drawn is that piecemeal improvement of individual techniques concerning prediction of particular kinds of impacts, community participation, joint development, evaluation, etc., will not be satisfactory in meeting the full intent of these requests for change. What is needed is a basically new approach in which the full set of activities of a location team are carefully coordinated and staged in response to a dynamic process.

This paper describes a proposed strategy for project planning, location, and design. While this overall approach is supported by in-depth investigations of individual activities such as community interaction, these portions of the research are not described. This work is based on approximately three years of research, case studies of several cities in which highway proposals have resulted in significant public controversy, and a period of field testing and implementation on an actual project located in a large metropolitan area (1).

### THE OBJECTIVE OF THE PROCESS

The proposed approach reflects several conclusions about the nature of the location-design process and the role of the location team in carrying out that process. In particular:

1. Significant changes in current attitudes and work styles of highway agencies are necessary if social and environmental criteria are to be more effectively incorporated into transportation analyses.

2. It is impossible to get a consistent and operational statement of the values of a community since individuals cannot state their own values in the abstract and since the values of different groups are frequently in conflict.

3. There is a need to redefine the role of the highway professional to be more consistent with overall democratic principles, with new laws and guidelines, and with the changing values of society.

4. A location team should work to enhance the political process by stimulating the constructive involvement of interest groups and individuals who do not usually participate as well as those who usually do.

5. A location team must be fair, open, and responsive in its interactions with all elements of the community. Efforts should be made to make each potentially affected interest group aware of the issues and to give each interest group every opportunity to make its voice heard throughout the decision-making process.

6. The principle of equity should be implemented such that no group bears an unfair cost that is not compensated and such that enduring values unrelated to any group (historical, ecological, etc.) are carefully considered in the decision.

7. In the process of reaching a decision, there must be opportunity for meaningful negotiation among conflicting interests in order to reach agreement on what comprises an equitable distribution of gains and losses.

These ideas imply that the objective of the location team is to achieve substantial, effective, community agreement on a course of action that is feasible, equitable, and desirable. To clarify this statement, the terms used are defined as follows:

1. "Location team": The location team is that organization of professionals that has the task of doing studies of alternative highway locations and designs. This team may have as few as 2 or 3 professionals or as many as 100. It may be an element of a state department of transportation or other state or local agency, or a metropolitan planning council, or a consulting firm hired by such agencies.

2. "Course of Action": Although a highway is the major program element under consideration, highway plans need to be coordinated with a variety of public and private actions—for example, relocation assistance plans, programs for the construction of replacement housing, air rights construction, multiple uses of rights-of-way, joint development, Model Cities and other area-oriented community action programs, job

training, wildlife refuge development and other conservation measures, and rehabilitation of historical sites. The development of a highway through an area is a stimulus to constructive public and private actions to enhance the area as a whole through coordination of the highway plan with other actions. The courses of action with which the location team will deal must involve many of these elements.

3. "Feasible": The course of action must be feasible technically, economically, fiscally, and legally. In some circumstances, this may require the location team to stimulate changes in law or administrative interpretation.

4. "Equitable": The construction of a modern limited-access type of highway in an urban area constitutes a major intervention in the fabric of the city. If there are groups that receive undue burdens, equity and fairness require that they be compensated more than adequately.

5. "Desirable": After the course of action has been developed and tailored to be feasible and equitable, the benefits should still be sufficiently great so as to justify the costs incurred, if the action is to be implemented.

6. "Community": A pragmatic definition is applicable in this context: the "community" consists of all those individuals and groups who potentially will be affected, positively or negatively, by any of the courses of action being considered. The "community" so defined is composed of diverse groups; for example, highway users, local residents, local businesses and industries, historical and environmental interests. Our use of the term "community" does not imply a single formal political jurisdiction; in metropolitan areas, it may well be all the municipalities, some portion of them, one alone, or only a part of one city, depending on the scale of the location project.

