

abilities and authorities and has a regional participatory mechanism that is tuned to the locality.

These observations highlight a more general need for disseminating information and sharing experiences regarding the role of and mechanisms for regional participation in transportation planning among various regions. Such exchanges could result in wider application of innovative organizational and methodological techniques to structure the participation process to assist in formulating, endorsing, and implementing sensible regional transportation systems to reflect local priorities and needs.

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# Selecting Effective Citizen Participation Techniques

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Selection of effective citizen participation techniques for use in transportation planning is described as a three-part process: (a) identify on the basis of function those techniques that are suitable to the stage in the planning process, (b) eliminate any techniques that require the use of resources beyond those available to the agency, and (c) select the most appropriate remaining technique on the basis of the sociopolitical situation in the community. Each part of the selection process is discussed and applied to 37 participation techniques, including advocacy planning, charrettes, hotlines, and surveys. The 37 techniques are classified as performing the functions of information dissemination, information collection, initiative planning, reactive planning, decision making, and participation process support and are related to appropriate steps in a 19-step analysis of the planning process. Several other functional classifications and analyses of the planning process are briefly discussed. The resources necessary for implementation of techniques are money, time, staff from the agency, expertise, and equipment. Estimates for each type of resource have been gathered from the literature for the 37 techniques. Sociopolitical factors are not easily quantified. Factors planners should consider in matching a potential technique to a given community are local interest level, attitude, cohesion, expectations of the community's role in planning, past experience with participation, and median educational level.

Much of the recent discussion on citizen participation has focused on individual techniques. Previous efforts to collect and synthesize this material have been in the area of transportation planning and were usually encyclopedic in nature. Typically these works suggested selecting techniques by means of elaborate interactive processes that use classification schemes of up to nine dimensions (1, 2, 3, 4, 5). This paper summarizes and provides a simple framework for using that information. Transportation planning is used as a specific example, but the framework can be applied as well to other types of planning.

Citizen participation techniques are the elementary components of a citizen participation program. In some situations a certain technique (such as a citizens' ad-

visory committee) will be very effective; in other situations the same technique will be totally ineffective. Through systematic consideration, effective techniques can be selected for different stages of a citizen participation program. An orderly three-step process for selecting effective techniques would (a) identify by function techniques that are suitable to the stage in the planning process being considered, (b) eliminate any technique that requires the use of resources beyond those available to the agency, and (c) select the most appropriate remaining technique on the basis of the sociopolitical situation in the community.

The first step in selecting an effective citizen participation technique for a specific stage of the planning process is to determine the function of citizen participation at that stage. There are six functions that citizen participation techniques perform in planning:

1. To disseminate to the public information about the planning process;
2. To collect information, either factual or perceptual, as input to the plans that are being developed;
3. To initiate plans by citizens with assistance from the agency;
4. To collect public reaction to alternative plans developed by the agency;
5. To make decisions that reflect a consensus within the community on the correct action to be taken; and
6. To support other elements of the participation process to operate more effectively (4, p. 18).

Most stages of the planning process require more than one citizen participation function and thus may need more than one citizen participation technique. For example, when a decision is made on whether to build a facility, decision-making techniques are needed, but also needed

are techniques that disseminate information to inform the public of the opportunity to participate.

#### TECHNIQUES CLASSIFIED BY FUNCTION

Some techniques can serve more than one function; for example, surveys, which primarily collect information, can also disseminate information by letting people know that a planning project is under way. The 37 techniques described by Rosener (6) and the Federal Highway Administration (FHWA) (4) are outlined below. They are classified on the basis of their primary functions (4, p. 19; 6, pp. 60-64).

##### Information Dissemination

1. Public information program: Information is provided to the public on a particular plan or proposal, usually over a long period of time.
2. Drop-in centers: Information distribution points permit a citizen to ask questions, review literature, or look at displays concerning a project affecting the area in which the center is located.
3. Hot lines: Telephone answering services connected with a planning process are publicized and used to answer citizens directly, to record questions to be answered with a later return call, or to provide a recorded message.
4. Open information meetings: Assemblies are held voluntarily by the agency to present to the public detailed information on a particular plan or project at any time during the process.

