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**CALIFORNIA SOLAR ENERGY STUDY:
DECISION-ANALYSIS PANEL REPORT**

Prepared for the
California Energy Commission

by:

Joseph B. Margolin, Ph.D.

and

Marion Ruth Misch, Ph.D.
Behavioral Studies Group
George Washington University
Washington, D.C.

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Abstract

In order to investigate motivations behind an individual's decision to purchase or not to purchase a solar energy system for a home, the California Energy Commission initiated a comprehensive survey program to analyze, in some depth, attitudes toward solar energy use. As part of that program, the CEC contracted with the Behavioral Studies Group at George Washington University to conduct a series of panels comprised of homogenous groups of individuals who were not solar adopters, to probe for underlying attitudes about solar and, through the group dynamics process, elicit information which generally cannot be obtained using a standard questionnaire. The results shed additional light on consumer perceptions about the energy situation, the solar industry, economics, government's role and acceptance of the technology which, in turn, affect the individual's decision to adopt or not to adopt a solar energy device.

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The Decision Analysis Technique

The Decision Analysis Panel is a method of collecting attitudinal and behavioral data by convening small generally homogenous groups of individuals to discuss a given topic. It was developed by the Behavioral Studies Group at George Washington University over a period of 10 years. It employs group dynamic principles to obtain a valid and reliable impression of the potential behavior dynamics and the decision-making processes of stratified segments of the population to be studied. DAP's have been used and perfected in studies of transportation, energy utilization, public health, education, etc. It can be used as a more sensitive, effective substitute for surveys or as a method for isolating, for use in survey construction, critical issues and feelings characteristic of populations to be studied, that may not be immediately available to the survey designers.

Further information on the technique can be obtained from the Behavioral Studies Group, PPSST, The George Washington University.

I. SUMMARY OF GROUP PROCESS

It should be noted that all of the groups opened with positive attitudes towards solar energy. Perhaps this occurred out of politeness to the group leader, but also, it would appear, because of a positive attitude towards this new, promising and attractive energy source. However, very soon the doubts that exist, both on the surface and beneath the surface, began to emerge and a negative theme followed. As social support for negative attitudes began to accumulate in the discussion, people felt freer to express their conflicts and feelings. What emerged repeatedly was a sense of general frustration with the ambivalence people experience: they favor solar energy yet fear to do so; they want help from the government or industry, yet also do not expect it. They perceive the institutions they expect to deliver solar to them--that is, industry or government--as exploitive, incompetent, or not caring. They are wary of being once again "victimized." These feelings may be most extreme among retirees. However, they characterized all groups to a marked extent. There was also evidence of an even more generalized and free-floating anxiety about the risk inherent in accepting any innovation and in any investment or commitment.

Thus, decisive conclusions about solar were never expressed by these groups. There were no ringing endorsements and no total rejections. Instead, conclusions were avoided because of the ambivalence, conflict, lack of information and, most of all, risk associated with this promising technology.

II. OVERALL SUMMARY OF FINDINGS

A. Perceptions, Attitudes and Behaviors of the Californians Sampled

1. The primary factor limiting the acceptance of solar energy in the California population would appear, on initial examination, to be an almost universal concern with the "up front" costs of solar. All groups mentioned it early in the discussion, and most were preoccupied with it and saw it as a barrier to the acceptance of the new technology. However, there is reason to believe that this is not the critical issue, but an essential element of a complex of factors.

The next in priority in barriers to the acceptance of solar energy were:

2. The "fly-by-night" vendor is mentioned repeatedly by some groups and mentioned occasionally by others, but remains behind the scenes as a source of great concern.

3. The fear that installations will not be well done was a recurring theme.

4. An additional factor considered significant by at least five of the groups is their concern with the insubstantiality of the solar industry as a whole, beginning with the manufacturer and continuing through the entire solar TDS (technology delivery system). Alternately describing it as a "cottage" industry or "fly-by-night" industry, people expressed the concern that it cannot produce a reliable, cost-effective product; that it cannot provide a satisfactory warranty; and that it is generally inefficient.

5. To deal with this last condition there is a universal demand or hope for government protection from the instability of the industry and the unreliability of vendors. This must be carefully qualified: most of the participants do

not want government regulation but do want protection. There may be some conflict in these two positions, which represents the ambivalence the population expressed toward government. This will be further discussed in another section.

6. All are unsure of the effectiveness of solar energy equipment today. It was the universal statement of the groups, both in word and deed, that solar equipment has not been proven reliable.

