CONF-810140--2

Community-Based Assessment and Planning of Energy Futures*

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Presented at the Community Energy Planning Conference
Sponsored by the Tennessee Chapter of the American Planning Association
and the University of Tennessee Center for Government Training,
Gatlinburg, TN., January 29-30, 1981

*Research sponsored by the Office of Strategy, Analysis and Integration, Office of Solar Energy, U. S. Department of Energy, under contract W-7405-eng-26 with the Union Carbide Corporation.

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ABSTRACT**

A number of communities throughout the United States have recently demonstrated considerable interest and capabilities in energy planning and implementation. Few of these communities, however, have carried out comprehensive assessment and planning programs. One innovative approach to community problem solving in the area of energy conservation and development has recently been "tested" in the Decentralized Solar Energy Technology Assessment Program (DSETAP). In this program four communities were involved in an assessment of the compatibility of diverse conservation and renewable energy supply technologies and community values and goals and in community planning for the implementation of compatible energy demand and supply alternatives.

The approach taken by these communities has several basic components, including: (1) recruiting and organizing for the assessment planning process, (2) collection and analysis of data related to community energy use and indigenous renewable energy resources; (3) creation and maintenance of a community education and information program; (4) development of policies favorable to the development of preferred community futures; and (5) development of implementation or action strategies.

How these components were carried out by the four communities in the DSETAP is reviewed. Particular attention is paid to a number of important issues which were raised during the course of the DSETAP, including the role of public participation, group decisionmaking techniques, the role of technical information in citizen and group decisionmaking and linkages between assessment planning and relevant policy process.

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**Submitted for presentation at the Community Energy Planning Conference, sponsored by the Tennessee Chapter of the American Planning Association and the Center for Government Training, University of Tennessee, to be held in Gatlinburg, Tennessee, January 29-30, 1981.

COMMUNITY BASED ASSESSMENT AND PLANNING OF ENERGY FUTURES

This morning I will review the Decentralized Solar Energy Technology Assessment Program (DSETAP), a community energy planning program which has been funded for almost three years by the Office of Solar Energy of the U.S. Department of Energy. This program has involved the development of an assessment and planning protocol, testing of the protocol in four communities, and an identification of the major assets and liabilities of the protocol which were raised during the course of the DSETAP. While I will enumerate the components of the protocol and will briefly discuss how these components were carried out in the four communities, I want to pay particular attention to some of the issues raised during the course of the community technology assessments or TA's; these include: 1) the role of technical information in citizen and group decisionmaking; 2) the role of public participation; 3) group decisionmaking techniques; and 4) linkages between assessment planning and relevant federal, state, and, most importantly, local policy processes.

The Assessment Planning Protocol

Although what I'm about to present appears to be a rational, concise list of assessment planning components, you should realize that the protocol evolved throughout the DSETAP--people at Oak Ridge National Laboratory and their consultants had some ideas about what should be included in the assessment planning process, but our ideas were considerably enriched by community people as they participated in the DSETAP. For our part we specified that each participating community should:[1] (1) establish a TA Task Team representative of community

interests to manage and direct the project; (2) develop scenarios on community futures relating energy use and preferred community futures; (3) establish and maintain a community information/education network for the project; (4) assess the potential role and impacts of conservation and renewable energy alternatives with respect to social, economic, institutional and lifestyle impacts; and (5) document the process and the project so that others might learn from the community's experience. As the four community projects evolved, other components--baseline energy use profiles or audits, characterizations of conservation and renewable energy technologies, renewable resource inventories, and implementation plans and strategies--were added.

Applications in the Communities

Four communities were selected to participate in the DSETAP: Franklin County, Massachusetts; the Southern Tier Central Region (STC) of New York, which is composed of Steuben, Schuyler and Chemung Counties; Richmond, Kentucky; and Kent, Ohio. As can be seen in Table 1, the communities varied in size, energy use mix, economic base, and the institutional affiliation of the community's project management--as you can see planning departments were directly involved in the STC and Kent projects.