##### Information Collection

5. Surveys: Structured questioning is conducted of a sample of citizens who statistically represent the whole population.
6. Focused group discussion: Small meetings (8 to 10) are guided by a trained moderator who uses a prepared outline; it is based on the assumption that the group collectively has more information and insight than the individual members (synergy).
7. Delphi: This method is designed to systematically develop and express the views of a panel of individuals on a particular subject. First, written views are solicited on a subject; successive rounds present the arguments and counterarguments from the preceding round for panelists to respond to as they work toward a consensus of opinion or clearly established positions and supporting arguments.
8. Community-sponsored meetings: Assemblies organized by a community group focus on a particular plan or project in order to provide a forum for discussion of various interest group perspectives.
9. Public hearings: This method is usually required by law when some major governmental program is about to be implemented or before legislation is passed. It is characterized by procedural formalities, an official transcript or record of the meeting, and is open to participation by an individual or representative of a group to present views.
10. Ombudsman: An independent, impartial official mediates between citizen and government to seek redress for complaints, to further understanding of each other's position, or to expedite requests.

##### Initiative Planning

11. Advocacy planning: Affected groups employ pro-

fessional assistance with private funds and consequently have a client-professional relationship.

12. Charrettes: Interest groups (governmental and nongovernmental) convene in intensive interactive meetings lasting from several days to several weeks.

13. Community planning centers: Ongoing local bodies independently plan for their community by using technical assistance employed by and responsible to a community-based citizens group.

14. Computer-based techniques: Experimental techniques that use computer technology to enhance citizen participation.

15. Design-in and color mapping: Citizens work with maps, scale representations, and photographs to provide a better idea of the effect on their community of proposed plans and projects.

16. Plural planning: Each interest group has its own planner (or group of planners) develop a proposed plan based on the group's goals and objectives.

17. Task force: An ad hoc citizen committee is sponsored by an agency and involved in a clearly defined task in the planning process. Its typical characteristics are small size (8 to 20), vigorous interaction between task force and agency, weak accountability to the general public, and specific time for accomplishment of its tasks.

18. Workshops: Working sessions provide a structure for parties to discuss thoroughly a specific technical issue or idea and try to reach an understanding about its role, nature, and importance in the planning process.

##### Reactive Planning

19. Citizens' advisory committees: A panel of citizens is called together by the agency to represent the ideas and attitudes of their groups or communities.

20. Citizen representatives on policy-making boards: Citizens participate as either appointed or elected members of public policy-making boards.

21. Fishbowl planning: This process involves citizens in restructuring a proposed plan before its adoption; it uses public meetings, brochures (which provide continuity between successive public meetings), workshops, and a citizens' committee.

22. Interactive cable-television-based participation: This experimental tool uses two-way coaxial cable television to solicit immediate citizen reaction; it is now in the initial stages of experimentation on a community level.

23. Neighborhood meetings: Meetings are held for residents of a neighborhood affected by a project or plan (usually these meetings are held either very early in the planning process or when plans have been developed and response is needed).

24. Neighborhood planning councils: Councils for specific geographic areas serve as advisory bodies to the public agency in identifying neighborhood problems, formulating goals and priorities, and evaluating and reacting to the agency's proposed plans.

25. Policy capturing: This highly sophisticated, experimental method involves mathematical models of policy positions of interested parties and attempts to make explicit the weight and trade-off patterns of an individual or group.

26. Value analysis: Various interest groups subjectively rank the consequences of proposals and alternatives to articulate community goals against which alternative plans can be evaluated and consensus for one alternative developed.

## Decision Making

27. Arbitrative and mediative planning: Labor-management mediation and arbitration techniques are used to settle disputes between interest groups in the planning process.

28. Citizen referendum: Citizens choose between proposed measures via balloting; it may be an official statutory technique or unofficial.

