

SOME ISSUES REGARDING REGULATORY POLICY,
POLITICAL PARTICIPATION, AND SOCIAL
IMPLICATIONS OF GEOTHERMAL RESOURCE
DEVELOPMENT IN THE IMPERIAL VALLEY

BY

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Authors' Prefatory Note

This applied research is exploratory in nature. Previous concern on the part of academicians and public officials in government agencies has been largely directed to the technical and economic aspects of geothermal resource development. This study may modify that trend by serving as a starting point to stimulate interest in the social and political context in which technological development of energy and water resources takes place. The authors hope that more intensive systematic research on the social and political implications of resource development will follow their efforts.

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Director's Note

The study related here was conducted as part of a grant in 1972-74 from the Water Resources Center of the University of California, Project #W-344. We are grateful to WRC and to its Director, Dr. Herbert Snyder, for his interest and support in our explorations of societal aspects of geothermal resource development. Neither Dr. Snyder nor WRC is responsible, of course, for the views of the authors.

We hope that this study will be understood as a contribution toward greater understanding, on the part of government officials at all levels, community leaders, and private citizens, of the diversity of public policy issues that the geothermal development potential raises--issues that are necessarily broader than that development itself. The study is intended to be tentative and exploratory rather than definitive, but we believe that such tentative issue papers fulfill a valuable public function in alerting relevant policy-makers to the fuller dimensions of problems on the public agenda.

Michael D. Reagan
Project Director and
Director of the Center

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We would like to add a special note of thanks to the public officials and community leaders of Imperial Valley for their interest in our research and for their generous expenditures of time in granting us the lengthy interviews that form the basis of this study.

SUMMARY OF FINDINGS

In order to delineate social and political issues relating to geothermal development, certain local government officials and community leaders in the Imperial Valley were interviewed on their perceptions of the potential of geothermal resources and regulatory problems implicit in development.* The researchers found that County officials exhibited a strong belief that they had an "overall responsibility" for the general welfare of the residents of Imperial County who would be affected by the potential economic, social, and environmental impacts of geothermal development. With little coordination among agencies at higher levels of government, County officials looked upon County regulations and coordination as a positive force that could: (1) minimize the negative impacts of geothermal development, (2) encourage multipurpose utilization of geothermal resources, and (3) improve land use planning within their jurisdiction.

Multipurpose utilization was viewed primarily in terms of water quality improvement for irrigation of agricultural lands, power generation for electricity and, to a much lesser extent, mineral extraction for commercial use. Existing patterns of regulation were seen as promoting piecemeal planning, a situation that was aggravated by the inability of the County to extend its authority to regulate Federal and State lands located within the County. County administrators recommended an expansion of the State Office of Planning and Research in order to accommodate the planning needs of

*The officials represented Imperial County and the Imperial Irrigation District, while a broad cross-section of community leaders included spokesmen for the dominant economic interest, agri-business, and the dominant ethnic group, Mexican-Americans.

sparsely populated counties and municipalities. They also felt that the lack of cooperation of the Federal Bureau of Land Management was a constraint on development of geothermal fields as unitized systems, a goal that some geothermal experts believe would lead to optimal use of land for extracting geothermal resources.

The researchers examined the theoretical and practical implications of decentralized decision making relative to the County's desire for overall planning at the "lowest level of decision making." They contrasted it with values implicit in centralized planning, such as the achievement of economic efficiency and optimum use of limited resources in response to perceived needs of the nation as a whole. They noted that some political analysts have recommended the formation of a super agency at the national level that could "efficiently" integrate environmental and energy policy. They pointed out, however, that values of economic efficiency and political expediency often come into conflict as greater coordination is required between levels of government and among government agencies. The most important decision at the State level was viewed by the researchers as the choice to be made by the California State Legislature of the agency or agencies that will be assigned formal authority for the regulation of geothermal resources. Such a choice could determine the degree of balance that will exist in the development of geothermal resources for electrical energy and water quality improvement in the Imperial Valley. Even so, the researchers concluded that County officials may eventually have to face up to a dilemma in values as the national need for energy overrides the County's desire for multipurpose utilization of geothermal resources.

Any substantial economic development usually generates social and political changes in the area in which it occurs. In this rural region, agri-business was found to dominate the economic, social and political affairs of the larger community. The researchers chose to examine current social problems and past political controversies in order to assess the nature of the changes that might be expected if spin-off industries follow the production of electrical energy. Five social problems were identified as salient issues by a broad cross-section of community leaders that included agri-business spokesmen as well as representatives of the dominant ethnic group, Mexican-Americans. Of the five issues--the problem of poverty, a lack of communication between Mexican-Americans and Anglos on certain issues, inadequate recreational facilities, a drug problem among youth, and a paucity of cultural activities--most were considered by community leaders to be related to the economic situation in the Valley.

There appeared to be a widespread acceptance by community spokesmen of the more positive attributes of economic growth. Community leaders asserted that even limited industrial development would help to alleviate the high seasonal unemployment rates that characterize this predominantly rural community. A more diversified economy, it was believed, would bring more jobs, a more broadly based middle-class, increased political representation for Mexican-Americans, and a greater variety of recreational and cultural opportunities. The polarizing political issues--unionization of farm laborers and the establishment of a federally funded medical clinic--were viewed as a reflection of changing demands made on a primarily elite group

of decision makers by newly emerging interests in the broader community. However, there was a consensus that any serious social or political problems could be solved in "good faith" through peaceful means, as they had been in the past.

While some community leaders were skeptical about whether or when development of geothermal resources would become a viable economic force in the community, not a single person interviewed expressed any objection to the potential development, perceiving it as a community benefit rather than a cost. Again, the general feeling was that if development takes place it will reduce the level of unemployment and create beneficial economic and social changes without intruding on major "amenities" values held by area residents. In the absence of industrial pollution in the Valley and with an abundance of land and clean air, environmental protection was found to engender little interest on the part of community leaders. In contrast, County officials and Irrigation District spokesmen were well aware of the potential environmental impact of even limited industrial development.

Public participation in local geothermal decision making was not encouraged by some County officials. Private citizens were viewed as having little to contribute during the initial "technical" stage of development. The researchers pointed to some potential pitfalls of such reasoning and suggested the costs and benefits that were implicit in governmental failure to include citizens in the formative stages of public policy decision making. In contrast, the Imperial Irrigation District had initiated a well-designed public information program that the researchers suggested would reach a wider audience through the use of bilingual educational materials.

Specific recommendations for improving the regulatory process were made by the authors that included organizational and procedural changes and amendments to state energy legislation. Suggestions for improving public input into the governmental decision making process were spelled out in the conclusion of the report in order to make geothermal regulation a joint effort of commercial developers, public officials, and private citizens.

INTRODUCTION

The early stages of geothermal resource development in the Imperial Valley have been characterized by an emphasis on the technological expertise of private developers and government officials. Government officials have created a complex array of Federal, State, and County regulations to monitor the development. Local control is under the jurisdiction of the Imperial County government. The County has as its responsibility the protection of the general welfare of its residents, including any potentially adverse social, economic, or environmental impacts caused by geothermal resource development.*

The land acquisition and resource exploration stages are now giving way to a stage of drilling on "Known Geothermal Resource Areas" (KGRA's), which have been discovered on both public and private lands. With growing national needs for new electrical energy sources, Federal lands have recently been opened to leasing by private developers--both large corporations and small independent companies--who previously had access only to privately owned lands. In the present stage, land use and potential environmental problems caused by drilling operations are dominant concerns of the Imperial County government.

Originally, geothermal activities in Imperial County by private companies focused on attempts to exploit the mineral and chemical potentials of the hot water that was extracted from the ground. Due to brine encrustation problems, this initial development proved to be technologically

*Imperial County is composed of the towns of Brawley, Calipatria, Calexico, El Centro, Heber, Holtville, Imperial, Niland, Ocotillo, Seeley, and Westmorland. It borders on Mexicali, Mexico.

infeasible. Currently, private developers and government officials are interested in geothermal resources as a source of water desalinization and electrical power generation. Since the direction of industrial development, particularly of the spinoff industries that may follow electricity generation is still to be charted, its socioeconomic implications for the local community are speculative at best.