7. "Substantial Agreement": It may be impossible to get total agreement from all the interests affected, but the location team should strive for this as an objective. The existence of any sizable group opposed to the course of action may indicate that there is a legitimate interest that has not been addressed adequately in developing the action. To the maximum extent possible, effort should be devoted to identifying and understanding this interest and to developing a component, or modification, of the course of action that responds to it.

8. "Effective Agreement": To be "effective," the process must involve all affected groups in reaching agreement. These groups must be confident that their views, needs, and suggestions have been fully considered and taken into account; that the location team is credible, open, and professionally knowledgeable; that there are no surprises or hidden arrangements; and that the agreed-upon course of action is indeed equitable and desirable from the different points of view of all the diverse elements of the community.

To reach this objective, the location team must ensure that (a) a wide range of meaningful choices is developed; (b) the facts about the incidence and magnitude of possible impacts of each alternative are developed and made available impartially to all interested parties; and (c) every effort is made to make each potentially affected interest group aware of the issues and to give each interest group an opportunity to make its voice heard throughout the process of reaching a decision.

We do not presume that it is feasible or even desirable to get an explicit, complete, and operational statement of the values of the community. Rather, we focus on the pragmatic objective of agreement; finding out values would only be a means to that end anyway.

To achieve this process objective, the mission of the location team is to clarify the issues of choice, to assist the community to reach a decision on what is best for itself.

Open debate about alternatives and their consequences is essential if the community is to be aroused sufficiently to inform and involve itself, and this is a necessary condition for a decision to be meaningful and lasting. The location team must work to stimulate such debate by bringing out the key issues of choice.

The no-build or "null" alternative must be one of those considered, and the consequences of deciding on the null option must be laid out as are the costs and benefits of alternative proposed actions. If some action other than the null action is to be selected, then the location team must provide sufficient information so that the community

as a whole becomes convinced that the course of action is worthwhile in comparison (once the condition of equity has been met). Another way of putting this is that "progress" per se is not desirable; only progress that meets the conditions of equity and substantial community agreement is desirable. Explicit, open, and objective discussion of the null alternative will provide a basis on which to judge action alternatives.

Fundamental to this approach is the premise that there is no single political or institutional mechanism through which all interest groups potentially affected by a highway decision can make their voices heard effectively. If there were such a mechanism, then the role of the highway team would be to serve as professional staff supporting it and to assist it in developing and analyzing alternative courses of action. Even in this case, it is quite likely that the proposed approach would provide a useful guide for a location team.

The task of the location team is much more complex, however, because in metropolitan areas there is a multiplicity of local, county, metropolitan, state, and federal agencies that play some role in highway planning. The kind of process the location team executes must provide a focus not only for the interaction of formal political institutions but also for the participation of those groups that do not find effective representation through these institutions.

#### PROCESS DYNAMICS: A FOUR-STAGE STRATEGY

A strategy for the kind of planning process we are recommending must be sufficiently flexible to facilitate changes as new knowledge is developed. Although the exact details of what is done must be determined for each study, we believe a basic four-stage strategy will be useful. The four stages of the basic process strategy are as follows:

1. Initial survey;
2. Issue analysis;
3. Design and negotiation; and
4. Ratification.

Initially, the location team has relatively little conception of the issues or of the alternative actions open to it. As it works with the location problem in interaction with the community, the issues become clearer; and, as the issues become defined and a range of meaningful alternatives has been developed, negotiation of an equitable compromise can begin. In this negotiation process, the location team acts as a catalyst while retaining primary authority over engineering issues that are its legal responsibility. Finally, either substantial, effective agreement is reached or, resources having been expended, the decision is passed to higher authority.

Within each phase of this process strategy, location team resources are assigned to ongoing activities according to the relative priorities of each activity and the particular talents and specialties of the team itself. The specific allocation of team resources will depend on the current issues as well as on the scale of the project and the resources of the location team.