29. Citizen review board: Decision-making authority is delegated to citizen representatives who are either elected or appointed to sit on a board and have the authority to review alternative plans and decide which plan should be implemented.

30. Media-based issue balloting: Citizens are informed through public media, such as newspapers or television, of the existence and scope of a public problem, alternatives are described, and then citizens are asked to indicate their views and opinions in a ballot to be returned for counting.

## Participation Process Support

31. Citizen employment: The direct employment of client representatives results in continuous input of clients' values and interests to the policy and planning process.

32. Citizen honoraria: Payments may be used as an incentive for participation of low-income citizens; honoraria differ from reimbursements for expenses in that they dignify the status of the citizen and place a value on his or her participation.

33. Citizen training: Participants are instructed in technical issues, planning, or leadership.

34. Community technical assistance: Professional staff and technical information and explanations are provided to interest groups so they may develop alternative plans or articulate objections to plans and policies proposed by the agency.

35. Coordinators or catalysts: An individual takes responsibility for providing a focal point for citizen participation in a project, is in contact with all parties, and channels feedback from citizens into the planning process.

36. Game simulations: Citizens experiment in a risk-free setting with various alternatives (policies, programs, plans) to determine their impacts in a simulated, competitive environment where no actual capital investment or real consequences are at stake.

37. Group dynamics: Interpersonal techniques and exercises are used to facilitate group interaction, or problem-solving techniques may be designed to highlight substantive issues.

Information dissemination is more than public relations; it includes techniques to let the public know what steps the agency is taking, what opportunities citizens have to make an input, what plans have been proposed, and what decisions have been made. Information dissemination techniques are needed at almost every stage of the planning process; information dissemination is a secondary function of most citizen participation techniques.

One type of information collection technique cannot collect all the information needed. For instance, identifying the major issues in a community may require communications with a limited number of people on an intense basis through a technique such as focused group discussions, but determining the attitudes of the community on an issue may require communications with a large number of people in a more limited manner through a technique such as a survey.

The public hearing is an information collection technique often required by law. Public hearings are characterized by procedural formalities. These formalities often prevent two-way communication but, when they are properly used with other techniques, they assure citizens of the opportunity to be heard and provide an official record that can be useful in decision making. Public hearings are such a traditional part of the American system that their very use often makes a decision-making process appear legitimate.

The use of an ombudsman is another information collection technique that has a special nature. The ombudsman receives and acts on complaints from citizens when the regular citizen participation process has broken down in some way. The ombudsman is usually not used as part of a single planning project but rather is used in relation to the city or state government in general.

Most interaction between citizens and the agency takes place through initiative planning techniques or reactive planning techniques. The former permit citizens to produce proposals and structure options while the agency provides information and technical assistance to the citizens. Initiative techniques require an active and interested public and a cooperative and skilled agency. In reactive planning techniques, citizens react to proposals and options developed by the agency so that the agency's proposals may be modified. Less public energy is used in reactive planning than in initiative planning.

Decision-making techniques help a community develop a consensus on an issue. These techniques do not replace the legal responsibilities of elected and appointed public officials. Some decision-making techniques, such as arbitration and mediation, develop compromises and resolve conflict while other techniques, such as citizen referendums, simply identify the majority position.

Participation process support techniques make the rest of the participation program run smoothly. They include techniques like citizen training that provide a greater understanding of the planning issues and thus allow more effective participation. They also include techniques such as community technical assistance, which provides citizens with resources that they could not develop on their own. Citizens sometimes view participation process support techniques as diversions; if they are not used appropriately, they may be.

Other classification schemes based on the functions of techniques have been developed. One of them, sponsored by the Pennsylvania Department of Transportation, uses these categories (3, pp. 3-18): (a) notification, (b) citizen feedback, (c) presentation, (d) dialogue, (e) advice, (f) community staff, (g) task force, (h) negotiation, and (i) monitor. Included in this list of functional categories are two techniques, task force and community staff.