Even so, experience with nuclear power plant siting in other localities suggests the advisability of assessing the interests and concerns of a broad sample of the public in the early stages of development in order to prevent dissatisfaction and unnecessary delay in operations at a later stage. There is an even more compelling reason for examining the socioeconomic and political context in which geothermal regulations are being drawn up. It is essential in a democratic society that the different interests of various segments of the public be identified so that government can be representative of, and responsive to, those interests. For these reasons, this paper will focus on four issues:

- (1) regulatory problems faced by local government officials in determining the course of development;
- (2) the social and political context in which the development is taking place;
- (3) the potential of geothermal development as perceived by community leaders and local government officials;
- (4) the desirability of expanding citizen participation in geothermal decision-making during a period in which, as public opinion polls indicated, many citizens feel separated from government actions which may significantly affect their lives.

In our discussion of these issues, we will examine not only viewpoints of local government officials but also the viewpoints of those citizens, or community leaders, who try to shape government institutions through their actions or expressed concerns. As investigators, we have value premises which we will try to make explicit. One such working assumption is that, in the long run, societal value questions are as important as problems of science and technology and that in many cases these various issues are actually intertwined. Another is that acts of government officials must be judged eventually in terms of such abstract criteria as the "good of the whole," defined not only by government officials but through citizen input, as well. We also recognize that there is not a single "public interest" but many "publics" with differing, and sometimes conflicting, interests.

A legally-based premise is that in the management of natural resources, it is the obligation of government to protect the interests of the various "publics" who own or are affected by the use of these resources and to see that the general welfare of the local people is not abused by private interests. In turn, private developers require assurance that their efforts will not be blocked arbitrarily by groups of citizens who oppose exploration and development of energy in their particular locales, while at the same time these citizens consume oil, gas, and coal extracted from sites in other locales. Thus, it is to the benefit of both County officials and private developers to understand the values, preferences, and perceptions of those community leaders and other local officials who will, in turn, spark the interest of the broader public. At the same time, the encouragement of

participation by a broad cross-section of residents may lead to greater understanding of the needs of previously inactive members of the broader public and may give these individuals and groups a feeling that they have a stake in the affairs of the community. The latter goal should not be minimized as a long-sought and still-valid principle of democratic society.

Methodology

The methodology used in this study consisted of elite interviews with those government officials who were engaged in any aspect of regulating geothermal resources in Imperial County. A cross section of community leaders in the County was also interviewed on the basis of their position in the economic, social, and political affairs of the area. Selection of these individuals (twenty government officials and community leaders) was made using techniques familiar in the sociological and political literature on community power studies. That is, certain individuals were selected because they held certain offices in the community (e.g., managing editor of the newspaper in the area with the largest daily circulation), while others were the most frequently mentioned individuals in particular categories, using knowledgeable informants identified by key officials or different types of organizations in the Valley. Direct quotations were checked for accuracy with the interviewees at the rough draft stage of publication.

In-depth interviews with County officials, Imperial Irrigation District representatives and community leaders, were held in Imperial Valley

during May and June, 1974.* Additional information was obtained by telephone interviews with representatives of the two major political parties and of other organizations in the Valley. Further information was gleaned from census data, newspaper accounts, Imperial County government documents, industry newsletters, technical and economic reports, government journals, and previous studies conducted at the University of California, Riverside.

REGULATORY PROBLEMS

Government regulation of geothermal resource development is multi-jurisdictional. Since this resource has three distinct uses--water, power, and mineral extraction--and also overlaps Federal, State, and private lands, various government jurisdictions, each concerned with a particular use, are involved in regulating it. Further, there are three layers of government that apply a broad array of rules and regulations to protect both the general public's interest and the health and safety of inhabitants of the area in which geothermal resources are being developed. However, the type of coordination among these agencies and jurisdictions that is needed to implement effective programs is not always easy to come by. Moreover, if the objectives of one agency or jurisdiction are in conflict with those of another, then the interests of the wider public may not be maximized.

With these orienting assumptions, we conducted in-depth interviews with County officials and Imperial Irrigation District spokesmen in Imperial

*Among those interviewed were County administrators, elected officials, Imperial Irrigation District spokesmen, farmers, Mexican-Americans active in community affairs, and a clergyman, as well as representatives of the business, legal, and journalism professions.

Valley, specifically probing into such matters as jurisdictional authority, inter-agency cooperation, suggested changes in regulations, and attitudes concerning public participation in government decision-making.

Interviews were held with the Planning Director of Imperial County, the County Counsel, the Director of Public Works, the General Manager of the County's economic arm, the Imperial Valley Development Association, and the County Agricultural Commissioner. The Chief Engineer and Public Relations Director of the Irrigation District were also interviewed. Some of these public officials had been identified by University of California researchers as being closely involved with geothermal development in the Imperial Valley. Additionally, interviews were requested of two members of the Board of Supervisors, one a present member and the other now a past member, who were said to be particularly interested in geothermal development. These Board members briefly discussed several issues with us and then referred us to those professional staff members whom they felt were "better informed on geothermal regulations." A newly elected member of the Board of Supervisors consented to a lengthy interview on issues that were largely nonregulatory in nature.

The first set of questions--asked of two County officials--centered on regulation. What do County officials feel are the advantages and disadvantages of having three sets of regulations? How cooperative are Federal and State government officials with County officials in regulating geothermal resources? How could cooperation be increased? Is the division of responsibility between governments satisfactory? Should any regulatory procedures be changed to protect the interests of the broader public?

The first question asked of two respondents was:

The existing pattern of Federal, State, and County regulations is highly complex. Do you see this pattern as imposing unnecessary impediments for the County, or are there any benefits from such a regulatory pattern?

The County Counsel, James Harmon, and the Public Works Director, David Pierson, have both built up a substantial amount of knowledge on geothermal development. The Planning Director, Richard Mitchell, also demonstrated great interest in the subject. Harmon stressed the point that the development must be multi-jurisdictional because three distinct functions are involved (power, water, mineral extraction) as well as the real property of the Federal government, the State, and private citizens. He added:

No jurisdiction has been established to fully coordinate the development of a (geothermal) anomaly. . . . A field should be developed as a system, that is, it must be unitized. Regardless of whether an anomaly is under private or public development, we're dealing with a geological phenomenon that requires that the most feasible field be tapped. I think the County has a real role to play, but we must recognize the need for the multijurisdictional coordination of anomaly developments.

Harmon's statement is reminiscent of Philip Selznick's observation in his study, TVA and the Grass Roots, that the Tennessee Valley Authority, in coordinating its various functions, tried to take into account "the natural unity of a region as an area of operation in resource development."* Pierson also felt that the regulations had to be multijurisdictional and did not feel that the complicated nature of the regulations served to prohibit County supervision of geothermal development.

*Philip Selznick, TVA and the Grass Roots (New York: Harper Torchbooks, 1966), p. 29.

Is cooperation among government jurisdictions hard to come by? The answer depends on the perspectives of County officials on jurisdictional authority and on who should regulate what. In Pierson's view, the County should have control over land use planning in the County even if the land belongs to the Federal government. Pierson argued:

The Federal government should be concerned with the seismic aspect and with geological surveying (vertical control, etc.). Beyond that, I don't agree with the course they're taking. The Federal government, as a landowner, feels that it is above anyone's responsibility. I consider them as just another landowner. When the Feds lease land to private or smaller governments, I see no difference from a farmer leasing his land. The County is responsible for land use planning for the environment and we are being cut out from this by the Feds. We should be able to determine which areas are open space, urban, or industrial. Some areas are checkerboarded with railroad land. The Bureau of Land Management is not under our jurisdiction but the railroad is.

Harmon, too, believes that the County should have primary responsibility over land use jurisdiction, planning, and zoning, unless special federal legislation precludes this.

In relationship to the State government, Harmon and Pierson emphasized the value of State expertise, or "quality personnel," in siting, supervising of the drilling of wells and of procedures to abandon them in a safe manner. Pierson explained:

One major area in which the State should have jurisdiction is in well drilling techniques and in the control of underground operations, since these are complicated and the County doesn't have nor can it afford the expertise needed. The development of the underground resource to its maximum extent should remain with the Division of Oil and Gas. I trust them. The State has a reputation for having quality people. We have minor policy disagreements with them but they're never over ability.

As would be expected, County officials emphasized their support of legislation and Federal and State procedures that would allow local input. They were particularly interested in the development of State programs that will help county governments to exercise more effectively the planning authority that they already have and in the improvement of coordination among public agencies.

Harmon urged the development of expertise in land use planning within California's Office of Planning and Research. He thought that the Office should expand its services to meet the needs of local governments by providing assistance for improving land use planning and in applying for Federal grants.