7. In general, all but the lowest socio-economic groups do not take the current energy crisis seriously.

8. The fear of running out of energy sources in the future is not overwhelming, however, it is compelling and ever present. It is a greater worry than the cost of fossil fuels for the more affluent, although not among the poorer.

9. Loss of control is a quiet, but potentially potent, factor. They feel as though their control of government and of their lives is weakening. This may be greater among those with high mastery needs.

10. While the initial view was the pure economic one that the upfront costs of solar are too high, this must be more fully developed to be understood. A more careful examination of the data reveals that there is an overwhelming risk element associated with the acceptance of solar energy. This risk represents a complex of (1) the high upfront or initial costs; (2) the lack of confidence in the industry, the vendor, the installer, the equipment itself; (3) lack of confidence in the government's capacity for, or interest in, providing protection for the consumer.

11. Closely linked to this risk factor is an underlying syndrome that emerged clearly in four of the groups and appeared to be latent in the others. This has been described by the authors in previous studies as the "victimization syndrome." It is increasingly common in our national population. It involves the consumer's feeling constantly in danger of being victimized or ripped-off by industry and by foreign and domestic economic and political forces, and feeling that the government is unable to stem the tide of such exploitation. In some cases it is believed that the government is either subject to political or economic pressure, or is in league with the exploiters to victimize the public. Applied to solar energy this all adds up to a tremendous sense of risk and apprehension about accepting the new technology. Apprehension is further heightened by the absence of familiar, reliable marketing institutions that would engender confidence in solar, and by the general fear of the novel, of accepting any innovation.

12. Less frequent but constantly present, is the fear that solar is basically unaesthetic and not likely to increase the value of the property. A combination of its ineffectiveness and its unaesthetic quality raises the spectre of losing a sizable investment in solar.

13. The concern that we are running out of energy and evidence that people are taking the energy crisis somewhat more seriously emerged in only three groups. However, this latter belief may run more deeply than was expressed. Toward the end of meetings when the population studied found itself in a

position of either having to make a commitment to solar or minimizing the threat of the energy crisis, they tended to minimize validity of the impact of the shortage. Thus, while they continue to be concerned about the power exerted by external and internal forces which would threaten our energy supply, they withdraw from expression of concern lest this lead them into the immediate risk associated with a commitment to solar energy and its high cost and potential loss.

14. There is a broad spectrum of passivity versus mastery in this sample with the San Jose blue-collars and the San Diego professionals being high in mastery, and the Bay Area and Valley areas being low. Nevertheless, a prevailing sense of helplessness in dealing with the overwhelming forces of government and industry permeated all groups. It is almost the kind of an alienation that results in people not voting, and in the Panels they did, by and large, refrain from voting for or against solar. They promise their votes and their decision tomorrow when the risk may be lower.

15. In the positive and facilitating side of the issue, a number of strong and supporting beliefs predispose the population to the acceptance to solar. These include the fact that solar is likely to be a vehicle for producing energy independence from the OPEC nations and from the large utilities, both of which are seen as victimizing the public. It is also believed, on a deep-lying basis that ignores the cost of equipment, that solar energy is somehow free and that once past the initial barriers it will be a way of dealing with the control that others hold over us. It is also believed that California is a good location for solar application. However, this latter belief is less widely expressed

than one might have hoped.

16. While the environmental issues were surprisingly little discussed by most groups, and one group rejected it as an issue, some concern with it was revealed by the almost unanimous belief that solar was a clean source of energy and that it is cleaner than nuclear energy.

B. Solutions to the Energy Problem Discussed

The sample as a whole tended to find certain solutions, some stereotyped, for the energy problem and the possible acceptance of solar energy.

1. They urged the improvement of the technology delivery system. Several methods were recommended ranging from the entry of large well-known corporations into the industry to government subsidies and incentives. Of course, both were fraught with hazards in the consumer's mind in that the large corporations were seen as potentially exploitive despite confidence in their ability to deliver a product. Thus, it was believed large corporations might accept the subsidies and still raise the prices to the ultimate consumer.

2. The government was seen by many as a source of protection against the ravages of industry and the exploitation of both fly-by-night and large corporations. However, others lacked confidence in the ability of government either to regulate or to promote the solar industry. The one competence attributed to the government was that of R&D that might improve the state of the art. It was repeatedly recommended.

3. The population also recommended to a lesser degree such steps as (1) the introduction of mass production, (2) the use of tax incentives (more to be said of this later) and most important and ubiquitous was the suggestion that

(3) the last stage in the technology delivery system, that is, the vendor, be a reliable deliverer of technology or home products, like Sears Roebuck.

