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A Study of the Influential Leaders
Power Structure, Community Decisions,
and Geothermal Energy Development
in Imperial County, California

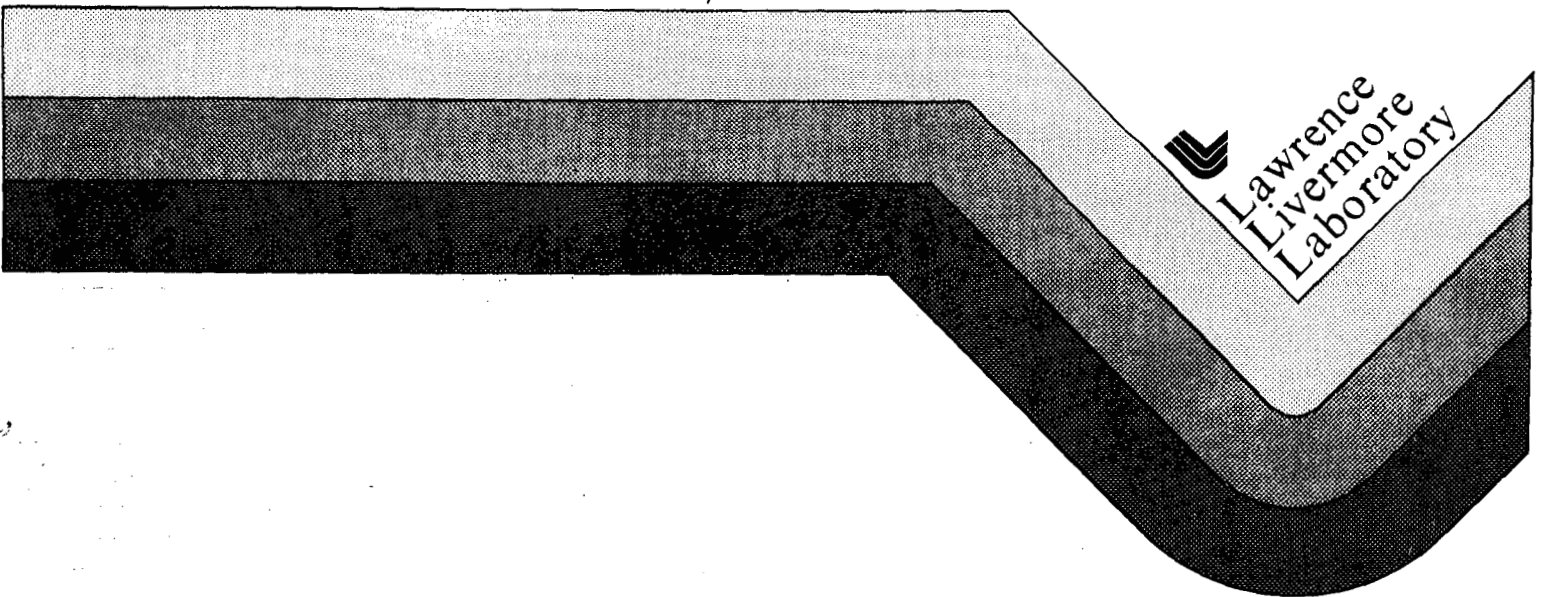
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April 1980



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A STUDY OF THE INFLUENTIAL LEADERS, POWER STRUCTURE,
COMMUNITY DECISIONS, AND GEOTHERMAL ENERGY DEVELOPMENT
IN IMPERIAL COUNTY, CALIFORNIA

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ABSTRACT

Social science research studies indicate that influential community leaders derive power from positions they hold and resources they control in industry and in government and from personal attributes. The economy of Imperial County, California, is now dominated by agriculture, but economic studies indicate that the emerging geothermal sector could grow to a size comparable to that of agriculture. The current power structure is based on control derived from positions in agribusiness and government. If control of dominant economic resources is important to power and influence and if geothermal industry becomes as large a segment of the economy as agriculture, the power structure in Imperial County may change substantially.

How will the power structure in Imperial County react to and be changed by geothermal development? The purpose of this study is to discover the kind of power structure operating in Imperial County, the influential leaders, the source of their power, their probable reactions to geothermal development, and the possible effects geothermal development will have on the power structure.

Several social science research methods are used to identify the influential leaders and to describe the power structure in Imperial County. An analysis of the opinions of leadership and the public shows the likely response to geothermal development. The power structure analysis, combined with forecasts of the economic effects of geothermal development, indicates the ways in which the power structure itself may change.

INTRODUCTION

Background

Power structures are made up of decision makers who are largely responsible for the actions and non-actions in organizations at all levels in the United States. At the individual level, the ability to make decisions enables one to influence the behavior of another. At the community-system level, an organization or power group may be able to command the behavior of other individuals or organizations. From a social system point of view, decisions involve every unit of human organization: the individual, the family, voluntary as opposed to involuntary organizations, the government, corporations, and the community (Hawley, 1971). Power is obtained by controlling that which is valued by people in a society (Lasswell and Kaplan, 1950). In the U.S., those who control economic institutions have power, influence decisions, and can implement decisions (Goldberg and Lindstromberg, 1966). Power structures are defined as the characteristic pattern within a community whereby resources are mobilized and sanctions employed in making decisions (Walton, 1967). Thus, a community is considered an organization of units held together through the use of power.