##### Stage 1: Initial Survey

The objectives of the location team in the first stage are to acquire basic social, economic, political, transport, and environmental data and to develop an understanding of the interests, needs, and desires of all potentially affected interest groups. By the end of this stage, the team should have assembled suitable data for use in generating the initial alternative locations and related programs (joint development, relocation, etc.). Further, it should have an initial estimate of what the significant technical, social, and political issues are likely to be.

##### Stage 2: Issue Analysis

The objective of stage 2 is to develop, for both the location team and the interest groups affected, a clear understanding of the issues by stimulating identification and expression of conflicting values. The major thrust is on developing a wide range of

alternatives that represent basically different assumptions about the objectives to be achieved. When presented to various interest groups, these alternatives will help interests to question and clarify their own objectives and to perceive that there are significant choices to address. Ideally, all parties concerned are seeking to develop their understanding of the advantages and disadvantages of various alternatives, well before the location team has narrowed its choice to one or two alternatives.

In this stage, the location team starts to develop location alternatives. Perhaps none of these will be selected; the purpose is to get a wide range that shows the spectrum of possibilities. The team also engages in a program of direct interaction with formal and informal community groups. The information resulting from these interactions assists the location team in refining its perceptions of the interest groups and their values and feeds back to the location-design activities, stimulating the search for further alternatives. By presenting information about the alternatives and their impacts to various groups, the location team helps them to learn about the issues and demonstrates the trade-offs that might be possible.

Information about alternatives and their impacts is presented many times to groups and individuals throughout stage 2. Initially, the tone of these presentations is exploratory. Later, as alternatives become more precisely defined, the presentations will have to be made more carefully to avoid premature polarization of attitudes and positions.

By the end of stage 2, the location team should have achieved a heightened understanding of the issues in the community but without any of the groups affected becoming committed to a particular alternative. This understanding of issues is particularly important to the team's development of its strategy for the design and negotiation activities in stage 3.

### Stage 3: Design and Negotiation

Only after an understanding of the technical and value issues is developed by both the community and the location team during stage 2 should the detailed development of alternative designs be initiated. The objective of the design and negotiation stage is to produce substantial, effective agreement on a single alternative. In general, this will involve a multi-faceted course of action: not only route location-design decisions, but also a package of joint development, relocation, compensation, and other programs.

As in stage 2, there are extensive technical and community interaction activities. Many additional alternatives are developed and their impacts predicted. However, where in stage 2 the emphasis was on a wide range of basically different alternatives, here the focus is on variations of several basic alternatives in order to develop potential compromise solutions.

Applying the criterion of equity will stimulate the search for ways of modifying actions to reduce or eliminate inequities—through redesign, through development of associated non-highway program elements, or through direct compensation.

Similarly, in community interaction, the emphasis shifts from concern with drawing out information on attitudes and desires to stimulating constructive negotiation. The location team hopes to achieve substantial agreement on a single equitable alternative. To effect this, it must structure a negotiation process that will prevent polarization of positions and promote rational bargaining among the affected interests.

Stage 3 terminates when substantial agreement has been reached, a complete impasse has developed, or location team resources (time, dollars) are exhausted.

### Stage 4: Ratification

If agreement on a program of action has been reached in stage 3, stage 4 merely formalizes the agreement at a public hearing. The hearing cannot serve as a substitute for meaningful and constructive community interaction in previous stages of the process. If no agreement was reached, the location team can prepare its recommendation for presentation at the public hearing, together with discussion of the particular advantages and disadvantages of the alternatives and the trade-offs available. The information developed at the hearing may catalyze further negotiation, possibly resulting in agreement.

Should this fail, the team prepares its final report and recommendation on the basis of its broad knowledge of community preferences. The report contains a record of the negotiation effort and the team's most recent analysis of community preferences. Choosing an alternative is then up to the legally designated authority to which the location team reports (a state highway commission, metropolitan area planning council, etc.).

A monitoring activity should be initiated upon ratification of a course of action to detect changes that may occur between the times of approval and implementation and to initiate design revisions as necessary to account for these changes.