In Harmon's view, the authority of the State Geothermal Board was limited and ill-defined. Composed of State officials (in areas of conservation, geology, oil and gas, public utilities, and water resources), the Board had been assigned few working functions at the time of this study. Harmon also expressed the need for a State energy policy and alluded to the recently passed Assembly Bill 1575, the Warren Alquist State Energy Resources Conservation and Development Act. The Commission that was created by this legislation stipulated a membership that he felt was representative of a cross section of interests. He was optimistic about the bill as a possible source of a coordinated energy policy and noted with favor that the Act was "very helpful in allowing for 'local input' in connection with power plant siting." The County's Planning Director, in contrast, felt that the bill did not permit adequate local input and, for that reason, opposed its adoption.

Did the Federal and State governments adequately supervise private industry records and practices, or did County officials feel that this was a County function? The researchers were interested in this question because the Federal Power Commission has been criticized for a lack of adequate, independent information on natural gas reserves, which was said to have made the Commission vulnerable to duplicity on the part of the natural gas industry. In view of a similar questioning of the credibility of major oil companies by members of the general public during the 1974 gasoline shortage, the question of independent verification by the County of private industry records and practices was raised with County officials. Mitchell replied to this question:

There is little independent verification beyond State regulation. The County regulates whatever is above ground, and in that respect we know what has happened. If the noise is too great, for example, the County would shut down the drilling at night if it's near a person's house.

Pierson, who is a professional engineer, offered this explanation:

We require that industry have a registered civil engineer or land surveyor to accomplish a survey and turn the results over to the County. He is qualified by registration and education. So far, they have used engineers in the Valley. They are contract employees to the company. Besides, the oil companies are just as interested in honest results as the County is. They could be accused by farmers of subsidence and, therefore, want an engineer to fall back on. The oil companies have been very secretive about underground operations, but I don't need the knowledge now. I have no method of keeping confidential information. The Division of Oil and Gas has it.

The responsibility to collect information on underground operations is required by law of the California Division of Oil and Gas. Pierson also stated that relations with private firms were cordial, but they were limited to land use permits and the necessary road encroachments. He added, "We have worked to an

extent with them, but we haven't just given in so that the regulations can be met."

Environmental impact statements required by the National Environmental Policy Act of 1970 are a legal regulatory device imposed by the Federal government on all public or private projects which could have potentially significant effects on the environment. The County is presently recruiting a geothermal coordinator, whose responsibilities will include the formulation of Environmental Impact Reports (EIRs) required by State environmental legislation." Some environmentalists claim that recruiting people with genuine concern for environmental issues can help to change the values of that organization in such a way that the agency becomes more receptive to environmental concerns. Guided by this premise, we asked Planning Director Richard Mitchell what qualifications the new Geothermal Coordinator is expected to have and what tasks he is primarily interested in having this person perform. Mitchell replied,

....an environmental impact assessment. The person could be a geographer or a planner with current planning experience. An environmental planning background would be good, but those people are hard to get. The person doesn't have to have environmental experience but could come from a background of geography, urban planning, or public administration.

It would appear that the particular person who was hired could greatly determine the nature and comprehensiveness of the Environmental Impact Reports and could help to determine which individuals or groups are advantaged or disadvantaged by these Reports.

*According to the personnel office of Imperial County, a geothermal coordinator had not been hired at the time of publication.

County officials demonstrated great concern for environmental protection regulations quite apart from desiring to conform with Federal and State regulations requiring Environmental Impact Reports. Planning Director Mitchell saw development and environmental protection as the two dominant values shaping geothermal resource decisions in the County. Mitchell's explanation, while lengthy, offers a great deal of insight into the present value of environmental impact statements. Mitchell viewed the dominant values shaping geothermal resource decisions in the County as:

....development and environmental protection. The two have to balance one another. You have to think of the benefits the County would receive versus damages to the County, such as loss of productivity, relocation of families south of town, the implications of a full power plant if the Heber site is developed, the fact that Heber is low-income with 90% Mexican-Americans, and they have a water and sewage problem. The County, you see, is responsible for the unincorporated areas. It has the power to tax, to bond, to construct facilities. The County has to authorize subdivisions.

Mitchell then alluded to a particular problem:

....Take Heber, for example. The City Engineer went in there, when some new housing was being built, to assess the needs. In unincorporated areas, the County is given pseudo-governmental control. A mobile home caught on fire. There was no water. There was just water from the canal. The people couldn't irrigate, wash dishes, and fight fire at the same time. Now, if we had had a pre-environmental impact statement, it would have given us greater authority to investigate the situation. As it was, prior to changes in subdivision laws, there were inadequate parks, the school system was overloaded, and yet the County had no authority to turn down the new subdivision. The environmental impact statement may be a nuisance and so forth, but many people fail to see the purpose behind it. It can be a very effective tool for better understanding. Some people criticize it, because you have to anticipate the problems without pointing out the good things. There's also greater informal contact with other agencies that makes for better regulation.

Pierson, too, saw the environmental impact assessments as making County officials more aware of "certain aspects" which "caused us to look further into such matters as protection of wildlife." He added, however, that "terms, conditions, and standards" were adopted before the Environmental Impact Reports were mandated. County Counsel Harmon viewed State legislation as too limited even though:

....the Planning Division of the Department of Public Works does have some independent experts who pass the costs of drafting environmental impact statements back on to the developer, or we contract with the University (of California, Riverside) for special help.

What did the respondents see as the worst environmental problems that were related to geothermal development? There was a consensus that subsidence was the most formidable problem. Mitchell explained, "As they take the water out, the land may sink, and if there's a sloping problem, we could have one big sump hole!" Similarly, Harmon noted:

If the water that was produced out of the ground had a big effect on subsidence and irrigation--because there has to be a proper elevation in order to have proper irrigation--a drainage problem could result in the Valley with the Salton Sea at the low spot. The elevation could be messed up. In Baja, they don't consider environmental problems. There also could be a brine disposal problem, with the intrusion of industrial into agricultural land use.

County officials believed that certain elements of environmental quality should not be sacrificed to development. In Harmon's words:

I think we should preserve the rural-agricultural environment and not sacrifice long-term needs of metropolitan areas for short-term profits. We didn't even have gas rationing in the Valley. It's different from metropolitan areas.

Mitchell concurred with this viewpoint:

Our priority is protection of agricultural land. Industrial development should be on the marginal levels; that is, they must be adjacent to the land, not leapfrogging among agricultural lands.*

While the power generation of the Cerro Prieto power plant in Mexico appears to have had a favorable impression on County officials, what several perceived to be abuse of the land has made an equally strong negative impression. Mitchell pointed out:

Cerro Prieto was a big influence on geothermal development in Imperial Valley. Their operation goes on 80% of the time, which is a high generator operation period. But they made a mess out of the surrounding terrain . . . killed all of the vegetation.**

In the environmental impact discussion, Pierson linked the economic concerns of the County Department of Public Works with the impact of geothermal development on the general environment. He stated, "I hope the tax base will be sufficient for the increased services needed. The sites are remote and therefore we will need more roads, waste disposal, and inspectors."

When energy promotion and environmental protection functions exist within the same agency, the two have been found to be in conflict. This was the case of the Atomic Energy Commission, a regulatory agency whose functions have recently been separated by Federal legislation into the Energy Research Development Agency and the Nuclear Regulatory Commission. County officials

*According to David Anderson, Geothermal Officer, State Division of Oil and Gas: "Drilling of wells is not allowed in the middle of agricultural lands. The development is being done on the edges of the farm land and on corners so that the contiguity of the fields is not broken up."

**When geothermal drilling equipment was installed, Cerro Prieto land was not being used for agricultural purposes. It was a natural geyser area consisting of sagebrush, sumps, and roads, and the land was not being utilized for any special purpose.

were asked if there could be a similar conflict of interest within agencies regulating geothermal resources. Pierson replied:

We need both environmental protection and energy--environmental concerns mitigate energy development. I don't share the concern of some that energy production will have a devastating effect on the area. There is concern for agricultural land being used with geothermal development, but it's not being put into perspective. It doesn't require much room. Mitigation, yes---but some amount of land can be sacrificed.

Pierson seemed to feel that such a development was inevitable and suggested no means of separating the two roles of energy promotion and environmental protection.

How do County officials assess the cooperation between County agencies and Federal or State agencies? Pierson described the relationship between the County and specific State agencies. He asserted that cooperation with the Division of Oil and Gas was excellent. He further observed that the County's relationship with the Department of Water Resources is "reasonable" and with the Water Quality Board "good." Pierson also stated that because the State controls very little land in Imperial Valley relative to the Federal and County governments, the State Lands Commission poses no problems for the County, even though dialogue with this agency could be improved.