Questions that are asked by investigators of decision making and power structures include: 1) Does the community have a single, monolithic, hierarchically structured power system or different power structures, the number and nature depending on the characteristics of the local community's institutional systems? 2) Who are the power elite (where do they exist), and how do they exercise power in decision making and control of institutional functions? 3) What is the extent of interlocking power positions that include power derived from economic, political, and social institutions? 4) How is a local community power structure interlocked with regional or national power systems? 5) What methods or approaches are most effective in studying community power structures?

Social science research indicates that influential community leaders usually control important economic and governmental positions, resources, and decisions. The Imperial County economy is currently dominated by

agriculture, which comprises about 70% of the total output of the country and 37% of the employment (Lofting, 1977). Agricultural development in the county is characteristically very capital intensive and productive compared with other areas of the county. Economic forecasts, though, indicate that the geothermal industry sector may grow to equal the agricultural sector of the Imperial County economy (Lofting, 1977).

If influence is closely related to the important economic sectors and if geothermal and related industry becomes as large as agriculture, the leadership structure may change substantially. Decisions, once made with relatively little conflict by a small group of leaders having a unified power base and economic interests, may in the future be made by a more diverse power group having conflicting interests competing for scarce resources such as water, land, or labor.

Purpose

The purpose of this study is to discover the kind of power structure operating in Imperial County, the influential leaders, the source of their power, their likely reactions to geothermal development, and the possible effects geothermal development will have on the power structure itself.

Method of Approach

In this report, we describe various theories of the relationship between community characteristics and the type of local power structure that develops and the implications of active decisions, decisions not to take action, and nondecisions. Several methods are used in social science research to identify functioning community power structures. We used a combination of these in Imperial County to identify the influential leaders and to describe the kind of power structure at work there.

We performed a survey research analysis to elicit opinions of the leadership and the public concerning geothermal development in Imperial County. This analysis indicates the reaction of the power structure to emerging geothermal resource development. The power-structure analysis, combined with forecasts of the economic effects of geothermal development, indicates the ways in which the power structure itself may change.

TYPES OF POWER STRUCTURES

Most investigators classify power structures as either monolithic or pluralistic. However, this dichotomy may be too simple because at least four types are possible: monolithic, pluralistic, countervailing elite, and amorphous (for another approach, see Agger et al., 1964).

In the monolithic or pyramidal model, an elite group makes decisions that are repetitive and predictable and, through these, controls the community. Within the monolithic type, subtypes can be identified that involve two major aspects of power as set forth by Weber (1957): personal attribute factors and power as part of established authority.

A pluralistic model (sometimes called coalitional) proposed by political scientists (Dahl, 1961) includes established, repetitive, and predictable patterns of decision making that are made by a larger number of people; leadership varies by issue and consists of interested persons and groups (Walton, 1967). Individuals and groups making decisions are assumed to represent the people and to be responsible to them. Although such changing groups may compete, they generally have assigned and accepted areas of decision making. Generally, people who make decisions in this approach are assumed to hold certain positions of authority in the community and, by virtue of these positions, hold representative power.

The countervailing elite and amorphous types of power structure are relatively neglected (however, see Galbraith, 1956). The countervailing elite model consists of at least two durable, competing elite groups attempting to control the community. The major differences between this model and the pluralistic one are the greater degree of conflict in this model, presumably involving different value systems with resultant implications for decision making and issue outcomes, and the concentration of power in two competing coalitions. An amorphous power structure is not solidified -- a large number of interest and power centers compete and a persistent pattern of power fails to develop.

Visible leaders have been more closely associated with the pluralistic positional model and concealed leaders with monolithic systems (Miller and Dirksen, 1965). Symbolic leaders do not have much power, according to other leaders, but are perceived by nonleaders as powerful persons in the community (Bonjean, 1963).

Leaders also are classified as institutional leaders, effectors, or activists. Institutional leaders are "the heads of the largest and most actively participating business, industrial, governmental, political, professional, educational, labor, and religious organizations (Freeman et al., 1960), and are uncovered by reputational studies or by positional and organizational participation. However, institutional leaders are not necessarily active participants in community activities. Many effectors are employed by institutional leaders, and "it seems very likely that their activities are frequently guided by what they view as company policy" (Freeman et al., 1960). Finally, activists are people who lack an institutional power base but are active in voluntary organizations, clubs, etc. Through their commitments of time and effort, they help shape the future of the community.

COMMUNITY CHARACTERISTICS AND LOCAL POWER STRUCTURES

Many social scientists assume that all local community power structures are alike -- rural villages, commuter suburbs, central cities, and entire metropolitan regions all tend to be included under the general concept of community. Yet, there are differences among these.

In some places, absentee-owned corporations influence local decisions through the role of their executives in civic affairs. One study of absentee-owned corporations and their executives suggests that executives generally attempt to further their corporate careers by participating in local decisions; however, at least some participate because they are concerned with community services and want to contribute toward their improvement (Pelligrin and Coates, 1956). Nevertheless, because executives depend on their corporate superiors rather than on local individuals or institutions for career advancement, they invariably side with the corporation, if a conflict between the local community and the corporation develops.

From another view, Duncan and Schnore (1959) hypothesize that communities of different size and functional type represent significantly different stages in the struggle between contending power groups. They also

suggest that dominance within a community ordinarily is associated with those functional units that control the flow of economic resources into it (Hawley, 1950). Wealth, as a source of influence, can be used to control other resources, such as personnel or institutions, that can be used to influence decisions.