Another classification scheme based on technique function by Smith and others was developed for FHWA (2, p. 101). It has these functional purposes: (a) to inventory groups and define key publics affected by a project, (b) to identify key community issues, (c) to identify community priorities and values, (d) to inform publics of meetings and events, (e) to motivate the public to participate in community involvement planning, (f) to predict social and physical project impacts on a community, (g) to promote direct public interaction in planning and design, (h) to resolve conflicts, (i) to monitor actual project impacts of recently built highways, and (j) to evaluate the effectiveness of the community involvement program. These are essentially subdivisions of the categories used in this paper.

Schuster and others, in a report sponsored by the U.S. Department of Transportation, use function as one dimen-

sion of a nine-dimensional classification scheme (1, p. 125). They list these five functions: (a) clarification, (b) communication, (c) communication with feedback, (d) interaction, and (e) problem solving. This scheme focuses on the type of communication that is involved rather than on the result of the communication.

**STEPS IN TRANSPORTATION PLANNING**

Any planning process can be broken down into several steps. The FHWA's 19-step representation of the transportation planning process is an example of how this can be done (4, p. 25). The full descriptions of the steps, in order, follow; the cycle can be repeated if necessary.

1. Inventory and analyze current conditions, trends, and problems.
2. Generate preliminary definitions of development issues and policies.
3. Forecast population and employment on the basis of policies.
4. Forecast travel demand on the basis of forecast employment and population.
5. Define transportation needs and objectives.
6. Develop alternative transportation plans and programs.
7. Make preliminary evaluation of alternatives.
8. Establish regional or subarea priorities.
9. Select a program package.
10. Make level-of-action decisions.
11. Establish annual (or biennial) action program.
12. Refine location and design alternatives.
13. Analyze in detail environmental impacts and engineering feasibility.
14. Write draft environmental impact statement.
15. Write final environmental impact statement.
16. Make decision to build or not to build facility.
17. Prepare final design plans, engineering plans and cost estimates.
18. Implement and construct.
19. Operate and evaluate.

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18. Implement and construct.
19. Operate and evaluate.

As an aid to identifying techniques that are functionally suited to the various steps, a matrix can be generated by arraying these steps down one side of a chart and the process-linked techniques across the chart. An example of how this can be done is shown in Figure 1, which was derived from the FHWA manual (4, p. 25). When a group of techniques suitable for a particular stage of planning has been identified, the next step is to eliminate techniques that require more resources than the agency has available. Resources may be grouped under five headings:

1. Money—the funds needed for purchasing supplies, hiring consultants, paying honoraria, and so on;
2. Time—the calendar time required to prepare and put into operation a given technique;
3. Staff of the agency as contrasted to consultants;
4. Expertise needed to put a technique into operation; and
5. Equipment required for a technique.

Possible limitations of resources can be reduced if provision is made for citizen participation at the very beginning of the project. This will give the longest period of time for planning and the greatest opportunity to locate funding, obtain allocations of staff, locate or train experts, and acquire special equipment.

Table 1 synthesizes estimates of the resources required for the 37 techniques (2, 3, 4, 5). Specific dollar amounts are given under the money heading whenever possible; the prices are as of 1975. For some techniques only subjective estimates of expensive or not too costly were available. These were used although they come from

Figure 1. Citizen participation in the transportation planning process.