The TA Task Teams. This component essentially publicized and organized the project. People were recruited from a variety of interests within the communities (e.g., utilities, churches, schools, environmental

TABLE 1. VITAL CHARACTERISTICS OF TAP COMMUNITIES

	Population	Economic Base	Chief Fuel Source	Project Management
Southern Tier Central Region, New York	219,000	Agriculture Manufacturing	Natural Gas	Regional Planning Commission
Chemung County	(102,000)	Tourism		
Steuben County	(100,000)	Retail		
Schuyler County	(17,000)			
Richmond, Kentucky	23,000	University Industry Agricultural Trade Center Retail	Electricity Natural Gas	Local University
Kent, Ohio	25,500	University Light Industry Retail	Natural Gas	City Planning Commission
Franklin County, Massachusetts	64,000	Industry Tourism Agriculture Retail	Petroleum	Solar Interest Group

Source: B. H. Bronfman, S. A. Carnes, and R. S. Ahmad, "Community Based Technology Assessment: Four Communities Plan Their Energy Future,: in Integrated Impact Assessment, F. Rossini, A. Porter, and C. Wolf, eds. (Elsevier: forthcoming).

interest groups, banks, etc.) through newspaper advertisements and special invitations. This component also encompassed organizing the project in terms of the development of committees, tasks, functions, and so on, and defining the roles that would be played by the Task Team and by citizens in open community meetings. In Richmond the Task Team was fairly passive, but citizen committees assumed a powerful role. In Kent the Task Team played a leadership role in developing the scenarios but only coordinated citizen participation in the assessment.

Data Collection. Major efforts were undertaken by the communities to develop community energy use profiles, inventories of indigenous renewable resources, and characterizations of conservation and renewable energy technologies. As Robert Kleinman discussed earlier, there are a variety of audit or profile methodologies available, and they vary in terms of the level of detail in the data, the resources required to collect the data, and accuracy. Among the DSETAP communities Kent and Franklin County developed the most detailed energy profiles.[2]

All of the communities inventoried indigenous renewable resources. STC mapped these resources in considerable detail with the aid of people at Cornell University;[3] Kent mapped the resources as well, but with much less detail. Franklin County quantified the availability of some renewable resources such as biomass, and Richmond participants toured existing renewable energy facilities.

Characterizations of conservation and renewable energy technologies were developed in both the Richmond and STC projects. The people in

Richmond developed at very little cost a brief manual on renewable energy technologies and how they work, while STC produced at greater cost a sophisticated workbook on renewable technologies, complete with professional drawings and photographs of operating facilities in the region.[4]

Community Information and Education. Each of the projects had active community education components. The initial reasons for this component were to publicize the project and to attract participants--logos were developed, posters were made, and newspaper articles, advertisements and surveys were utilized. As the projects evolved, materials developed during the data collection stage (i.e., energy use profiles, renewable resource inventories, and technology characterizations) were distributed to project participants, and visits were made to existing renewable energy facilities (i.e., solar homes, windmills, low-head hydro facilities, etc.). Information was also provided to citizens within the communities, particularly in the case of Richmond, through newsletters, film fairs, conservation and solar fairs, workshops and demonstrations, and presentations by project staff and participants to target audiences such as neighborhood groups, planning commissions, and schools.

Scenarios or Futures Development. One thing that we have learned from communities participating in the DSETAP is that "scenarios" is a horrible word--it either means nothing to participants or it is assumed to be bureaucratese or some other jargon. "Scenarios" was so bad that the

participants in one community, Richmond, were never able to agree on its meaning or its worth and, thus, failed to include scenario development and assessment in the scope of their activities.

What we mean by this component is simply that communities study themselves and where they would like to be in the future. The three communities which did attempt to develop community futures used different approaches. In Kent the TA task team and the planning staff developed narrative community energy futures, indicating indigenous energy supplies through conservation and renewable energy development and a range of decisions to be made and actions to be taken to achieve these futures. Franklin County and STC both hypothesized radical energy shortages as a mechanism to force their task teams and the public to think about local energy demand and supply and potential local solutions. Franklin County had a graphics artist sketch futurist visions of a solar Greenfield (the county seat) and of solar schools and factories.

Community Assessment of Alternative Futures. Although the title of this component sounds complicated, essentially all of the communities, through meetings, asked people to identify the social, economic, institutional and environmental impacts of community energy futures based upon conservation and renewable energy supply systems. In STC participants organized themselves according to occupational groups as they related to the impact areas. Based on past participation or interest in the Kent project, people were invited through the mail to select one of the impact areas and to identify five positive and five negative impacts; these

impacts were then used at public meetings to catalyze the identification of other impacts. In Franklin County the project staff organized public meetings in six geographically dispersed communities throughout the county and asked attendees to respond to an energy future previously developed by the project staff.

Implementation Plans and Strategies. Once goals had been identified through the futures development task and impacts had been identified through the community assessment task, all of the participating communities, except Franklin County, engaged in mapping out, with varying degrees of detail and sophistication, implementation plans and strategies. Although there were also some diversity in the particulars of each plan, the communities emphasized one or more of five components: community energy education; implementation of conservation measures; infrastructure development; implementation of appropriate renewable technologies; and continuing the investigation of the feasibility of local renewable energy initiatives. The Franklin County project's disaggregation into six regions of the county during the assessment phase and its failure to attract participants over the life of the project effectively inhibited the development of a citizen-based or community-based local energy plan.