A plausible assumption is that the more heterogeneous a community, the more likely it is to have a pluralistic or amorphous power structure, especially when it has a great deal of economic diversity. An amorphous system is expected in a heterogeneous community that is growing or changing extremely rapidly. Yet, Walton (1967) argues that region, population size, composition, industrialization, economic diversity, and local government structure are not related to type of power structure. On the other hand, local ownership and lack of economic resources, status, independence (not a satellite unit), and political party competition are associated with a community that has a pyramidal or monolithic power structure.

Gilbert (1968) argues that self-contained communities are becoming rarer, and, as a result, most local community power structures are becoming pluralistic. The only way that things are accomplished in diffuse fragmented communities is through a strong leadership that can unite disparate interest groups. Gilbert concludes that communities are becoming increasingly pluralistic, that they are continuing to have the same kinds of conflicts, that elected officials, who now have economic dominance at the upper levels of power, are losing power in many communities, and that no apparent trend exists in increased use of experts in shaping policy.

Many issues in a community are influenced by decisions made external to the local unit. That is, "policies and procedures of state or national organizations, by state and federal law, and by developments in the national economy" all influence community decisions (Warren, 1963). Communities in the U.S. are simply points of geographical contact of criss-crossing networks of different organizations, such as the Presbyterian Church, Rotary International, Standard Oil Company of New Jersey, Atlantic and Pacific Tea Company, not to mention various governmental agencies (Warren, 1963). These extra-local influences limit local autonomy by regulations, by charters defining operating conditions, and by administrative directives.

When community consensus is limited, leadership tends to be more competitive (Walton, 1967). Furthermore, "to the extent that the local community becomes increasingly interdependent with respect to extra-community institutions, the structure of local leadership becomes more competitive." The application of extra-local power involves interdependence and the introduction of new interests and institutional relationships and, thus, introduces competitiveness into the power structure.

POWER STRUCTURES, COMMUNITY DECISIONS, AND ISSUE OUTCOMES

Every community has individuals who exert considerable influence over community affairs, over what are considered issues, decisions on issues, and the implementation of decisions. Communities confront numerous problems, some recognized by everyone, some by a few, and some generally unrecognized. In addition, the importance given to different community problems varies -- tax rates, use of water, crime and delinquency, industrial development, energy development, air or water pollution, etc. Of those potential problems that become issues, a variety of outcomes can be specified: 1) general discussion, 2) actual proposals pending, 3) proposals rejected by active opposition, 4) proposals dropped, 5) proposals adopted with no opposition, 6) proposals adopted despite opposition.

What issues are decided and at what levels? "The initiation of issues and decisions about them may occur at quite different levels in the power structure" (Schermerhorn, 1961). In the initial stage, there are three major areas of controversial issues. First, conflicts may arise over economic issues such as taxes, industrialization, or water use; second, disputes may arise over the form of government, representation, and decision making, eg., whether the public should be involved; and third, conflict may arise over certain cultural beliefs and values, such as educational philosophy, school desegregation, and land and water use (Coleman, 1957).

Which issues are allowed to become part of the public realm and which are not? This question is important because the selection of issues, at least public issues, precedes decisions about them (Schermerhorn, 1960). Some grievances and conditions never become issues because individuals or

groups exercise power and effectively prevent them from becoming issues. Although this may seem to describe a nondecision or nonevent, in fact, the process of nondecision making may be as great an exercise of power as decision making (Bachrach and Baratz, 1963). Thus, many outcomes of community power structures may not be observable, e.g., a decision not to have a particular educational program, not to allow industrial development, or not to discuss water use.

Issues vary in their relevancy to the leadership system. In many instances, issues are perceived as salient only if social change will result from a decision. Because monolithic leadership structures control the number and shape of important decisions, concentration of power results in substantial activity or little activity, depending on whether the power structure blocks, influences, or actively seeks decisions, or directs programs in the community (Fowler, 1958). In monolithic communities, if the issue is salient to leadership, the program is assumed to be shaped and resolved in a fashion suitable to the leadership structure.

Innovation seems extremely rare in government bureaucracy or in established pressure or interest groups. However, there is some trend for ad hoc groups to develop innovative programs. Overall, Gilbert concludes that decision making is "less and less in the hands of a privileged few and increasingly dependent upon the broker, be he elected official or not, who can bring together (to the extent he can bring together) various elements in the community."

Communities with a pluralistic power system probably offer the most opportunity for innovation in solving problems. This occurs because power centers that interlock develop a great deal of knowledge about each other. "For many issues this will mean the creation of an organization whose specific task is the implementation of the decision to innovate" (Aiken and Alford, 1970), e.g., housing authorities and welfare councils (see also Turk, 1970).

Both countervailing elite and amorphous systems are assumed to be nearly incapable of reaching long term or sustained decisions. Countervailing elite systems are hampered because opposing centers of power alternately control community affairs. At times, coalitions may be formed that temporarily allow decisions to be implemented, but coalitions tend to

be short term. Thus, the countervailing elite model suggests a great deal of variability in decisions, following the ebb and flow of power in the community, and as issues become differentially important to each of the countervailing elites. When equally powerful countervailing elites exist, alternating periods of dominance should result in programs and decisions changing in number, kind, direction, and shape.