The main problems County officials encountered were with the Federal Bureau of Land Management. Harmon described the existing relationship:

There has been relatively little exchange between the Federal government and the County. In other words, we have been politely ignored. The Bureau of Land Management is in charge of leasing. There has been little communication of the Federal government's plans or intentions to develop any anomalies. The Bureau of Reclamation gives us very good information on water desalinization. We just don't know the intentions of the Federal government on

leasing--there's little input. The Department of Interior put out some bids on June 4 for some tracts on the East Mesa Anomaly, but we don't know anything about it.

According to Pierson, permit conditions make for contact among agencies, while conferences and telephone calls are the main channels of communication. Pierson commented that more frequent information meetings with the agencies would probably improve cooperation. He also stated that the number of jurisdictions that are responsible for geothermal energy could be reduced, because "as many of the control items as possible should be made ministerial." He did not, however, specify which "control items" he meant or which jurisdictions were expendable.

Possibly the most important insight of County government officials was their belief in the County's overall responsibility for the way in which geothermal development takes place. County officials stressed the fact that the County has an overall rather than a partial concern, in contrast with other agencies that have a particular functional responsibility (e.g., monitoring water quality). Pierson stated that all of the agencies have a part in the overall program of land subsidence, but it was the County that initiated policy on the matter, particularly in regard to agricultural protection. The County, he said, was also concerned with potential socio-economic impacts. He noted that State action came in response to the County's concern for the protection of existing agriculture.

Another local governmental agency which logically would have a particular interest in geothermal development is the Imperial Irrigation District, a special purpose district established (by local petition to the

State) to allocate water and electrical power in the local area. We asked several respondents about the level of the District's involvement in geothermal development. Some respondents noted that the Imperial Irrigation District's current involvement is much less than it will be once development occurs. These people mentioned that the District has leased land for exploration purposes, but their general impression was that the District currently took a limited role in development, acting more as an observer than as a stimulator to development. The sense was that the District preferred to allow others to develop geothermal energy in the Imperial Valley, and that once development occurred the District would assume a more active role.

Another respondent disagreed with these statements, arguing that the District has been quite active in geothermal development. He pointed to the District's leasing of lands, its cooperative arrangements with the San Diego Gas and Electric Company, and its various relationships with the U. S. Bureau of Reclamation as evidence of extensive District involvement in fostering geothermal development. Obviously, there was considerable disagreement about how "substantial" the District's involvement in geothermal development had been. This difference of opinion appeared to turn on evaluations of the District as a catalyst to development. Those who felt the District had stimulated development considered the District's role in geothermal development to be substantial. Those who saw the District as taking an "interested onlooker's" position argued that the District was not substantially involved in the development at the present.

One point which was repeatedly made by County officials was that they viewed themselves as having an "overall" responsibility for the general welfare of the citizens of Imperial Valley. Again, the philosophy of the Tennessee Valley Authority, in support of decentralization of responsibility is in some respects similar to that of County officials who believe that their job is to identify and to meet particular needs and problems of residents of Imperial County. Philip Selznick in his book, TVA and the Grass Roots, described the philosophy:

The place for the coordination of progress is in the field away from the top offices which are preoccupied with jurisdictional disputes and organizational self-preservation. Coordination should be oriented to the job to be done, centering federal authority and its administrative skills and power upon the special needs and problems of the area.*

What is of interest to us is that County officials assume the necessity for coordinating energy policies and for coordinating water resource policies at the County level without speculating on the locus (i.e., national, regional, State) of the central regulatory agency to which they and other agencies would be held accountable. Indeed, this is a difficult question for those Federal and State officials who are paid to ponder such relationships, as well as for those social scientists who are concerned with giving the relationships a theoretical rationale.

A theoretical digression is therefore necessary at this point to understand the difficulty of formulating a workable regulatory plan for geothermal resources.

*Ibid., p. 29.

THEORETICAL AND PRACTICAL DILEMMA: CENTRAL PLANNING
VS. DECENTRALIZATION

Theoretical Dilemma: A Conflict of Values

The two themes of decentralization, or local/district or field responsibility for public policy, and central planning, or rationalized, coordinated policy-making at the national, regional, or state level, continue to dominate the discussions of policy analysts of natural resource development. Yet, in the case of geothermal resource regulation, both the frequently proposed centralized policy and the existing decentralized policy face serious problems in theory as well as practice. The decentralization theme, in our view, fails to deal adequately with the conflict of values that is produced when numerous government jurisdictions have responsibility for the same policy. Relatively narrow, local interests may place a constraint on national values and needs (e.g., for electrical power). Consequently, as McConnell observed, the question of whether a constituency is narrowly or broadly based may present different results in the "distribution of benefits to different groups and in the favoring of some values over others."* In contrast, proponents of central planning attempt to combat the problems produced by piecemeal, fragmented, ineffective policies by establishing a coordinating agency which will presumably take into consideration the diverse values and broader interests of the more inclusive constituency. However, they generally fail to examine the question of whether such overall planning is possible, given existing

*Grant McConnell, Private Power and American Democracy (New York: Vintage Books, 1970), p. 117.

government agency objectives, organizational patterns, and the frequently cited bureaucratic resistance to change. The question of how central planning can be brought about is rarely related to policy implementation at the local level. The potential impact of such a policy on local government decision making is often inferred but seldom demonstrated.

Some County officials in Imperial Valley have expressed the seemingly paradoxical notion of overall planning at the "lowest level of decision making." By this they mean that planning considerations should focus on total anomaly development in which geothermal fields are developed as unitized systems. Currently the County regulates privately owned lands, the State has authority over State-owned lands, and the Federal government controls Federal lands, a pattern of regulation which results in piecemeal planning and jurisdictional confusion. One County official stated, "Geothermal anomalies should be developed under comprehensive plans designed to effect optimized power production and multipurpose utilization consistent with environmental protection." Yet, at the present time, there is no existing agency or unit of government other than the County which is concerned with multipurpose utilization of geothermal resources.

Because Federal resource agencies are generally decentralized and grant their district offices considerable autonomy, decisions that are made by these agencies are presumed to be closely related to local needs and objectives. However, district offices have not come to grips with a major problem of decentralization, namely, that at each level of decision making

government agencies may pursue different policy objectives, and, as a result, local needs may conflict with State, regional, or national needs.

For example, if Imperial Valley residents decided to establish their own utility company for the production of electrical power to utilize locally-developed geothermal energy, it might be possible to attract industry to the area. This would occur only if savings in transmission costs would offset other locational costs, such as those arising from Imperial Valley's distance from major markets (e.g., Los Angeles and San Diego). These local priorities may conflict with State priorities to develop geothermal energy to benefit the State as a whole. The priority of private developers, in contrast, is to sell the energy at the going energy price to public utilities which, in turn, want to meet existing demands, which are predominantly outside the Valley, notably in Los Angeles and San Diego. The supply of geothermal energy may not be sufficient to satisfy all of these demands. Under such circumstances, would the County government be able to "coordinate" the needs of broader jurisdictions and those of their local constituency? Would a regional organization better facilitate "multipurpose utilization" of geothermal resources to encompass not only electrical energy production but water quality improvement and mineral extraction, as well? Or would a joint County-State-Federal commission be more feasible? These are questions that must be confronted by County officials who advocate a form of decentralized decision making, that is, overall planning at the "lowest level of decision making."

The central planning theme has been expressed by writers Stanley Scott and Samuel E. Wood in the publication, Cry California. Scott and Wood

lamented that the development of geothermal resources

....has the appearance of an orderly approach to developing geothermal resources. But in fact, the effort is disorganized and limited in purpose, being guided principally by the narrow objective of getting geothermal resources on the market. Thus, the programs are not directed by any overall strategy or planwhich would relate the production of energy and water to state or regional needs.*

Aaron Wildavsky referred to this type of overall planning theme as exhibiting the "centralizing bias." It is a familiar prescription, accepted not only by journalists and professional planners but by social scientists, as well.

Political scientist Terry Gilbreth, for example, who conducted an intensive investigation of the regulatory aspects of geothermal development in Imperial Valley in 1972-73 manifested the "centralizing bias" in the conclusion of his study, Governing Geothermal Steam: Intergovernmental Relations and Energy Policy (1974).** He described the lack of geothermal planning as follows:

There has been no attempt to plan for its development, to critically examine the societal implications of that development or its implications for the other energy industries, and, in general, no attempt to fit it into an integrated, coherent, and comprehensive policy for energy.

Gilbreth demonstrated elsewhere in his study a substantial awareness of the problems involved in central planning, but what such a "comprehensive" policy should actually look like and how it is to be brought about are questions that most proponents of central planning leave unexamined. Instead, they rightfully

*Stanley Scott and Samuel E. Wood, "California's Bright Geothermal Future," Cry California, Vol. 7, No. 1 (Winter 1971/72), pp. 15-16.