The four phases of the process strategy reflect the conclusion that the location team should participate constructively in the political process, in addition to developing technical alternatives and predicting their impacts. The strategy reflects the premise that some controversy is good; stage 2 is designed to stimulate controversy as a way of getting groups involved in the process. Stage 3, on the other hand, is designed to channel conflict into constructive bargaining.

## THE LOCATION TEAM

### The Roles of the Location Team

The proposed approach implies certain roles for a location team:

1. Agent of the responsible decision-making authority. Generally, a state highway agency, or its equivalent, has the basic legal responsibility for designing and constructing highways. While the location team may or may not be organizationally a part of this agency, it has to report its results to the agency for final decision and implementation. Thus the team must act as the agent of the higher authority throughout the planning process.
2. Technical adviser to the decision-maker. The location team is also responsible for acting as a technical adviser to the decision-making authority. In this role, it has a responsibility to develop alternatives and lay out their impacts.
3. Ombudsman and spokesman. The location team has a professional obligation to act as a voice for interests not represented in the political process. This means that, besides speaking for national interests, the interests of the metropolitan area as a whole, and the long-term interests of the future (in contrast to short-term and parochial interests), the location team should speak for those who may not be heard effectively, such as low-income communities that may be unable to organize themselves, and for those interests (ecological, historical, and aesthetic, perhaps) for which no other spokesman may exist. There is also a professional responsibility on the part of the location team to provide technical expertise to assist particular interest groups. This may extend to actually developing alternatives responsive to the needs and interests of a particular group.
4. Impartial negotiator. The location team is responsible for stimulating negotiation among interest groups who are in potential conflict. The team has to consider its role in the negotiations carefully, particularly as a bargaining party. It may have developed its own perception of what an equitable consensus might be through its continuing contact with the community. It has acquired bargaining resources in the form of proposals for relocation housing, multiple use, and similar programs.
5. Community adviser. The location team can help interest groups clarify their objectives by posing alternatives to individuals and groups. The team may help people to broaden their perceptions of the impacts of alternatives on themselves and others.
6. Impartial developer of alternatives and of factual information. Finally, there is the clear responsibility to develop a wide range of meaningful alternatives and to predict as accurately as feasible their full impacts on all interest groups affected.

These roles may be too dissimilar to be accommodated in one organizational entity, and it is possible that they may be performed by several organizations or organizational elements. However, at the present time, there seems little alternative to requiring the location team to perform all of these roles.

## Location Team Activities

Five basic location team activities can be structured into an overall program of work designed to achieve the process objective of substantial effective community agreement.

Development of Alternatives—A wide variety of courses of action directed toward achieving a range of basically different objectives should be produced rapidly to facilitate effective community interaction and impact prediction. The detail of the designs should be adjusted to a level appropriate for the stage of the location-design process. Early in the process, rough sketches of many different alternatives are sufficient. As the range of alternatives is narrowed, attention must be given to the details of design and to related program elements. Alternatives considered should include alternative types of highway facilities and improvements to other transportation modes. The option of no highway construction—the "null" alternative—must always be openly and explicitly considered in all phases of the location-design process and used as a reference point for determining impacts of other alternatives.

Designers should be viewed as all those members of the location team who have responsibility for the development of alternatives. We use the term in a much broader sense than is traditional: the group of designers may include not only highway engineers but also relocation specialists, right-of-way experts, architects, ecologists, sociologists, urban designers, etc.

Impact Prediction—All significant negative, as well as positive, impacts should be identified for each course of action, whether they can be quantified or merely described qualitatively. Impact predictions should be initiated sufficiently early in project studies so that the results can meaningfully influence the alternatives being developed.

Quick and approximate impact predictions are sufficient in early stages of the location-design process when a large number of alternatives are being considered. More detailed and accurate impact predictions become necessary when a few alternatives are being given serious consideration.