PLANNING STEPS	Information Dissemination		Information Collection		Initiative Planning		Reactive Planning		Decision Making	
	Public Information Programs Open to Critics Hearings Marketing Open Information Roundtables Forums Focus Group Discussions Dial-in	Public Hearings Advisory Committees Subboards Citizens Planning Community Planning Councils Commuter Board Techniques Public Planning Task Force Roundtable Citizens Advisory Committees In-house Committees Interactive Cable-TV Participation Marketing Roundtables Neighborhood Planning Councils Voter Analysis Advisative and Participatory Citizen State Boards Make-Build-Own-Bidding	Public Hearings Advisory Committees Subboards Citizens Planning Community Planning Councils Commuter Board Techniques Public Planning Task Force Roundtable Citizens Advisory Committees In-house Committees Interactive Cable-TV Participation Marketing Roundtables Neighborhood Planning Councils Voter Analysis Advisative and Participatory Citizen State Boards Make-Build-Own-Bidding	Public Hearings Advisory Committees Subboards Citizens Planning Community Planning Councils Commuter Board Techniques Public Planning Task Force Roundtable Citizens Advisory Committees In-house Committees Interactive Cable-TV Participation Marketing Roundtables Neighborhood Planning Councils Voter Analysis Advisative and Participatory Citizen State Boards Make-Build-Own-Bidding	Public Hearings Advisory Committees Subboards Citizens Planning Community Planning Councils Commuter Board Techniques Public Planning Task Force Roundtable Citizens Advisory Committees In-house Committees Interactive Cable-TV Participation Marketing Roundtables Neighborhood Planning Councils Voter Analysis Advisative and Participatory Citizen State Boards Make-Build-Own-Bidding	Public Hearings Advisory Committees Subboards Citizens Planning Community Planning Councils Commuter Board Techniques Public Planning Task Force Roundtable Citizens Advisory Committees In-house Committees Interactive Cable-TV Participation Marketing Roundtables Neighborhood Planning Councils Voter Analysis Advisative and Participatory Citizen State Boards Make-Build-Own-Bidding	Public Hearings Advisory Committees Subboards Citizens Planning Community Planning Councils Commuter Board Techniques Public Planning Task Force Roundtable Citizens Advisory Committees In-house Committees Interactive Cable-TV Participation Marketing Roundtables Neighborhood Planning Councils Voter Analysis Advisative and Participatory Citizen State Boards Make-Build-Own-Bidding	Public Hearings Advisory Committees Subboards Citizens Planning Community Planning Councils Commuter Board Techniques Public Planning Task Force Roundtable Citizens Advisory Committees In-house Committees Interactive Cable-TV Participation Marketing Roundtables Neighborhood Planning Councils Voter Analysis Advisative and Participatory Citizen State Boards Make-Build-Own-Bidding	Public Hearings Advisory Committees Subboards Citizens Planning Community Planning Councils Commuter Board Techniques Public Planning Task Force Roundtable Citizens Advisory Committees In-house Committees Interactive Cable-TV Participation Marketing Roundtables Neighborhood Planning Councils Voter Analysis Advisative and Participatory Citizen State Boards Make-Build-Own-Bidding	Public Hearings Advisory Committees Subboards Citizens Planning Community Planning Councils Commuter Board Techniques Public Planning Task Force Roundtable Citizens Advisory Committees In-house Committees Interactive Cable-TV Participation Marketing Roundtables Neighborhood Planning Councils Voter Analysis Advisative and Participatory Citizen State Boards Make-Build-Own-Bidding
1. Inventory and Analyze Current Conditions, Trends, and Problems	•	•	•	•	•	•	•	•	•	•
2. Generate preliminary definitions of development issues and policies	•	•	•	•	•	•	•	•	•	•
3. Forecast population and employment based on policies										
4. Forecast travel demand, based on forecast employment and population										
5. Define transportation needs and objectives	•	•	•	•	•	•	•	•	•	•
6. Develop alternative transportation plans and programs	•	•	•	•	•	•	•	•	•	•
7. Make preliminary evaluation of alternatives	•	•	•	•	•	•	•	•	•	•
8. Establish regional or subarea priorities	•	•	•	•	•	•	•	•	•	•
9. Select a program package	•	•	•	•	•	•	•	•	•	•
10. Make level of action decisions	•	•	•	•	•	•	•	•	•	•
11. Establish annual (or biennial) "action program"	•	•	•	•	•	•	•	•	•	•
12. Refine location and design alternatives	•	•	•	•	•	•	•	•	•	•
13. Analyze in detail environmental impacts and engineering feasibility	•	•	•	•	•	•	•	•	•	•
14. Write draft environmental impact statement	•	•	•	•	•	•	•	•	•	•
15. Write final environmental impact statement	•	•	•	•	•	•	•	•	•	•
16. Make decision to build or not to build facility	•	•	•	•	•	•	•	•	•	•
17. Prepare final design plans, engineering plans and cost estimates	•	•	•	•	•	•	•	•	•	•
18. Implement and construct	•	•	•	•	•	•	•	•	•	•
19. Operate and evaluate	•	•	•	•	•	•	•	•	•	•

• - Indicates a technique that may be useful at that step

Table 1. Resources and techniques.