**Unpublished Ph.D. dissertation, University of California, Riverside.

Public officials and private industry spokesmen agree that existing decentralized energy policies simply do not confront the needs of the times. State public utility commissions, for example, are facing the dilemma posed by scarce energy resources, an unremitting public demand for these resources, and a growing consumer dissatisfaction with high electrical energy prices. They are increasingly seeking the direction of national policy makers to cope with the dilemma.

A major problem with geothermal resource regulation is that even though a rationalistic philosophy points to the need for an agency to fit a particular problem "like a glove," geothermal development has a multifunctional dimension (i.e., water, power, and mineral extraction) that is not easily amenable to control by a single "super agency." Nevertheless, the question of which national, regional, or state agency, if any, will eventually have primary responsibility for geothermal development will be critical to the "societal implications" alluded to by Gilbreth.

As Mazmanian and Neinaber pointed out, "since bureaucracies over time became closely allied to their natural clientele, they overlook, ignore, and/or minimize the significance of other interests that may appear to them to have little to do with their programs."* Consequently, at the State level, longstanding agency-clientele relations between the Division of Oil and Gas and major oil companies could mean that primary responsibility for geothermal

*Daniel A. Mazmanian and Jeanne Neinaber, Bureaucracy and the Public: A Case of Citizen Participation in the Corps of Engineers (Paper presented at the Midwest Political Science Association Annual Meeting, Chicago, Illinois, April 25-27, 1974), p. 36.

development and less on water quality improvement and mineral extraction. Oil companies may only be concerned with selling steam for power production but may not have sufficient economic incentives for desalinizing water. Desalinization of brine to produce a source of water to augment the Colorado River is the principle concern of other interests. Thus, if the State were to grant primary responsibility to a land use or water agency, then agricultural interests or other local concerns might be enhanced. For these reasons, the decision regarding which agency should regulate geothermal resources in the State of California may have far-reaching implications for the various interests that will find themselves advantaged or disadvantaged by such a decision.

Practical Dilemma: Providing Regulatory Safeguards

The problem of providing regulatory safeguards at the State level to guard against private and public abuses in geothermal development is still to be solved. County officials would like to see greater land use planning by the State government and the inclusion of a geothermal element in the planning. Again, a number of factors suggest the probability that such an element--if it is intended to be comprehensive--will not be forthcoming. Constraints that readily come to mind are the low level of information on underground operations distributed by private developers in a highly competitive industry, the legal requirement preventing the Division of Oil and Gas from divulging technical information received from private operators, and the lack of cooperation by the Federal Bureau of Land Management in regard to County requests to include Federal lands located in the County in local land use planning.

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It would appear that a State coordinating agency might have to guard against the possibility of too much control in the hands of private developers. As Gilbreth pointed out, at the State level the California Division of Oil and Gas has taken upon itself the responsibility of encouraging geothermal energy development. Even though it has no clear legislative responsibilities relative to geothermal development, apparently the Division of Oil and Gas has assumed a leadership role because no other State agency was willing or able to do so. In addition, there are no formal lines of communication between State legislators and County officials, so that local priorities are not formally communicated to those elected officials on key committees who establish the legislative priorities that relate to geothermal development. Consequently, during the early stages of development, geothermal development has been almost exclusively the prerogative of private developers and government officials intent on making geothermal resources marketable. Whether or not a predominantly technological emphasis has impeded a careful consideration of the adequacy of State planning and regulatory mechanisms is not known at this time.

While noting problems inherent in the formation of such an organization, Gilbreth has suggested the possible need for a watchdog agency or committee to monitor geothermal development. We asked the County's Planning Director the following question: Do you think there ought to be any special watchdog agency to insure that the public is adequately protected from any possible private industry abuses? If so, who should run this agency, and what do you think should be its functions? Mitchell replied:

The watchdog should be the courts. Beyond that, I think the best control is at the lowest possible level. It should be here, and it should stay here. The lowest level is the best level.

County officials seem convinced that the County and the Courts provide the most adequate regulatory safeguards for local citizens. On the other hand, in the functional area in which County government is most interested, land use, County officials believe that there is considerable room for improvement. They have expressed the need for greater attention to coordination and communication among government agencies as well as overall State government articulation of responsibilities and priorities in the development of geothermal resources. An additional impediment to the County's progress in planning for land use has been the lack of coordination and, to a lesser extent, cooperation among the various levels and agencies of government. As a result, County officials have found it difficult to formulate a workable set of regulations that encompasses a number of functional areas. For example, while State agencies have cooperated in water resource development, the Federal government has ignored requests that Federal lands be included as elements in an overall County land use plan, thereby limiting the capability of County officials to plan as effectively as they would like to. Even so, regulation of geothermal development has proceeded at a slow enough pace to allow County officials to formulate carefully worded zoning, exploratory permit, and environmental protection regulations to control for land use that many community leaders have found impressive. County officials appear to be fully aware that in the long run, regulations drawn up at the County level will be evaluated on the criterion of how well they meet the broad social responsibility that the State government has delegated to local governments. To be successfully carried out in later stages, geothermal planning must, therefore, be integrated into the social and political life of the area.

SOCIAL AND POLITICAL CONTEXT*

It was mentioned at the beginning of this report that the authors intended to describe the social and political context in which geothermal development might occur. Our interest is in identifying the possible impacts that any substantial degree of geothermal development may have on social life in the Imperial Valley. While it is impossible to anticipate these impacts with any degree of accuracy, knowledge of the existing socioeconomic and political context may suggest the nature of future problems to government officials who make public policy or to employers anticipating moving to the region. This description does not include such matters as the high degree of social life in voluntary associations (such as service clubs, civic organizations, and other social groups), which is characteristic of the Imperial Valley, or of the broadly-based support of community-wide projects exhibited by some of these organizations. The study is restricted to social and political problems, as they were perceived by a broad cross-section of community leaders, including farmers, a clergyman, political party spokesmen, officers of social and civic organizations, Mexican-Americans active in community affairs, and representatives of the business, legal, and journalism professions.

Five important social issues were identified by our respondents: the problem of poverty, a lack of communication between Mexican-Americans and Anglos on certain matters, inadequate recreational facilities, a drug problem among youth, and a paucity of cultural activities. Problems relating to the Mexican-American segment of the population were the most intensely expressed and form

*Empirical data used in this section was derived from 1970 census data and the County Plan of Imperial County.

the major focus of this section. The other problems were generally described as inconveniences, beyond resolution, or not serious at this time. However, some of the respondents perceived all of the problems as relating to the economic character of the Valley, or, more specifically, to the high rate of unemployment and the lack of a strong and diversified economic base that would retain and attract middle class residents.

Any profile of the socioeconomic context of the Imperial Valley must include the fact that migratory patterns related to geographical proximity to Mexicali, Mexico, have resulted in an ethnic mix in which Mexican-Americans slightly outnumber Anglos in the area population. The major industry in the Valley, agri-business (i.e., large farms and related businesses), is predominantly owned and managed by Anglos. Mexican-Americans generally comprise the agricultural work force and are disproportionately low-income relative to the population as a whole. Given this contrast, the problem of poverty was generally viewed by our respondents as being structural in nature, since it reflected the lack of availability of jobs and insecurities relating to migrant farm work. The responses of those interviewed indicated that County residents as well as public officials were concerned with solving these basic economic problems.

Without exception, our respondents stated that unemployment was a major problem--probably the major problem of the area. Moreover, there was agreement that the dominant factor in this situation was the absence of a diversified economy and the consequent lack of nonseasonal employment opportunities. Only a very small proportion of the population is employed by

manufacturing concerns not dependent on agriculture. Those who do not work in agriculture tend to work in government positions. This lack of diversity has several consequences for Valley residents.

First and most important, the unemployment rate in Imperial County during the past two decades has consistently been considerably higher than the rate for the State as a whole. The difference would be even more pronounced except for the fact that a number of the unemployed have tended to leave the area in the off-farm season. In addition, as the data below illustrate, Mexican-Americans (who dominate the farm labor force) are disproportionately affected. It is a well-documented fact that the mechanization of agriculture is displacing an increasingly large number of farm workers. The average agricultural employment in Imperial County decreased from 14,700 workers in 1960 to 7,650 workers in 1969 (County Plan, p. 3). Even this figure is constantly dwindling.