The amorphous power structure consists of a large number of power centers that have not coalesced into an effective decision-making or controlling system for community affairs and/or there is a high level of citizen participation that generates conflict and prevents effective decision making (Crain and Rosenthal, 1967). As a result, no decisions are made, but conflict occurs among many veto groups.

Although the above discussion assumes a patterned relationship among leadership structures, community decision making, and consequent community decisions, little research has been conducted to verify completely such relationships. Also, several other perspectives have been developed to explain *community decisions*. For example, a more elaborate formulation was advanced by D'Antonio and Erickson (1962), who noted in their studies along the U.S. and Mexican border that few communities had monolithic power elites and also that the cities did not fit the pluralistic model. These cities had a small group of people whose influence was general and cut across many issues, although at times these people were in contention with each other with regard to the outcomes of decisions. Whether this study can be generalized or simply characterizes border cities has not been determined; however, a study of 18 New England communities showed some very strong similarities (Gamson, 1966).

A view contrary to all that has been advanced so far was proposed by Long (1958). He believes that when communities and decision making are examined closely, no structured decision making exists. Rather, he sees issues resolved by a system of unintended cooperation among interested groups and institutions. Unintentional coalitions deal with problems from a limited point of view, e.g., those confined to their particular interests or institutional bases. Thus, he argues that the debate in the power structure literature is misplaced because it may have obscured the possibility that no one is systematically making decisions.

This may seem to be the case, even though it may not be true, because few studies have examined the full range of issues that come before a community and an individual decision maker. Most issues and outcomes examined have been dramatic or controversial, rather than everyday decisions that affect the local community. To anyone familiar with a given community, however, the existence of power, its utilization, and its impact on the lives of all the citizens living in the community are quite apparent.

METHODS IN LOCAL POWER-STRUCTURE STUDIES

Early sociological studies of community power structures emphasized perceptions of various knowledgeable people about the reputations of powerful individuals. A list of prominent leaders was generated by these people who, in turn, were then interviewed. Interviewed leaders listed other leaders, which resulted in "snowballing" as more leaders were named. The study focused on the extent of social interaction among nominated leaders, and a voting system determined the most influential leaders. The person nominated most often by other named leaders was presumed to have more influence than those who received fewer votes (Hunter, 1953). This approach has been criticized because emphasis is placed on perception of individuals and not on behavior in community political systems (Dahl, 1961; Wolfinger, 1960; Sayre and Polsby, 1965).

Political scientists, on the other hand, have studied issues and decisions by focusing on the political system. These studies emphasize the political process and people in political positions gained through election or appointment. The major criticism of this approach is that it is primarily concerned with visible leadership--persons elected or appointed to governmental and corporate positions. No one has attempted to go behind the scenes to study concealed leadership to determine if persons or groups hold power over more apparent leaders.

Both perspectives illustrate the consistency or pattern of positions that leaders hold, including company presidents, managers of absentee-owned corporations, bank presidents, head cashiers of banks, mayors or city managers, city attorneys, medical association chairmen, bar association

members, judges, etc. Sometimes people are included who hold positions such as school superintendent, school-board chairman, president of an influential union, newspaper editor, television-station manager, pastor of a prestigious church, police chief, or a charity-fund executive director. Researchers using the reputational approach tend to report centralized decision-making structures; researchers using other methods report varied structures (Walton, 1966).

Most studies of power structure in the U.S. have focused on a single, local community. One of the first studies of power structure, in Muncie, Indiana, reported that a single family dominated the community power structure from the 1920s to the 1930s. This particular family dominated manufacturing, banking, hospitals, department stores, milk depots, particular political parties, churches, the newspaper in the city, and the local airport (Lynd and Lynd, 1929, 1937). This degree of concentration of power in one family does not exist in most other communities, but power concentrations are systematically reported by researchers.

A study of communities along the U.S. and Mexican border showed that the reputational technique provided a good indication of perceived, general influence and that reported leaders are deeply involved in general community decision making (D'Antonio and Erickson, 1962).

Another study, conducted in Lorain, Ohio, reported the formation of multiple coalitions of individuals and groups whose composition depended on the issue at hand (McKee, 1953). Another variation was reported in a study of an industrial suburb in which plants had been bought by absentee-owned corporations. This study showed that managers of these plants did not participate in local decisions, thus leaving them to be made by others, creating an apparent power vacuum (Schulze, 1958). A corporation may abdicate power in the belief that the local community can have little effect on its operation. If the local community makes a decision that adversely affects the corporation, its managers, in response, would probably use their potential power by threatening to leave the community.

Generally, studies show that the higher a community's appraisal of a leader, the higher that leader's expectation is of community support. In addition, highly rated leaders are perceived or identified as influential in a number of issue-related areas: business and industry, education, religion,

politics, municipal affairs, and perhaps even in personal matters. Thus, the content of issues and community evaluation are not necessarily related. In at least one place, community appraisal, leadership self-evaluation, and influence seem to be correlated (Abu-Laban, 1963).

In the remainder of this report we examine power and its utilization, the power structure, influential people, decision making, and the impact of these on the people in Imperial County, California.

THE POWER STRUCTURE IN IMPERIAL COUNTY

Methodology

The power structure in Imperial County was identified by using a combination of research methodologies. First, we compiled a list of people who held important positions in Imperial County. This list included people holding positions in government, quasi-government, business, agriculture, and various associations. Each of these persons, by virtue of their positions, was assumed knowledgeable about at least some issues requiring decision making in Imperial County. The list included a random selection of business enterprises in the county. A representative of all business and agricultural enterprises with 50 or more employees was also included.