Unresolved Issues

As I mentioned at the beginning of my presentation a number of issues arose during the course of the community projects which merit further

consideration and/or research. Again, just as I promised that the assessment planning protocol and its components should not be unfamiliar to planners, you are all probably familiar with these issues and how they affect your work in the more conventional domains of planning.

Technical Information. As planners you deal with technical information on a daily basis--you use maps and statistics; you correlate statistics in terms of public service delivery systems. As energy planners, you also deal with technical information--insulation, insolation, direct gain, passive gain, kilowatt hours, passengers per vehicle mile, and so forth. You develop new vocabularies and the expertise to accompany those vocabularies. To a great extent you learn this on your own or, if you are fortunate, you receive professional training in graduate schools of planning or at special workshops.

As demonstrated in the DSETAP, the problem of technical information is bi-modal. The TA task teams, composed of planning staffs and citizen representatives of interests within the community, had to learn to cope with new vocabularies and systems of knowledge. This learning process was time-consuming and, for some, frustrating. The greatest frustration, I think, was not the complexity of the subject matter, for energy use and supply systems are not really all that complex; rather, it was that there is no single paradigm or approach or characterization which can be transferred from one planning effort to another--the technical and institutional aspects of local energy conservation and renewable energy development are changing so fast that planners and citizens alike are

confronted with multiple interpretations of the state of the art and must select that interpretation, that approach, and that level of technical detail which is most appropriate to their resource base and to the purpose of the planning effort.

The second dimension of the technical information problem was identified more formally by the TA task teams in the emphasis they placed on community education in their local energy plans. If citizens are to be involved in developing and implementing preferred energy futures, they must become familiar with and understand how they use energy and what energy conservation and supply options are available. If they do not develop this understanding, they and the community will have no choice but to continue to depend upon decisionmaking on energy issues by external authorities (e.g., OPEC, utilities, public utility commission). Another reason for the emphasis on community education was, I think, strategic; TA participants recognized that without community education it would be difficult to develop a constituency which would insist that local politicians confront energy conservation and indigneous renewable energy development.

Role of Public Participation. The role of the public in energy policymaking has in the past also been bimodal. On the one hand the public, through a variety of national interest groups (e.g., solar, consumer, environmental), has lobbied on Capitol Hill along with representatives of energy supply interests (e.g., utilities, coal, oil, and gas producers).

The public has also been active--perhaps reactive is a better term--at the local level when faced with the possibility of hosting a centralized energy supply facility (e.g., coal-fired or nuclear power plant, oil refinery).

Community energy planning represents the first time that local publics are called upon to be proactive in energy policymaking, and this responsibility is, more or less, being imposed in an experiential vacuum. Many, if not most, citizens may continue to consume energy with little thought or concern regarding its source or its supply and may not begin to assume responsibility for participating in energy policymaking. Put differently, developing public participation in local energy planning and development is developing citizen liability or responsibility for shaping the future. Until such an obligation is perceived and acted upon, until a constituency is developed for community energy planning and development, formal elected authorities such as mayors and city and county commissioners will not assume responsibility for such tasks; they will not put energy planning and development on their agenda. In short, as you are undoubtedly aware, planning is political, and without local public support your efforts are likely to be in vain.

Group Decisionmaking Techniques. Once you have managed to attract citizens to an effort such as community energy planning and have agreed with them upon a division of pre-decisionmaking responsibilities (e.g., data collection and analysis and community education), how are decisions made and who makes them? How are community futures developed and who develops them? How are the impacts of each future assessed, and who

assesses them? How is a community energy plan developed, and who develops it?

While there are a number of options available, I'd like to suggest that the group process techniques used in the Kent project are worth considering.[5] Group process techniques is a generic term used to describe several methodologies and approaches found to be useful in facilitating the assessment of group opinion in a structured manner--in short, they promote productive group interaction. The output of the group interaction can then be used as an aid to better solutions by those formally responsible for making decisions.