The interest group affected by an impact, and the magnitude of the impact, should be identified. For each predicted impact, the range of uncertainty in the prediction should be stated explicitly.

The location team should differentiate between factual impacts and those that are conceptual in nature (not objectively measurable, but dependent on perception). This difference may be hazy, and the location team must recognize that their own perception of an impact may not agree with that of the affected interest.

Affected community interests should be involved in the identification and prediction of impacts on them. Also, displays should be prepared to assist community interests in perceiving and understanding potential impacts.

Evaluation—Evaluation is the process of appraising—throughout the location-design process—the options that have been developed by analyzing the available impact prediction information. In doing this, the location team draws on the results of impact prediction as well as the results of development of alternatives and of community interaction.

Evaluation must be thought of more broadly than simply the comparison of alternatives or the analysis of impact data. In particular, the developed evaluation method is designed to help (a) identify significant issues and the uncertainties surrounding them; (b) assess the potential of alternatives to serve as a basis for community agreement by viewing the alternatives from the perspective of each identified interest and by identifying who would gain and who would lose if an alternative were implemented; and (c) guide the management of a location team by suggesting priorities for subsequent activities involving the development of alternatives, community interaction, and impact prediction. The evaluation method treats qualitative as well as quantitative information and does not assume the existence of a consistent and well-defined set of values for all affected communities. Five kinds of issues are emphasized: (a) representation of affected interests; (b) equity of the incidence of positive and negative impacts; (c) community preferences between alternatives, including the null choice; (d) feasibility in a

technical, legal, and fiscal sense; and (e) desirability from the point of view of overall net benefit resulting from an expenditure of public funds.

Community Interaction—Community interaction is broadly defined as the two-way communication process through which the location team and the community learn about each other and work together to reach agreement on a course of action. The location team should interact with both local officials and private groups and citizens.

Objectives for community interaction are to establish and maintain the legitimacy and credibility of the location team; to determine the validity of earlier decisions; to establish facts and explore community values; to detect, anticipate, and find solutions to community problems; to communicate information about the location-design process; to gather information on local concerns, needs, and wishes; and to search for consensus on a course of action. Community interaction tasks and techniques must be selected and managed carefully with an eye to meeting these objectives. Community interaction is not a grab-bag of techniques; it is a complex undertaking that must be closely coordinated with other location team activities. Currently popular techniques such as public hearings or large open meetings, citizen advisory committees, and surveys generally will not be sufficient to achieve the desired objectives.

Interaction with community groups should occur throughout the process and is necessary in all phases. Such community interaction can be used to identify and predict both the incidence and magnitude of a wide range of social and environmental impacts and to learn what various interests of the community consider to be important and unimportant issues. In addition, community groups can serve as a useful source of solutions to highway and related community problems. The tone of community interaction should be consistent with the mission of assisting the community in reaching its own decisions; a position of attempting to "sell" a highway should not be assumed (2, 3).

Location Team Management—A location-design process should be managed in a style that will enable it to be dynamic, flexible, creative, and responsive to the needs of the community, yet decisive. A basic program of work must be laid out and followed, so that the resources (people, funds, time) available to the location team can be used efficiently. It includes establishment of objectives and priorities, assignment of personnel and resources to the various community interaction and location-design activities as priorities change, determination of time schedules, and overall coordination of activities. A major task of location team management is the development and revision as necessary of a process strategy, the general sequence of steps the location team follows in trying to achieve the overall process objective.

The approach proposed is based on the premise that these five basic activities must be conducted, no matter what the scale of the location team in terms of staff and other resources. Even a three-man location team must conduct community interaction activities as well as the development of alternatives and impact prediction; the function of evaluation is an important aspect of the activities even of this small a team; and the basic management approach is still critical. However, quite obviously, the degree of formal organization of a team will be markedly different between small and large teams, and the amount of work in each functional area that can and should be accomplished also will vary considerably. In addition, it is important to be able to vary internal structure as the priorities of the location team change over the course of the location-design process.