A selection of people from this list were interviewed. Part of the interview schedule included questions about people whom the respondent considered the most influential in Imperial County, their occupational and other important positions in the community (e.g., lawyer, charity official, mayor, department store owner, etc.), the extent of their influence, and the basis or source of the person's influence. In addition, other questions were asked about various issues, including geothermal resource development.

As interviews were completed, a card-filing system was used to determine those having a reputation for leadership and influence in Imperial County. A few names emerged that were not on the original position list. These names, obtained from the interviews, were added to those to be interviewed. Because only a few names were added in this manner, we assumed that all the important leaders of Imperial County were known to us. This

assumption was validated because no additional names of influential people were added in all of the subsequent interviews. A total of 105 interviews were conducted in 1977 and 1978 from the final list that was compiled by using positional analysis and names added by subsequent interviews.

In summary, the power structure of Imperial County was determined in a systematic way, combining methodologies used in previous research. People who we assumed were influential were identified for an interview on the basis of positions they held in the community.

Influential People and the Power Structure in Imperial Valley

Who is influential in Imperial County? Because agriculture is the dominant economic activity in the county, it is not surprising that many influential people are involved in agricultural pursuits. However, the influence among leaders in the county differs substantially, and not all individuals who have power are directly linked to agriculture.

Nevertheless, our evaluation of the power structure suggests that it is, in fact, monolithic, i.e., established, repetitive, and predictable patterns of decisions are made by a rather small group of people in Imperial County.

Clearly, most of the influential leaders in Imperial County combine the two major aspects of power as set forth by Weber (1957): 1) personal attributes and 2) power as part of established authority, in this case resulting from agricultural, governmental or quasi-governmental positions, and, at times, jointly held positions in both spheres.

From our analysis of Imperial County, two people are far above all others in influence and can be considered the dominant, influential people in Imperial County. AG-11*, the most dominant and influential, has large scale agricultural interests and also has an important government position. The second most influential person, M-11, does not hold a government position and is one of the few important, influential people in Imperial County having no known direct link to agriculture.

Four other people make up the first echelon of leadership in the county. Three of these influential people are directly linked to various

* This is a code number for use in further discussion. A = agriculture; B = business; F = finance; G = government; M = manufacture.

kinds of substantial agricultural enterprises (AF-11, AF-12, AF-13). The fourth person is a local businessman who also holds an important government position; he is said to represent the Mexican-American community (BG-11).

Thus, four out of six of the major leaders in Imperial County are directly linked to significant agricultural enterprises. In addition, two of these four hold important governmental positions. Two of the six have no direct relationship to agriculture but by virtue of their positions can greatly influence decisions related to agriculture as well as virtually all other decisions in the county.

A second level of leadership, consisting of nine people, has less influence. Only four of these leaders are directly linked to agriculture (AG-22, AG-24, AG-28, A-29). Again, three of these four, in addition, hold important governmental or quasi-governmental positions. The remaining five second-level influential people all have important governmental positions, and several of them also own large businesses.

A third level, about as influential as the second, contains four people. Three of these four are heavily involved in agriculture. In addition, two of them have or have had important government posts. The remaining person in this group is a local businessman with no apparent ties to agriculture or to any governmental or quasi-governmental position. He is one of the few leaders who is considered a political activist.

Another level of leadership in the county consists of people who hold a variety of positions, some of which, on the surface, seem to be very important and some not so important. These 11 influential people are probably effectors. Effectors are those who put policies decided by others into action. Eight of these 11 influential people hold or have held important governmental positions. The positions of several of these people overlap substantially, however, in both agriculture and business (BG-41, AG-43, AG-44, MG-45, AG-46, and BG-491). Two of these effectors hold only governmental positions (G-42 and G-47).

The interviews of those people who were reported to be the most important leaders by others in Imperial County were analyzed further. If only the key influential people had been interviewed, the results would have been as indicated but with a somewhat stronger demarcation between the first six leaders and all of the others. Furthermore, not one lower level effector was mentioned by the upper level leaders as having influence.

Some respondents refused to name specific influential individuals, but many of these same people reported influential groups. In descending order of perceived importance, these groups were farmers with large land holdings, the county supervisors, the councils of each city, minority coalitions, the news media, and the Farm Bureau head. In addition, a large number of other people and positions were reported by key influential people as having power.

Among all of those mentioned by name, only one of the upper level leaders and one of the effectors had a reported meaningful link to the minority community. Similarly, no one who could be considered an activist (a person who lacks an institutional power base) was reported to have influence or to be an effector in Imperial County. Only one person was reported by several people to be an activist in the county but was considered generally to be ineffective, except as an agitator. One third-level leader was reported to be influential because he was active in political affairs, although he did not hold a political office himself.

Summary

Among the top six leaders who are perceived to have the most influence, two have far more influence than the others. Most of these key leaders are involved in agriculture and also hold important governmental or quasi-governmental positions. Other influential leaders and effectors also seem to be dominated by those with a link either with government or with agriculture. One of the two most influential leaders in the county is an exception in that he is involved neither in agriculture nor in government. However, this leader's position is such that he can influence agricultural, business, and virtually all other decisions that affect the County.