One of the group process techniques used in Kent was the Nominal Group Technique (NGT). Although there are several variations to NGT and other group process techniques,[6] the NGT can be divided into five stages: (1) development of an appropriate question/issue for group consideration; (2) written responses to the question/issue by each group member; (3) oral round-robin submission of responses by group members to the group; (4) serial clarification of responses; and (5) voting, on the basis of priority, importance or some other judgmental criteria, on each of the responses. NGT has several advantages over the conventional committee format: (1) it is faster than the traditional committee approach; (2) it focuses group energy on a specific task; (3) it encourages participation by each member of the group; (4) it minimizes the dominance of one or two group members over other members of the group;

(5) discussion is limited to clarifications of group members' responses to the NGT question; (6) the end result is a structured product; and (7) the voting procedure gives participants a sense of closure about their efforts. If the structured part of the NGT breaks down, as it certainly can, this approach also can encourage interactive and creative thinking--one idea or response can be generated as a consequence of a respone submitted earlier.

The major points to be remembered are that you are trying to encourage representative participation, you want the time of participants to be well spent, and you want to develop some sort of consensus regarding the issue at hand. This can be achieved through NGT and other group process techniques.

Assessment Planning and Policy Linkages. I am sure that you are all familiar with plans which end up on the back burner if not in the circular file. The primary reasons for this, I feel, is that steps are not taken to assure that appropriate linkages are made between the assessment planning process and its products(s) and various levels of policymaking and their associated constituencies. To some extent this is comparable to strategic planning--it includes activities such as identification of potentially affected policymakers, inclusion of those policymakers throughout the planning process, tailoring plans to fit within the traditional parameters or dimensions of the policymaker's domain, and developing resources and support among the policymaker's conventional constituency.

For community energy planning, in the comprehensive fashion that Marty Schweitzer talked about, this means thoroughly scoping out the linkages that need to be made before the planning process itself begins. Bankers, architects, real estate people, utilities, property tax assessors, zoning commissions, city councils, developers, and contractors, among others, will ultimately make decisions affecting the implementation of the residential end-use component of any community energy plan. Other policymakers will be affected by and will affect the implementation of other components. Ideally, these same people will be included in the planning process at the very beginning, but if some of them are not, then, as strategic planners, you must learn enough about their interests and their powers and capabilities to develop plans responsive to their needs. This is not to say that your plans will mirror their needs (that is unlikely in any case, since their interests may conflict with others), but that you should know how decisions are made in your community, who makes them, and why they are made the way they are. One way of winning the support of decisionmakers who are essential to the successful development and implementation of your plan is to develop the support of that decisionmaker's particular constituency. Ring the chimes of those who ring the decisionmaker's chimes. In the case of local elected officials this may mean grassroots politicking, but for others this means developing support among homeowners, tenants, and investors, among others.

Although there is much you can do, by yourselves, in your own community, links also need to be made with state and national public and private sector groups. State legislatures and energy offices, public utility commissions, associations of tax assessors, and others can make significant inputs to your local efforts--they have resources, power, and capital. The same thing applies to the federal government, of course, in the executive branch (e.g., Departments of Energy, Housing and Urban Development, and Commerce) and in Congress. You should realize, however, that many commentators and analysts believe that the most exciting things currently taking place in energy planning and policy are found at the local level.

Conclusion

With your skills and your resolve, with the support of the citizens in your communities, you can go a long way toward helping to solve our national energy problems. At the same time you will be fulfilling your obligation and duty to protect and preserve the public safety and welfare of your community. In short, through community energy planning, you have the opportunity to help shape and design the future.

NOTES

1. B. H. Bronfman, S. A. Carnes, and R. S. Ahmad, "Community Based Technology Assessment: Four Communities Plan Their Energy Future," in Integrated Impact Assessment, F. Rossini, A. Porter, and C. Wolf, eds. (Elsevier, forthcoming).

2. J. W. Ostrowski and D. M. Crawford, The Kent Solar Technology Assessment Program: A Program Process Evaluation, ANL/31-109-38-5164 (Argonne, Illinois: Argonne National Laboratory, July, 1980); Future Studies Program, Franklin County Energy Study: A Renewable Energy Future, University of Massachusetts, Amherst, Massachusetts, August, 1979.

3. Southern Tier Central Regional Planning and Development Board (New York), Renewable Energy Resource and Technology Assessment, ORNL/SUB-7594-1, (Oak Ridge, Tennessee: Oak Ridge National Laboratory, December, 1978).

4. Ibid.

5. J. W. Ostrowski, D. M. Crawford, and C. A. Johnson, City of Kent Decentralized Solar Energy Technology Assessment Program: Process Workbook, ANL/31-109-38-5164 (Argonne, Illinois: Argonne National Laboratory, December, 1980).

6. A. L. Delbecq, A. H. VanderVen, and D. H. Gustafson, Group Techniques for Program Planning (Scott, Foresman, and Co., 1975).