This suggestion ran through all the groups but two. It represents a powerful need for a strong and confidence-engendering, reliable and experienced agent for the delivery of both equipment and installation of solar energy. It is interesting to note that Sears rates higher in this sample's confidence than the government, the oil companies or the utilities. This repeats evidence from the authors' solar studies elsewhere in the United States.

It should be noted as a sharp departure from earlier studies that there was little or no interest expressed in seeing solar systems in use. Instead the groups stated challengingly that the government should make greater use of solar.

4. The information-seeking phenomenon: A request for reassurance?

Throughout the meeting of each group, there was the repeated request for more information about solar energy. Sometimes it was directed to the group leader, other times it was stated complainingly or realistically that government, industry, vendors, etc. needed to provide more information and more education before decisions could be made. In addition to its possible viability as a need of the program, this represents an interesting and revealing group process. It is apparently a way of avoiding commitment or decision and projecting the responsibility onto some other agent. "Thus, I can't possibly make up my mind, I do not have enough information." In many cases, the individuals and even the groups were clearly armed with sufficient information to take stronger positions on solar than they did. However, when a decision

crisis approached they asked for more information.

Frequent requests for information were addressed to the subsidy or tax benefit area where, after revealing some insight or understanding of what is in process or has been recommended, the groups would become confused and fall back on the fact that they really do not know what the tax credits mean or what the extent of the tax benefits might be. There is a strong suggestion that this represents a welling up of fear of high risk. Thus, admitting knowledge of what financial assistance the government would provide is the first step in a decision-making process leading to the acceptance of solar energy. However, these people are clearly unprepared for such a decision. To avoid admitting that there is an underlying fear, it is necessary for one to state that one is confused and not in possession of the basic information needed to make the decision. It is also likely to represent a request for reassurance that someone knows about solar and will take a hand in helping them.

There were other avoidant behaviors designed to achieve the same effect. The groups frequently moved to discuss other alternative energy sources. They considered wind energy in one or two cases, photovoltaics and in still another Panel, tidal energy. The groups also would shift back to a consideration of the level of threat to the existing energy sources (nuclear and fossil fuel) and judge in most cases that things were not at a critical point yet.

Another decision-avoidant procedure was to drift into the future and to project solar as though it was a potentially effective technology for tomorrow or for the next generation. This tendency was very strong in five of the groups and was present in all.

Removing solar to the future solved people's cognitive dissonance* problems: it permitted them to "accept" solar without feeling the need to do anything about it.

In order to deal with the dual factors of risk and the sense of victimization the following steps will be important.

- 1a. Providing greater confidence and security in the technology delivery system including the vendor and the installer.
- 1b. The issue of mass production enters here in that it provides to the individual a sense of safety in numbers and the recognition that his unit is not a unique, one-of-a-kind, piece of equipment that may become obsolete and is not consensually validated through the purchase of the same equipment by thousands or millions of others. In addition more production is believed to lower costs and improve quality control.
2. Good economic terms and incentives for the consumer.
3. That the consumer be fully apprised of these terms and incentives.
4. That the government provide protection from exploitive or unscrupulous agents through regulation, warranties, certification, etc.
5. That the consumer be provided with some basis for having confidence in the government's decision to, and ability to, provide this protection.

III. RECOMMENDATION FOR STATE-WIDE SOLAR PROGRAMS

1. A state-wide program for facilitating the development of solar energy should be built around a baseline of action and information which is directed

* Discomfort produced by not acting in accord with one's opinions or beliefs.

specifically to the several segments and sub-segments of the population through the use of channels that are familiar and meaningful to those demographic groups. Thus, ethnic or racial groups may have their own communications and decision-making channels, e.g., Oriental or Mexican-American groups; differing socio-economic levels have different media communications channels and decision-making styles and different geographical areas have their own needs, social and geographic distance, media and decision-making process.

2. Facilitate the granting of loans for homes to include the initial cost of solar energy to be paid off over the life of the mortgage. This reduces upfront costs tremendously. This provision should be made for retrofits, as well as for new homes.
3. Provide assurance that recommended solar systems work. Restrict granting financial incentives to the purchase of reliable systems. This may include licensing of vendors and establishments of solar industry standards.
4. Assure reliable installation, warranty and maintenance. Attempt to develop regulation that does not increase the cost of equipment and installation.
5. Provide information in non-ambiguous terms comparing solar with other energy sources.
6. Build confidence in solar energy built around the steps described above, as well as by government utilization of solar energy in government buildings, e.g., city halls and police stations.
7. Implement the programs in a planful manner so as to make them operational:
 - a. Reach the operational decision maker, e.g., builders, bankers, architects, planners, building syndicate directors.