A second consequence of the County's economic structure is that area residents are faced with the scarcity of such amenities as medical facilities, cultural activities, and recreational facilities and programs, which increased general wealth could support. (Some respondents linked the use of drugs by young people in the community to the absence of recreational outlets.) Further, lack of economic opportunity was blamed for the fact that a number of the Valley's most productive and energetic members--that is, those in the 24-44 years old age group--have been leaving the area. In the period 1950-1970, the State's population in the 25-44 age category has increased 43.8%. During the same period, Imperial County's population in this age cohort has decreased by 6.2%.

At present, Imperial County is estimated to be 47.5% Mexican-American, 46% White or Anglo, and 2.5% Black.* It was noted above that the Mexican-American population suffers noticeably more from unemployment than does the Anglo population. This condition has several correlates. First, the fact that this ethnic group is overrepresented to such an extent in the farm labor force means that they are disproportionately subjected to the seasonal nature of employment, the vicissitudes of the farm industry, and the dislocating effects of mechanization. The children of migrant workers suffer greatly from a lack of continuity in schooling, which does not facilitate the learning of English, a prerequisite to success in the school system. In addition, migrant workers are unlikely to be involved in community affairs since they do not experience residential stability. Secondly, while the standard of living of the entire Imperial Valley population tends to be lower than that for the State as a whole (ranking 46th in median family income among California counties in 1960), Mexican-Americans in Imperial County are more severely affected. Among other things, they have difficulty finding adequate housing since there is a shortage of low-income housing and many of the existing dwellings are sub-standard. It can be concluded, then, that a high priority item in the County would be the improvement of the living conditions of the poor in general--but most specifically of the Mexican-American community.

*It is difficult to describe the area's ethnic distribution precisely since a large percentage of its population is composed of migrant farmworkers and their families. In addition, one of the Valley distinctions is the "international commuter phenomenon." It is estimated that during peak farm seasons 10,000 Mexican nationals per day cross the border into Imperial County. Since a number of these "greencarders" are in the process of becoming resident Americans, it is not possible to have census statistics reflect this trend exactly. It is reasonable to assume, however, that the numbers of Mexican-Americans in the County are underestimated by the official statistics.

Ethnic group conflict was defined by several respondents in terms of unfair treatment of low-income Mexican-Americans and of Mexican immigrants who are not yet American citizens. For example, a water shortage experienced in Heber, an unincorporated community composed mainly of low-income Mexican-Americans, generated considerable dissatisfaction with the County's handling of the matter. The situation in Heber was summarized by Luis Legaspi, the newly elected Mexican-American member of the Board of Supervisors.

It used to be a community of 900 people. There was a bond issue to update the water unit. A developer applied to the County to build 256 houses and was allowed to do it. The County was supposed to review services, but it sublet the reviewing to an engineer in the Valley who went to the Water Board in Heber and warned them that there would not be enough water. There was only enough for 1,300 people, and with the new housing there would be over 2,000 people. Therefore, there would be a water shortage. The developer (successfully) lobbied against the engineer who was proved later to be right.

Apparently, it was felt that the County would have been more attentive first to the warnings and later to the complaints of residents if the problem had arisen in a middle or upper class--that is, in a predominantly Anglo--community. Several respondents pointed to a "communication gap" with some Spanish-speaking Mexican-Americans in the area, instead favoring "developer" interests.

Political participation, beyond voting has apparently been limited in this nonmetropolitan, rural, desert community. Political activity, when it occurs, tends to be issue-specific, alliances dissolving when the issue is resolved or dropped. There are few politically-oriented groups other than political party organizations. As is generally the case in other communities, these latter organizations are active primarily at election time. Even so,

according to a spokesman for the Central Committee of a political party, it is easy to mobilize large groups of people for public meetings when people believe that their presence will affect the outcome of governmental decisions (e.g., in school board meetings).

The general impression concerning the County's political climate derived from the responses of informants is that people feel that there are no deep-rooted social issues which divide Valley residents and, as a result, there has been relatively little overt conflict. Some respondents, notably those who were prominent in the community, thought that the lack of conflict resulted from the real absence of grievances--that is, people understood each other and felt that they were being treated fairly.

Other respondents, however, held a less sanguine view of the political climate. While it was agreed that the Imperial Valley is certainly not divided by political differences, their opinion was that there were segments of the population that were being overlooked for one reason or another. For example, while farmworkers might have many legitimate grievances such as the lack of low-income housing available to them, Mexican-American respondents asserted that farmworkers have neither the time, energy, nor political knowledge to press government for change nor to attend meetings where matters relevant to them are discussed. As one informant put it: "The farm worker gets up at 2 or 3 a.m. and come back at 3 or 4 p.m. This is a burden so he doesn't have time and he's too tired to go to meetings and complain." Another commented that the low level of education made it difficult for people to be informed about the issues. Respondents felt that as Mexican-

Americans gain greater political influence, latent grievances will surface and spokesmen who represent farmworkers will express that group's preferences.

While political polarization is the exception rather than the rule in Imperial County, two issues were repeatedly described by respondents as the most controversial in recent years. Unionization of farm labor was the most heatedly fought issue, one eventually resolved by the selection of the Teamster's Union as the representative of farm laborers over, as many community leaders phrased it, "Cesar Chavez." In this predominantly conservative county, unionization was a polarizing issue that united conservatives but divided liberals, Mexican-Americans, and political parties into different factions that were pro or anti-Chavez.*

The second issue was the establishment of the Federally funded "Clinica," a health care center organized through the California Rural Legal Assistance (CRLA) organization. The Clinica, which hired four physicians to provide medical services for low-income residents of Imperial County, was opposed by the local medical association on a number of grounds, including alleged discrimination against the Anglo poor. The current director of the CRLA stated that improved channels of communication led to satisfactory resolution of the dispute.

*The strong opposition to Chavez and the United Farm Workers was reported to be linked mainly to the practice by Chavez of controlling the selection of farmworkers and eliminating the right of foremen to hire and fire workers, regardless of the workers' skills or industriousness. Proponents of unionization felt that the Teamster's Union benefited from the initiative and organizational efforts of the United Farm Workers and was selected only because growers looked upon it as the lesser of two evils.

Of all of our interviewees, only a County official and the Mexican-American spokesman spontaneously commented on social problems in the area. They expressed the opinion that many community leaders wanted to keep controversial social items, such as the militancy of some Mexican-Americans, off the agenda of government. When we asked a longtime member of the County Board of Supervisors about the matter, he concurred with this opinion. He further suggested that wider citizen participation was not being encouraged by the Supervisors because it would open the community up to the type of conflict and controversy that most supervisors would like to avoid.

A number of community leaders, however, spontaneously commented on the reporting of several important issues in the Valley's major newspaper, the Imperial Valley Press. They felt that there was little investigatory reporting and the presentation of the news was biased in favor of the status quo, a fact that made it difficult for readers to understand or to gauge community feelings about these issues. Our own perusal of the newspaper, which covered a year of back issues (1974-1975), revealed the printing of diverse points of view in Probe, the letters to the editor column, and editorial support for the election of the Mexican-American candidate who ran against an elderly, long-term incumbent. The incumbent was subsequently defeated. While we were unable to assess the validity of the "biased reporting" charges without a content analysis of the newspaper covering a number of years, future researchers who are interested in the social and political environment of the Valley may want to investigate this matter.

There was agreement among most respondents that the most significant political activity revolved around an elite group which consisted of large farmers, the Board of Directors of the Imperial Irrigation District, the Board of Supervisors, and certain businessmen in the area. Some community leaders described the Irrigation District Board and the Board of Supervisors as being dominated by large farmers or their representatives. However, one indication that areawide decision making is becoming more representative of the broader community is the election of Luis Legaspi to the County Board of Supervisors. Legaspi is the first Mexican-American to achieve a prominent political position in County government. It is significant that Legaspi was elected not only with the support of the Mexican-American community but also with that of a cross-section of the general population and, as mentioned earlier, was endorsed by the County's major newspaper. Experience in other communities suggests that as the number of Mexican-Americans who are elected or appointed to governing boards increases, social problems that were previously not considered by governmental bodies will be placed on the agenda.

Certain respondents asserted that there is an increasing number of informal Mexican-American leaders who are taking an interest not only in specific community issues (e.g., increasing the number of parks) but also in more partisan issues (e.g., increasing their representation in government). While some respondents pointed out that the County's political structure is not sufficiently representative of Mexican-American interests, it was never once suggested that "noninstitutionalized" means might be necessary to bring about change. In a conversation with one of the more prominent Mexican-

American community leaders, the interviewers had the distinct impression that, far from being "alienated" citizens--that is, citizens often described in current social science literature as lacking a sense of efficacy and a feeling of attachment to the political system--Mexican-American leaders were, rather, optimistic about the potential of organization for political action.