#### DANGERS OF THE APPROACH

From the perspective of the highway agency, it may seem that the recommended approach is very dangerous and undesirable. The process may take longer than the time now allocated for route location and design studies; the study itself may be more expensive; it may result in a project that costs much more; and it may result in the project's never being built at all.

It may well be true that more time and money will be required, but let us be realistic about what the base of comparison should be. The length of time between initiation of location studies and initiation of construction is increasing in many instances—sometimes becoming infinite—because controversy leads to the mobilization of political



power to modify or block the project. When compared with the duration of studies and controversy, the time period for the process proposed here may be short indeed.

When it comes to cost, again a true base line for comparison must be established. Given the present high annual rate of increase in construction costs, the project cost estimate of today is much lower than the cost that will be incurred when the project is built. Even if controversy delays a project only 4 or 5 years, there will be a significant increase in costs—perhaps 50 percent. On the other hand, if a major portion of this cost increase can be saved by gaining community acceptance of the need for a route and its location and design features at an early point, then this amount of resources is easily justified as being available to provide things the community desires and needs in order that the result be "equitable and desirable." [This is not intended to imply that the cost savings due to achieving earlier construction should be used as a guideline for establishing the amount that is available for project elements other than the highway and its supporting structure. Rather, this amount is suggested as a way of putting into more realistic perspective the costs of elements required to achieve "equity."]

A third major "danger" as perceived from the perspective of the highway agency is that the project may never be built at all. This is an issue that needs to be examined very carefully. At present, a highway agency may see itself as having the mission of completing a system of highways for which the need and desirability have been clearly established and, where the system plan was established at some point in the past, reflecting the best available knowledge at that time and the values of that time. As the particular route location and design study proceeds, more realistic and accurate estimates can be made of costs, of traffic service provided, of the impacts on various communities and groups, and of the costs necessary to compensate for those impacts that are negative. These estimates may indicate costs and other effects of this project that are substantially less desirable than those estimated when the system was initially established. If as a result a particular project is seen as undesirable and eliminated, this is not a catastrophe; it is simply the inevitable result of the changing world we live in. Thus the process we are recommending can be viewed as an opportunity to re-examine earlier system decisions, either to validate those decisions or to revise them.

Let us now examine the dangers in this process as some elements of the community may perceive them. To some, this process may appear to be a Machiavellian attempt to continue the highway program by co-opting the opposition. To these people, the approach will be seen as encouraging and enabling the highway agency to manipulate the community; opposition to highways will be channeled away from confrontation and direct political activity to a more diffuse form of activity. Some groups may fear that the highway agency will seek their cooperation only long enough to weather a current confrontation and to wear down the public opposition to a highway.

This fear of manipulation is legitimate. There is a real danger that some unenlightened public agencies may use this approach as a way of out-maneuvering political opposition. However, this danger is not as great as it appears. We are convinced that many community groups concerned about highways have learned, through their political activities of the last 10 to 15 years, to organize themselves to be politically effective. Whenever the agency fails to operate in a scrupulously legitimate and open manner, effective political activity by the community groups can be expected. Therefore, a system of "checks and balances" will operate.

To some groups, cooperation with a highway agency is heresy. To these groups, highways are bad, and everything possible should be done to block all highway construction. Since cooperation will only detract from the effectiveness of political confrontation, these groups will oppose any participation in the location-design process.

Certainly, groups who take this position are as narrow in their vision as those few highway professionals who insist that the system must be completed regardless of the reasons for community opposition. Some highways will be desirable; others will not be. The real task is to determine, for each proposed project, whether in fact it is desirable (and, if not, what it would take to make it so). The proposed process is designed to assist the community and the highway professionals to work together to determine the desirability of a project.