Our analysis, we should note, agrees partially with that of Green and Faran (1975). They noted that, "There is agreement that the most significant political activity revolved around an elite group which consisted of farmers with large land holdings, the Board of Directors of The Imperial Irrigation District (IID), the Board of Supervisors, and certain businessmen in the area." They further suggested that area-wide decision making is becoming more representative of the broader community. Our analysis, performed in 1978, clearly indicates that the latter was not true

then, and the former is only partially correct in that certain owners of large farms and/or their representatives dominate the decision making. However, not all Board Members of the IID and the Board of Supervisors have equal power, and some strict qualifications must be made about the influence of local businessmen.*

OPINION ABOUT GEOTHERMAL DEVELOPMENT IN IMPERIAL COUNTY

Leadership Opinion and Reaction to Geothermal Development

In this section of the report we evaluate opinions of leaders in Imperial County about geothermal resource development. About 90% of the leaders in Imperial County believe that geothermal development is very important and of immediate concern for the county. Only 1% believe that current energy is adequate; 9% believe that geothermal development is important but not of immediate concern. Around 80% of the leaders strongly favor geothermal development in the county, the remaining 20% are in favor, but voice several qualifications, such as "as long as it doesn't harm agriculture" or "if oil companies are closely regulated." Not one leader interviewed was opposed to geothermal resource development (see Green and Farnan, 1975, for similar results).

When questioned about regulation, well over half of the leaders expressed strong opinions that geothermal development should be strictly regulated, another 30% believed less strongly that regulations should be imposed, 11% were uncertain, and 3% believed that no regulation should be imposed. Thus, more than 80% of the leaders felt that geothermal development should be strictly regulated. This question elicited, in addition, a variety of comments. The most prevalent comment was that strict regulation was the only way to avoid problems such as adverse effects on agriculture, subsidence, and monopoly of the resources by oil companies. A

* Events in late 1978 and 1979, since the survey work was completed, may have altered the leadership structure somewhat. The newly-elected Board of Supervisors and IID Board have fewer members with ties to agricultural interests than previously. The impact of these changes is not yet clear.

substantial belief also exists that it should be strictly regulated because geothermal resources should be viewed as a public utility or a resource belonging to everyone. Generally, the volunteered comments reflected great deal of knowledge about geothermal development by some of these leaders.

According to almost half of the leaders, the oil companies are primarily responsible for initiating geothermal development in Imperial County; another 25%, private enterprise; others, Dr. Rex and/or the University of California, Riverside; and a small number, the IID or the Magma Power Company. One or two others listed a variety of extra-local (federal government, San Diego Gas and Electric Company, Department of Energy, etc.) and local (Board of Supervisors, Public Works Director, local government, etc.) groups as being most responsible.

Almost a third of the leaders believe that opposition to geothermal resource development exists in Imperial County. No one was able or willing, however, to pinpoint a specific individual or group who was opposed. A few believe that San Diego Gas and Electric Company and nuclear power interests are opposed, and some say that the Farm Bureau and unspecified agricultural interests are opposed.

In responding to a question asking for "comments about geothermal development in Imperial County that we didn't discuss and you feel we should have", the major responses were: 1) too many government regulations exist, 2) development has been too slow, 3) all levels of government should be involved in geothermal development, and 4) more education and/or information should be made available to the general public. The only other numerically meaningful responses were that the federal government, a la the Tennessee Valley Authority, should control geothermal development. In contrast, many leaders believed that the local county government should control it.

A Comparison of Leadership Opinion and Public Opinion of Geothermal Resource Development

Table 1 shows the opinion of the public*, leaders in general, and the top six leaders on various aspects of geothermal development in Imperial

* Opinions of the general public in Imperial County were surveyed in 1976 as part of a separate study (Butler and Pick, 1977).

Table 1. Opinions on geothermal resource development in Imperial County, California, 1977-1978. ^a

	General public opinion ^a	All leaders	Top 15 leaders	Other leaders
127. Geothermal development will bring new tax revenues to Imperial County.(+) ^b	66.2%	94.2%	93.3%	94.4%
128. Noise from geothermal development can be bothersome.(-) ^b	13.0	13.5	33.3	10.1
129. Economic benefits from geothermal development are more important than environmental costs.	37.2	21.2	20.0	20.3
130. Because it will attract new residents, I'm against geothermal development.(-)	3.7	1.9	6.7	1.1
131. The construction of geothermal power plants, transmission lines, pipelines and roads that result will create eyesores. (-)	13.8	23.1	20.0	23.6
132. Because it will attract new businesses and help Imperial Valley grow, I'm in favor of geothermal development.	75.1	90.4	86.6	91.0
133. Most geothermal electricity produced in Imperial County should be used in Imperial County.	52.8	47.1	53.3	46.1
134. A fuel shortage will develop in the United States unless geothermal and other sources of energy are developed. (+)	73.6	82.7	86.7	82.0
135. Geothermal energy will provide cheap electricity for Imperial Valley.	42.4	33.7	26.0	34.8
136. I like Imperial Valley the way it is, and don't want it to change.	7.4	15.4	0.0	7.8
137. New developments like geothermal are not welcome in Imperial County.(-)	5.9	6.7	0.0	7.8
138. Most geothermal electricity produced in Imperial County will be used in Imperial County.	22.7	12.5	20.0	11.2
139. Imperial County can broaden its economic emphasis to more agriculture through geothermal development.(+)	73.6	87.5	80.0	88.7
140. Geothermal companies should have the main responsibility to plan and conduct steam exploration and production.	53.9	69.2	60.0	70.8
141. Geothermal development may cause unusual odor problems.(-)	8.9	18.3	6.7	3.3
142. Geothermal development will increase demands on city and county government and thus increase taxes. (-)	16.0	11.5	6.7 ^c	12.3
143. Geothermal development will increase jobs in Imperial County. (+)	81.0	91.3	86.7	91.1

^a Questions 1-126 refer to an earlier survey of the general public in Imperial County taken in 1976 (Butler and Pick, 1977).