Technique	Money	Time	Staff	Expertise	Equipment
1. Public information program	\$5 000 to 50 000	Medium to high	Medium to high	No	No
2. Drop-in center	Can be costly	Medium	High	No	Yes (mobile center)
3. Hot line	\$2 000/week for recording equipment 24 h/d, \$40 installation fee	Low	Low	No	Yes
4. Open information meeting	Varies widely	Low	Medium	No	No
5. Survey	\$3 to 5/mailed questionnaire, \$10 to 15/telephone interview, \$15 to 30/ personal interview with basic anal- ysis of data	Medium to high	Medium	Yes	Yes
6. Focused group discussion	Varies	Medium to high	Medium	Yes	No
7. Delphi	Can be costly	High	Low	Yes	No
8. Community-sponsored meeting	Relatively little	Low	Low	No	No
9. Public hearing	\$500 to 25 000	High	Medium	Yes	Yes
10. Ombudsman	\$18 000 to 40 000 annual salary	Low to medium	High	Yes	No
11. Advocacy planning	\$20 000 to 100 000/year	Low to medium	Low	Yes	No
12. Charrette	\$15 000 to 250 000	High	Medium	Yes	Yes (overnight facility)
13. Community planning center	\$60 000 to 200 000/year	Medium to high	Low	Yes	No
14. Community-based technology	Varies widely	Low to high	Low	Yes	Yes
15. Design-in and color mapping	Less than \$100 to 5 000	Low to medium	Medium	No	Yes (models)
16. Plural planning	\$50 000 to 100 000/community group	High	High	No	No
17. Task force	Relatively little	Low to medium	Medium	No	No
18. Workshop	\$500 to 2 000	Low to medium	Medium	Yes	No
19. Citizens' advisory committee	\$20 000 to 60 000	High	Medium	No	No
20. Citizen representative	Very little	Low	Low	No	No
21. Fishbowl planning	Relatively costly	Medium to high	High	No	No
22. Interactive cable TV	Costly	Not available	Not available	Yes	Yes
23. Neighborhood meeting	Relatively little	Medium	Medium	No	No
24. Neighborhood planning council	\$20 000 to 100 000/year	Medium	High	No	No
25. Policy capturing	\$10 to 20/computer regression anal- ysis; \$40 000 for interactive com- puter graphics program	Medium to high	Medium	Yes	Yes
26. Value analysis	Many cost factors	High	High	Yes	Yes
27. Arbitration and mediation	\$200 to 250/d for arbitrator or mediator	High	Medium	Yes	No
28. Citizen referendum	\$5 000 to 40 000	Medium to high	Low to medium	No	Yes
29. Citizen review board	Depends on amount needed for honoraria and citizen training	High	High	No	No
30. Media-based issue balloting	\$17 500 to 1.5 million	High	Medium	Yes	Yes
31. Citizen employment	\$5 000 to 10 000/employee	Low to medium	Low	No	No
32. Citizen honoraria	For each person: at least \$10/meet- ing or \$25 to 50/d; higher if repay- ing at actual payscale	Low	Low	No	No
33. Citizen training	Varies widely	Low to high	Medium	Yes	Yes
34. Community technical assistance	Varies	Medium to high	Low to high	No	No
35. Coordinator or catalyst	\$20 000 to 30 000 annual salary	High	Low	No	No
36. Game simulation	\$100 to 500/d for existing game; \$10 000 to 2 million to develop new game	Medium to high	Medium	Yes	Yes
37. Group dynamics	\$150 to 1 000/d for leaders; \$1 600 for purchase of videotape equipment; \$16 for 30 min of tape	Medium	Low to medium	Yes	Yes (videotaping)

various sources and have no standard scale. Time required to institute a technique is estimated on a three-point scale (2, p. 71): (a) low = less than 1 month, (b) medium = between 1 and 2 months, and (c) high = more than 2 months.