In summary, the prominent decision making bodies in the County are at present overwhelmingly composed of middle-class Anglos. At the same time, there has been, until recently, a noticeable absence of political activity on the part of the Valley's major ethnic group--the causes of this inactivity lying in such factors as lack of political skills, a language barrier and, for a large percentage, the practical burden of the farm worker's life. However, the above situations are in the process of transformation--a transformation that seems to be occurring in an atmosphere of "good faith."

The previous section of the report dealt with certain social and political characteristics of Imperial County. The next section will examine the relevance of these factors to the issue of geothermal development in regard to the following questions:

1. How is the potential of geothermal development viewed by County residents and politicians in light of the area's economic problems?
2. How, given the Valley's political character, can public participation be enhanced?

THE POTENTIAL OF GEOTHERMAL DEVELOPMENT

The potential of geothermal development is seen by those citizens in the County who are aware of it as one possible, and perhaps very significant,

solution to the area's economic problems. Interest is not motivated by the actual development itself since it is realized that only a small number of the technically skilled will be needed for such development. Rather, those interviewed expressed great interest in the industries that very possibly will be attracted if electric power is made available to them at a reasonable price. According to a County report,* one of the reasons the County has had difficulty persuading industry to locate there is the high cost of area utilities. Presumably, locally produced geothermal power will result in a reduction in the cost of power and an increase in its availability. However, as was stated earlier, it is not at all clear whether or not local priorities will conflict with State priorities to meet the electrical power needs of the State, as a whole.

The promotion of economic growth was the main value priority expressed by the majority of respondents, who felt that bringing jobs to the area through secondary industries (e.g., food processing) would be the most beneficial aspect of geothermal development for Imperial County residents. Environmental protection was found to be an issue of low salience for most of our respondents because of the abundance of land in the Valley and the absence of industrial pollution. Community leaders indicated that the formulation of strict environmental standards by the County government had engendered a trustful attitude among residents that governmental officials were adequately safeguarding their interests. Consequently, land owners and homeowners near

*Overall Economic Development Plan, County of Imperial, 1970.

geothermal sites demonstrated little fear over such potential hazards as land subsidence, well-site problems, the placement of transmission lines, and possible well blowouts.

While there was some skepticism over when or whether development would actually take place, none of the respondents was opposed to geothermal development. The consensus was that if development does take place, it will reduce the level of unemployment and create beneficial economic and social changes without intruding on major "amenities" values held by area residents. Moreover, our respondents did not believe that economic prosperity would drastically change the size of the County's population. They felt that the skills of many of those workers who were presently unemployed could be utilized in geothermal spinoff industries. The promise of more professional and managerial positions was viewed as an incentive for young people who were college-educated to remain in the Valley rather than to move to more economically lucrative regions for employment.

However, the County's unemployed work force may not be suitable for the kinds of jobs that new industry would make available. While information on those seeking work is incomplete, the unemployed have been found to be disproportionately Mexican-Americans who were formerly farm laborers, many of whom are not English speaking. National studies have suggested that there is little transferability of skills from farm labor to industrial work. Apparently, training programs have met with mixed success. If this point of view has any merit in Imperial County, the County's economic development agency will have to attract industries that utilize existing labor skills. Otherwise, if industries

must support labor, then development might have the effect of increasing the County's population without significantly affecting its unemployment problem.

However, the Greater Brawley Development Corporation argues more optimistically in one of its brochures that Brawley and Imperial County have an excellent supply of trainable labor, with 2,100 applicants on file in the area office of the California Department of Human Resources. Further, the majority of those interviewed felt that, with the help of Federal manpower training programs, the Valley's unemployed (as well as youth) will both be suited for and will welcome industrial work. As an Office of Economic Opportunity official, in discussing his clients, expressed it, "It's more appealing to work in a factory than in the fields."

On the basis of existing evidence, it would be hasty to speculate on whether or not Imperial County has a labor force adequate to fill potential industrial positions. It is still not known specifically which industries may be attracted to the Valley and therefore what kind of technical, managerial or operative skills will be required. It seems reasonable to expect industry initially to have to import personnel to fill at least some of the more specialized positions. Further, there is not enough background information on the unemployed to judge how much retraining they would require. It should be possible at a later stage of development to reach more definite conclusions.

EXPANDING CITIZEN PARTICIPATION

In the absence of environmental and other interest group activities in Imperial County, it is probable that geothermal resource development will be looked upon by the general public as a technological issue that is largely

the prerogative of County officials and private developers. One County official believed that at the exploratory stage, any public participation would be "wasteful and delaying. The issues are too technical at this point." Consequently, keeping the public informed on the progress of this development has not been a high priority of County officials at this time. In contrast, the Imperial Irrigation District newsletter, the District News, provides extensive coverage of geothermal development. The District Public Relations Director also makes available for public use films and other educational materials on geothermal development. Despite an imaginative array of services, the District has not reproduced any of these geothermal materials for the Irrigation District's Spanish-speaking clients who either do not read English or find it easier to conceptualize in Spanish.* In addition to these informational sources, local newspapers print notices of public meetings relative to geothermal development and report on other events involving geothermal resources.

Do the benefits of keeping citizens informed on geothermal development outweigh the costs? We believe that they do. If public officials in Imperial Valley are to use their regulatory duties to "protect the public interest," then they must know what those interests are. The most direct way in which a

*Bilingual publications, in addition to serving a symbolic function of recognizing California's close historical and cultural ties with Mexico, can help lead to expanded citizen awareness and political participation. In communities in which many residents have a language other than English as their principle language, publications which seek to provide information to the general public often are bilingual in order to reach effectively those for whom Spanish, for example, is the native, and perhaps sole, language of communication (e.g., ballots, certain utilities statements, etc.).

government agency can identify the interests of various segments of the public is to encourage public participation in decision making, that is, to provide the means by which public officials can measure the preferences of the various "publics" that they serve.

Whether County officials will encourage citizens to take an active interest in the environmental and ecological aspects of geothermal development in later stages may depend, in part, on the interests and personality of the person who is hired as geothermal resource coordinator, the tasks that he or she is assigned, and the initiative displayed by this coordinator in involving the public in what one County official described as "proper decision points." Certain positive benefits may result from such involvement. Ongoing concern will result in greater understanding of problems which may mitigate later conflict. Questions may be raised early enough to prevent or mitigate potential problems, while future economic costs may be lowered, or even eliminated, through early anticipation of these problems. The consequences of greater citizen participation may also be negatively perceived by decision makers. County officials in Imperial Valley may find that citizen participation means higher expenditures of time, personnel, and money in order to provide greater information to the public and to set up the machinery for feedback from the public. In addition, citizen participation may mean costly delay for private developers that will, eventually, be translated into higher costs for consumers. As a high risk venture that requires a long lead time before the product is marketable, geothermal development must be economically competitive with other energy sources in order to insure the continued investment by those interests that have leased land.

Nevertheless, while few would argue that efficiency and economy are not important in the development of geothermal resources, environmental costs may be even more damaging in the long run for the health and safety of Imperial Valley as well as for its future economic welfare. The Calvert Cliffs vs. AEC (449 F.2d 1109, 1971) court decision required the Atomic Energy Commission to take responsibility for assessing the environmental impact of nuclear power plant construction. The decision exposed the fact that economic growth factors have been overly represented in regulatory commission policy making and environmental values underrepresented. Inclusion of citizen representatives in the drawing up of environmental impact statements and in permit hearing requirements in Imperial Valley is an attempt by the Federal and State governments to provide a balancing mechanism that carefully weighs environmental costs along with technical and economic costs on a case-by-case basis. In addition, participation with genuine two-way feedback serves the value of "efficiency" when it provides a source of new, inventive, innovative approaches with new patterns of communication, an exchange of factual data and attitudes of mutual concern, and a collection of intelligence that reduces the isolation of the government agency from the people at large. Such isolation may lead to later delay if members of the public are forced to file lawsuits on matters that could have been informally settled if better patterns of communication had existed. The above arguments would seem, then, to refute the contention that widespread citizen involvement is incompatible with bureaucratic values.

Some people feel that professionals in government are not receptive to the viewpoints of the "little people" in a community. They claim that

"professionalism" and "expertise" nurture class distinction. The language, or argot, of the highly educated is vastly different from that of people with limited formal education. In a community like Imperial Valley which borders on a nation in which another language is spoken, this type of communication problem is aggravated by the lack of bilingual information for those highly mobile Mexican-American citizens who travel back and forth between the two countries. In addition, a number of our respondents felt that the interests and viewpoints of certain groups in the community were consistently overlooked by County officials.