^b (+) Clearly in favor of geothermal resource development; (-) clearly against geothermal resource development.

^c Statistically significant difference between top leaders and other leaders.

Table 1. Cont.

	General public opinion ^a	All leaders	Top 15 leaders	Other leaders
144. Local government officials have primary responsibility to plan geothermal exploration and production.	33.5%	50.0%	73.4% ^C	46.0%
145. Geothermal development will take water away from agriculture.(-)	4.8	9.6	33.3 ^C	5.6
146. Geothermal resources in Imperial Valley should be used for purposes other than electricity, such as by industry or for chemicals.	39.4	55.8	73.3	52.8
147. Geothermal development will result in fewer Mexican National agricultural workers crossing daily into Imperial Valley.	7.1	24.0	20.0	24.7
148. The Imperial Valley policy that new industries, like geothermal, should be able to live with agriculture is a good one.(+)	82.2	93.3	93.3	93.3
149. Geothermal development will cause border regulations to change, making it easier for Mexican National workers to cross into the United States.	5.9	1.9	0.0	2.2

^a Questions 1-126 refer to an earlier survey of the general public in Imperial County taken in 1976 (Butler and Pick, 1977).

^b (+) Clearly in favor of geothermal resource development; (-) Clearly against geothermal resource development.

^c Statistically significant difference between top leaders and other leaders.

County. In comparing the key questions in Table 1, it is apparent that leaders are generally more in favor of geothermal development than the general public. Leaders are also slightly more likely than the general public to believe that geothermal development may create some problems in Imperial County.

Leaders are less likely than the general public to believe that economic benefits are more important than environmental costs (q. 129). Also, a greater percentage of the general public than of the leaders believes that geothermal energy development will provide cheap electricity for local residents and that most of the locally produced electricity will be used locally.

Leaders, more than the general public, would give geothermal energy companies the main responsibility to plan and conduct exploration and production. On the other hand, more leaders than the general public would give local government officials the primary responsibility.

Leaders, more than the general public, believe that geothermal resources should be used for nonelectrical purposes. More of the leaders also believe that such development will reduce the number of Mexican workers in the county.

In comparing responses of the top leaders and other leaders, few major differences in opinion were noted. More of the top leaders, however, believe that noise from geothermal development might be bothersome. In fact, a similar percentage of other leaders and the general public believe that geothermal development will increase demands on city and county government and thus increase taxes; fewer top leaders believe geothermal development will have these effects.

More of the top leaders, again in contrast to other leaders and the general public, believe that geothermal development will reduce the availability of water for agriculture.

Although these differences exist, top leaders and other leaders hold substantially the same opinions on all the other statements on various facets of geothermal development.

THE EFFECT OF GEOTHERMAL RESOURCE DEVELOPMENT
ON THE POWER STRUCTURE IN IMPERIAL COUNTY

What is the likely impact of geothermal resource development on the leadership structure in Imperial County? Several research studies have concluded that geothermal resource development will probably create substantial impact on population (Pick, 1977), employment and the economy (Lofting, 1977), and fiscal system (Goldman and Strong, 1977) of Imperial County. However, these social and economic effects are, by and large, beneficial. The few negative ones are relatively small and manageable. Other impacts, including those on water quality, air quality, aquatic and terrestrial biology, health, and seismicity are generally negligible (Layton, 1979). Exceptions include cooling tower drift, accidental release of brine, and subsidence. Even these potential problems, though, can probably be managed. Some of the mitigation efforts will require substantial capital investment and application of technology and skilled labor. However, the point is that geothermal resources can generally be developed compatibly with existing agricultural activities. The opinion research reported here demonstrates that the perception of Imperial County leaders of the effects of geothermal development on agriculture agrees with the technical research.

However, leadership patterns have been drastically changed in other regions affected by energy development. If industry moves into Imperial County on a large scale, a population with essentially different lifestyles from the people now living in the county will immigrate there. Subsequent population growth will trigger physical growth in the towns and former rural areas, requiring land-use changes, additional services, and expanded community institutions, such as administration, education, religion, recreation, and others. The flow of such large scale economic resources involves major decisions. The development of geothermal resources in Imperial County will result in new leadership and influence patterns, if past research is a reliable guide. To what extent conflict will be engendered between the old and new economic interests and how conflicts are resolved will be vitally important to the leaders and citizens and will influence the county for coming generations.

The current leadership in Imperial County, unanimously supportive of geothermal resource development--though with strong controls, apparently are confident that geothermal resources can be developed without threatening agriculture, the current dominant economic base of the power structure. It can be assumed that the leadership has already responded positively to geothermal development by supporting it privately through lease agreements (a necessary condition for the current level of exploration and experimentation) and publically through county policy. Strong controls have been built into this support through the Geothermal Element of the General Plan, environmental review, and use conditions. The controls are primarily directed toward minimizing damaging conflicts between geothermal resource development and the existing agricultural development, with secondary concern for other environmental issues.