Qualitative estimates of the staffing required for many participation techniques used the following scale (5, pp. 20-21): (a) low = no significant commitment of staff time or skills after a possibly substantial initial effort to institute a technique; (b) medium = short term, intensive effort for each occurrence; and (c) high = significant commitment of some staff members for more than 1 month. Expertise is rated on a two-point scale according to whether a technique requires skills and knowledge beyond that usually possessed by transportation planners (2, pp. 72-95). These ratings have been freely combined with those from other references to the need for special skills. Similarly, the column for equipment indicates whether a technique requires specialized equipment beyond the usual clerical supplies the agency is assumed to have available.

After determining which techniques are functionally suitable and eliminating those that require resources unavailable to the agency, the techniques most applicable to the sociopolitical situation of the community should be selected. At least six factors should be considered:

1. The community's interest in the topic,
2. The community's attitude toward the topic,
3. The community's cohesion,

4. The community's expectations of the role it should play in the planning process,

5. The community's past experience with citizen participation, and

6. The community's median level of education.

Selections must be made subjectively, but they should be based on the objective information obtained from these factors. This is where the judgment and the experience of the individual who is running the community participation program come into play. These six factors do not lend themselves to being arranged in a matrix or to quantitative analysis.

In communities where the level of interest is high, different techniques are necessary and more appropriate than in communities where the level of interest is low. For example, the information dissemination technique of hotlines will not work if there is not enough interest in the community for people to make the telephone calls that start that process. The level of community interest in the topic can be determined by reviewing local newspapers, talking with community leaders, and using such community participation techniques as focused group discussions, delphi, or surveys.

When a community has already developed an opinion, all alternatives may not receive fair consideration. The process may benefit from the use of special techniques. Game simulations, for example, may help by making the participants more sensitive to issues that they have not considered. The community's attitude toward the topic

can be identified in ways similar to those used to determine the level of community interest.

The cohesiveness of the community determines the ease with which consensus can be developed on a proper course of action. If opposing interests exist in the community, conflict resolution techniques such as mediation may be needed. The level of community cohesion is less easily measured than are some of the other sociopolitical factors. It is influenced by such factors as the community's mobility, ethnicity, and range of income levels. Some of these factors can be found in statistical publications and others by talking with people in the community.

The community's expectations are important because they can determine which techniques the community will consider legitimate. Past experiences affect the community's expectations. The community's expectation of the role the public should play in the planning process can be determined by talking with community leaders or by using surveys and other information collection techniques.

The community's past experience will affect the community's opinion of planners. It may cause the community to expect certain levels of power in decision making. It may also have generated the development of certain interaction and leadership skills in the community. These factors should be considered when selecting appropriate techniques. The community's past experience can be learned from interviews with knowledgeable people in the community and in local planning organizations. Records can be found in back issues of the local newspapers and sometimes in the files of the planning agency itself.

The median educational level of a community is an important indication of the expected success of certain techniques. For example, fishbowl planning relies heavily on the reading and writing skills of the participants; it will probably fail in a community where the educational level is low. The median educational level of a community can usually be determined from census data.

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## Fiscal Planning and Highway Programming: The Pennsylvania Response to a Changing Environment

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Many states face a changed era of highway programming and administration, an era characterized by a highly uncertain and pessimistic outlook for fiscal resources, escalating costs, and mounting environmental and other operational constraints. This paper discusses this changing environment in Pennsylvania and consequent developments in the state's highway program and programming process and relates them to trends in other states. Major issues described include the forecasting of fiscal

resources, development and delineation of program alternatives, recognition and resolution of trade-offs among highway program elements (for example, capital versus maintenance efforts), and programmatic allocation and administration of capital investments.

Many state highway programs are experiencing severe