## APPLICABILITY TO SYSTEM PLANNING AND OTHER PUBLIC POLICY PROBLEMS

The approach described has been developed specifically for project-level decisions, i.e., highway location and design decisions. It should also be directly applicable with few or no modifications to other project-level decisions: transit route (or station) location and design; airport location and design; urban development project location and design; flood control project location and design; and similar project-level decisions.

In principle, the concepts underlying this approach, and the approach itself, seem applicable to a wide spectrum of public policy system problems—for example, decisions about a metropolitan or statewide multi-modal transportation system. In extending the approach to the systems level, however, some modifications would be necessary.

To illustrate, the following are a few of the issues in system planning and their implications for modifications to the basic project-level approach:

1. At the project level, the impacts of various alternatives (including the null alternative) are easier to identify. At the system level, decisions can be made only on the basis of tentative estimates of impacts, because the "true" impacts can be identified only when project-level alternatives have been developed and their impacts predicted.

Therefore, uncertainty over impacts plays an even more important role in system planning. Uncertainty should be incorporated explicitly in the process, and staging strategies that incorporate uncertainty must be an integral part of the process. A staging strategy is not a plan for several years but rather makes actions in the future years dependent on what happens each year.

2. At the project level, impacts are relatively close in time and easy to perceive by affected interests so that the location team can succeed in getting community interests involved in a constructive way. At the system level, impacts of decisions are largely far distant in time, more global in scope (e.g., impacts on the metropolitan land development patterns), and more difficult to perceive and understand by laymen. This occurs because decisions at the project level are made and then implementation usually follows relatively quickly (except of course in some states where location decisions may be made 15 or more years before implementation). At the system level, decisions about some components of the system may not actually be implemented for 20 to 30 years. Some means are necessary at the system level to ensure that all relevant interest groups become involved.

In order to heighten and maintain interest in system level planning, both short- and long-range decisions could be dealt with in the system planning process that adopts the approach described here. This would also serve to develop an understanding among decision-makers and the public as to the relationship between long-run and short-run impacts.

3. At the project level, interaction is more easily manageable, as the community of affected interests can be focused more easily into a single negotiating arena; at the system level, the affected interests operate at a number of different levels of government and the identification of an appropriate negotiating arena is far more difficult. The interaction process in system planning must operate such that all groups perceive that their interests are adequately represented at each point in the decision process. Although interaction will be complex, it need not be unwieldy if a "web of trust" is encouraged in which each group feels that someone speaks for them in each negotiating arena.

4. The approach to evaluation that has been developed seems to have applicability to system planning decisions, but its operational use will be more complex in system planning due to the larger number of relationships among factors that should be considered. The same observation holds for any other evaluation method.

5. Institutional constraints on the decision process create more significant difficulties at the system scale—for example, differences in the degrees of federal, state, and local participation in funding of capital and/or operating expenses of various transportation modes; fragmentation of decision responsibility among different agencies and

levels of government; and the tendency to accept a "system" as fixed once the decision has been made, regardless of change in demand, in technology, in knowledge, and in values. All these problems affect the project level as well, but such issues must be resolved at the system level.

Research has begun on extending and adapting the basic approach described in this paper to system-level decisions. The end product of this research is expected to be a pragmatic, operational method for incorporating community and environmental issues in system-level decisions.

#### ACKNOWLEDGMENT

The material contained in this paper is based on research performed by the Transportation and Community Values Project of the Urban Systems Laboratory. Acknowledgment is due all of the people who have contributed to this effort, especially Frank C. Colcord, Jr., Arlee T. Reno, Hans Bleiker, Harry Cohen, Robert Giel, Michael Petersilia, Jeffrey Tryens, Elizabeth Bennett, Lowell K. Bridwell of Systems Design Concepts, Inc., and Stuart Hill and Robert G. Fisher of the California Division of Highways. This paper is based on research sponsored by the American Association of State Highway Officials under National Cooperative Highway Research Program Project 8-8(3) and the California Division of Highways. The opinions and conclusions expressed or implied are those of the authors and do not necessarily represent those of the sponsoring research agencies.

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