We believe the current influential leaders support controlled development of geothermal resources because they expect that the new industry will not threaten continued agricultural activities and revenues -- it will yield additional revenues in the form of leasehold and royalty payments. In other words, the land controlled by current influential leaders can yield two sources of revenue, one from surface agricultural use and the other from subsurface geothermal resource extraction, without serious interference between them. Unless a significant conflict between the agriculture and geothermal sectors develops, the economic position of the existing power structure will not be threatened, but enhanced.

The power structure may be affected by the need for outside capital, for managerial and technical expertise, and for a strong, constant, secure market in the form of an electric utility. The needs of these outside interests will have to be met so that the indigenous power structure can realize revenues from geothermal resource development. This change will probably take the form of cooperative accommodation, rather than outright sharing of or a change in the locally based power structure, for two reasons. First, it will be in the interests of the geothermal developers and the utility to disturb the current power structure as little as possible to facilitate development. Second, the vast majority of the land from which the geothermal resource will be extracted will remain in the hands of owners who will continue current surface uses.

Among the few major conflicts that may develop between surface agricultural interests and the new subsurface resource developers is over scarce water supplies. Agriculture in the valley uses significant quantities of water (3 million acre-feet/yr) to irrigate crops (up to five plantings a year) and to leach salts from the soil. Heat exchangers used in geothermal power plants will also require substantial quantities of cooling water. Current analyses of the lower Colorado River basin hydrology, legal constraints, geothermal technology, and Imperial County policy indicate that county-wide geothermal development will have few constraints up to 7000 MWe of generating capacity (Layton, 1979). However, specific sub-areas of the county may have water shortages before the 7000 MWe county-wide capacity is developed.

Whether or not there is a conflict, and to what degree, depends on a number of variables which are difficult to determine at this time. These variables include: the heat-exchange technology used; the success of reinjection; the availability, at an economically feasible cost, of treated agricultural drainwater; the rate of and total extent of geothermal resource use; the types of crops planted; the extent and success of water conservation efforts; the status of upstream claimants to Colorado River water; basin hydrologic performance; IID policy with regard to irrigation water; and county policy.

Another potential conflict, pitting local interests against regional and national energy needs, may develop over where electricity generated in the county is used -- locally or regionally. Should local county residents bear all the costs and gain few benefits (in the form of more abundant or cheaper electric power)? If local residents become sufficiently disturbed over the regional distribution of costs and benefits, strong opposition to geothermal industrialization may slow or even stop development.

CONCLUSIONS

Power is the ability to command the performance of individuals, groups, and organizations. A systematic, patterned use of power exists in Imperial County, structured as a monolithic leadership system. This monolithic

structure, not too surprisingly, is dominated by agricultural interests, although one of the two most influential leaders in Imperial County is not directly linked to agriculture. His position, however, allows him to influence agriculturally related decisions. Agricultural interests in the county are systematically interlocked with local government, i.e., many of the influential leaders have large scale agricultural enterprises and also hold important local governmental or quasi-governmental positions, some elected and some appointed.

The leadership in Imperial County is a visible one. However, the power and influence of individuals in Imperial County varies substantially, even though they ostensibly occupy the same or similar positions. Similarly, some individuals who hold positions that, on the surface would seem to give them power, do not actually have extensive power. Some of these individuals are not even considered to be effectors or lower level influential leaders; these people could be considered symbolic leaders because some citizens and outsiders assume they are influential, but other leaders, especially the top ones, do not consider them influential in important decisions.

This research and most previous studies illustrate the importance of personal attributes, in addition to positional authority, in power and influence in the community. Wealth alone is a poor indicator of power in Imperial County. Yet, almost all of the key leaders control substantial economic resources, especially in agriculture.

Key leaders know who the others are, systematically list them, and do so much more often than do less influential citizens. A substantial consensus seems to exist among key leaders on most issues, although they may differ slightly on the implementation of decisions or on minor issues. As far as geothermal resource development is concerned, they all are in favor of it, but most of them want strict regulation.

A strong consensus exists among other leaders' appraisal of key leaders, key leaders' self evaluation, and their actual influence in Imperial County: a small group of individuals influence all of the major decisions in the county. Their influence cuts across all issues, including geothermal development. Clear, structured, purposeful decision making occurs, and the decisions affect the lives of all the citizens in the county.

New population, attracted by geothermal energy and other commercial and industrial development, will probably have different characteristics, lifestyles, and demands for community services than existing residents. However, the leadership structure will probably not be significantly affected. Surface agricultural use, currently the dominant economic sector, is generally compatible with the extraction and conversion of subsurface geothermal resources to electric or direct heat energy. The influential leaders, already in control of substantial agribusiness revenues, will derive additional revenues in the form of geothermal lease and royalty payments from the land resources they control. Competition between agricultural needs for irrigation water and electrical production needs for cooling water will become a problem county-wide only if electrical production reaches high levels. Certain subareas of the county could have water shortages at lower electrical production levels as a result of the distribution of water, irrigation systems, and power plants. The development and extent of competition for water depends on a number of factors that will not be resolved for some time.

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