One of our recommendations in the section that follows is to make a concerted effort to open up the geothermal planning element in the County's land use plan to different segments of the public. The warm, friendly qualities that our respondents described as characteristic of Imperial Valley-- and that we, as interviewers, also observed--should not be adversely affected by broadening the governmental decision base. "Public" involvement may turn out to be limited in practice, with the same "elite" groups attending hearings and being heard. On the other hand, there is increased representation on the Valley's governing boards of Mexican-Americans with a special interest in improving the education and employment opportunities of a growing bilingual population. Communication between public officials and Spanish-speaking residents will probably improve as a result of this official representation. Such communication may, over time, generate increasing participation of a broad cross-section of citizens in public hearings, on commissions, and on advisory boards. This increasing interest in community affairs may eventually

benefit the larger community, as well as positively affect the course of development of geothermal resources in Imperial County.

Federal legislation in the 1960's provided the impetus for public participation in governmental agency decision-making when it encouraged "maximum feasible participation" of the poor in Community Action and Model Cities programs. It generated greater formal and informal communication between public administrators and their clients. In the 1970's dissatisfaction with the performance of public agencies charged with oversight of the nation's natural resources led to the adoption of environmental protection legislation and the stipulation that members of the general public be included in environmental planning and in the formulation of environmental impact reports. Underlying this action was the assumption that the general public, as opposed to private clientele or special interest groups, was seriously underrepresented in government agency decision making. It was thought that only through a sustained effort by concerned citizens could the political system be made accountable to the people to work for the common good.

The role that citizens can play in geothermal resource regulation in Imperial Valley can find rational justification beyond the very important incentive provided by Federal legislation. Especially for those of low socioeconomic status, there have been few opportunities for participation in political activity. Training for citizenship, granting equal protection for underrepresented interests, and local government responsiveness to citizen needs seem to us to be compelling reasons for County officials to encourage citizen participation in regulating geothermal development. The contribution

to the continued vitality of governmental agencies made by private citizens interacting with government officials would constitute an additional payoff.

CONCLUSION

We have attempted in this report to place the development of geothermal resources into the legal, social and political context in which it occurs. The following recommendations (which are, of course, those of the authors as individual analysts, and not necessarily those of the institutional sponsors of the research summarized here) stem in part from our research, and in part from a more general knowledge of government regulatory experience.

RECOMMENDATIONS FOR REGULATION OF GEOTHERMAL RESOURCES

Regional development of water resources should be encouraged through the establishment of a regional planning commission that would concern itself with the whole of the Colorado River Basin, including the section that involves Mexico. The purpose of such a commission would be not only to fulfill treaty obligations but also to share information on environmental and other standards. In addition, it would chart the future direction of geothermal resource development as a source of improved water quality.

The pooling of information, funds, and personnel by State and Federal agencies would make available sufficient governmental resources for independent verification of industry claims with less reliance on industry records. Also, such pooling should improve inter-agency coordination. As emphasized in this report, decisions concerning geothermal resources necessarily involve a variety of other factors, all of which must be taken into account when considering geothermal policy. Since individual agencies tend to focus on the particular function with which they are concerned, it is unlikely that any one agency will have sufficient information to formulate general conclusions regarding geothermal development that incorporate these diverse functions. Inter-agency coordination and cooperation could be improved through more frequent meetings and better communication among governmental jurisdictions and functional agencies.

The Federal government should voluntarily cooperate with county land use planners by contributing its expertise to enhance the quality of local

land use planning. Such activities would promote the policy of the present national administration to encourage the application of local decision making authority wherever possible. The Office of Planning and Research in Sacramento should be expanded to provide assistance to county and city governments to improve their land use planning through development of expertise in this area. Further, such assistance could help local governments to take better advantage of those Federal planning grants that are available to local governments that are able to present sound applications.

Greater local government input should also be included in State energy coordinating legislation. To this end, local officials should suggest improvements to State legislators to modify the Warren Alquist Bill (Assembly Bill 1575). The bill establishes a State Energy Resources Conservation and Development Commission with sweeping powers over energy production, consumption, planning, and development. Although this Commission may prove to be a better coordinating agency than the Division of Oil and Gas (which presently lacks the authority to regulate diverse energy sources), it has certain drawbacks. The bill grants "exclusive power to certify" all future power plant sites in California to the Commission, thereby preempting local zoning authority over these sites. The bill should be amended so that comprehensive land use plans in local communities that are in accordance with State and regional plans are given strong consideration in this much needed energy coordination legislation. The Commission should also try to come to grips with the problem of potentially conflicting values among governmental jurisdictions and should try to work out some policy alternatives in case local priorities for use conflict with State, regional, or national priorities.

RECOMMENDATIONS FOR IMPROVING PUBLIC INPUT INTO GEOTHERMAL REGULATION

1. In the recruitment of a geothermal coordinator in Imperial Valley, one selection criterion should be "a demonstrated concern for ecological values, as well as economic values." The coordinator should also have a particular interest in expanding citizen participation in the drawing up of environmental impact statements.
2. A two-way flow of information between government officials and members of the general public should be encouraged.
 - a. A public service program for the discussion and exchange of views on geothermal development should be initiated by the County. Because members of the public often complain that they are confronted with "after the fact" plans, early involvement of citizens in geothermal planning (e.g., at the "draft" stage of environmental impact reports) is essential.
 - b. Environmental impact information should be publicized in both English and Spanish in the Irrigation District newsletter and on the radio. As was suggested by County Planning Director, Richard Mitchell, "A weekly notice could be placed in the newspaper, so that people will become more used to looking for information about governmental decisions that affect them."
 - c. Citizens should be urged to participate in developing guidelines for the geothermal element in the County's comprehensive land use plan.

- d. A geothermal "library shelf" for public use could be placed near the office of the geothermal coordinator in order to facilitate the use of planning studies, County staff analyses and recommendations, as well as other documents which private citizens might want to examine.
 - e. Mailing lists should be developed, consisting of individuals and groups that are particularly interested in geothermal development. Announcements of any pertinent public meetings would then be mailed out to those concerned citizens.
 - f. Adequate notice of public hearings is an essential factor in the encouragement of citizen participation in public hearings. The notice should include specific information on the subject of the hearing and a summary of any proposed project. (See 2b for ways of publicizing hearings.) In scheduling day-time speakers, every attempt should be made to place private citizens on the agenda ahead of federal, state, and local agency representatives. Otherwise, citizens may lose wages unnecessarily or become discouraged by lengthy waiting and leave the meeting prior to being heard.
 - h. A representative group of private citizens should be consulted when County applications for planning grants are being written in order to insure a more realistic analysis of the community's strengths, weaknesses, and economic potential.
 - i. Periodic assessments of how information flow can be improved should be made by the staff of the Planning Department.
3. Securing a broad representation of interests in County government should be promoted by County officials as a public service.

- a. A conscientious effort should be made to include previously under-represented segments of the public (e.g., Mexican-Americans, young people, senior citizens) on citizen advisory boards.
 - b. Potential vacancies on these boards should be widely publicized in the newspaper and on radio in order to solicit names of interested and qualified candidates from the public at large.
 - c. The County geothermal committee, which is presently inactive, should be reformulated to include a broader cross-section of County residents.
 - d. Employment opportunities of Mexican-Americans and of women in the County government should be upgraded. The introduction of different concerns and new and important points of view that have not been previously expressed may be an outcome of such an upgrading.
4. The opportunity to educate the public is a responsibility that should not be ignored by the County government or the Irrigation District.
- a. To this end, people must be informed of their rights and the availability of legal recourse for grievances related to geothermal development (e.g., mineral rights of Heber homeowners).
 - b. As a consumer service, the Irrigation District should make available selected educational materials on geothermal development in both English and Spanish and then publicize the availability of these materials.
5. Citizens, too, have obligations to learn more about how the development of geothermal resources will affect their lives and their community.
- a. They should express preferences informally with elected and appointed officials.

- b. They should suggest ways in which the information flow between citizens and public officials can be improved.
- c. They should write letters to the editor of local newspapers (e.g., the Probe section) if informal communication with government officials does not bring satisfactory results.
- d. They should attend public hearings and express their concerns.
- e. They should suggest names of qualified, interested people to the Board of Supervisors for appointments to vacancies on the Planning Commission and other advisory boards.

The implementation of these recommendations should produce a local government even more responsive to the preferences of the various "publics" for which County and Irrigation District officials have already demonstrated great concern, as well as a better informed, more politically active citizenry.

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