- b. Simultaneously apply whatever direction or pressure is required to those who write building codes and assess property, to extend the limits of conventional thinking to include the potential of solar energy and other renewable or storage based energy systems.
- c. Reach the local decision-making focus in California communities. These may be professional or occupational groups, labor unions, neighbors or civic associations. In others ethnic groups, the extended family, cooperative groups, credit unions, church groups, etc., may be central.
- d. Teachers in high schools and colleges should employ discussion techniques to achieve consensual validation about the acceptance of solar.
- e. Encourage discussions about solar in the media. The level of interest expressed in the Panels demonstrates its interest value.
- f. The consensual validation process suggested in c and d may be enhanced through the availability of information and personnel to answer questions.

PANEL SUMMARIES: DIFFERENCES AMONG SAMPLE SEGMENTS

A. THE SACRAMENTO GROUP

The second group of the California Study is the Sacramento Group composed of homeowners with joint incomes in the family of over \$45,000. The group is composed, however, of middle-middle class, white-collar people in sales, tax brokers, secretaries and middle-range administrator.

The group immediately launched into a discussion of the high cost of solar energy. This was matched by the consideration of the high cost of energy in general and it was concluded that there was a real crisis. (This was one of the few groups that acknowledge the presence of a real crisis.) They were aware but were weakly motivated by the issue of energy independence from OPEC or from the utilities.

They remarked that the solar industry itself was weak, that it was in great need of reliability and that there were too many divergent systems of solar currently in use. This led to the suggestion that there was a strong need for R&D and ultimately standardization.

The group also concluded that the industry was in need of support from government and the financial community.

Shortly thereafter, however, they began to run out of the sense of assurance that they knew much about solar and began to express their need for further information and a demonstration. The resistant quality of this request for information and the fact that it is associated with the development of a strong hesitancy about solar was revealed when they next revealed a very strong fear of things that are new and novel (acceptance of innovation).

They did have confidence that the state government can do something about solar energy and they seem to be aware of the state's capability and consciousness of the program.

However, they were unsure about the utilities companies' impact on solar. Conversely, they were proud of the role of the University at Davis although they did not know that the program had had any effect to date.

They noted that there were severe installation problems and this again substantiated the high risk quality of the industry. They noted even more strongly that the state of the art was poor, that the quality control was not good and the publicity was very poor, partly because of the fly-by-night nature of the operators.

This led to the conclusion that state certification is necessary and federal backing via a bond issue would also be of great value. They also suggested these should be used as tax incentives, both federal, state and local.

The warranty problem was discussed. It was clear to them that the vendors were unreliable and fear derived from this unreliability prevailed and contributed further to the sense of risk. They had more confidence in government than they do in industry. (This is atypical for the rest of the population). The statement was made that energy savings are more important than economics; however, while this anti-economic viewpoint in favor of conservation was discussed and generally supported, it did not contain a note of conviction and promptly died out. The group moved toward a mood of pessimism in which their faith in government tended to weaken and it was clear that their allocation of responsibility to government earlier was on a "government ought to" rather than a "government can" point of view.

The need for the stable, intermediary vendor appeared again. Sears Roebuck was seen the epitome of solidity and stability and would offer a boost to the solar industry, especially if the units were made by a large and reputable manufacturer.

Toward the end of the meeting a group which had begun with more positive attitudes toward solar had backed off from even their modest earlier commitment and was stressing the risk aspects of the problem.

SUMMARY

This is a group of middle-middle class persons living in the state capital where they have a greater familiarity with state government operations. They begin with some concern and with some acceptance of the reality of the energy crisis and generally positive attitude toward solar energy although there is considerable hesitancy about the industry and its vendors. They are more positive about government. As the meeting progresses and the various questions associated with solar energy are introduced and the information is not available to resolve them, the group works itself into a resonating increase in the sense of risk associated with the industry which eventually produces a modification of their positive attitude and the pessimism about the application of solar immediately even with government subsidies. Solar does remain quite viable as an energy source for the future.

B. THE AUBURN BUSINESS AND PROFESSIONAL GROUP

SUMMARY REPORT

Meeting held 7/19/79. This is a group of business leaders and political office holders.

The group was initially intrigued with the possibility of free energy from solar sources and subsequently recognized that it was at least low cost energy. However, immediately caution began to intrude upon the assumption.

They developed criteria for the industry saying that it:

- a. Needed to have sound installation, it needed to be cost effective and there had to be some reliability and someone had to assume liability.

They began to doubt that consumer satisfaction would be achieved. They questioned the installation first, saying that there were no qualified installers.

- b. Subsequently, they began to express doubt of the scrupulousness of the fly-by-night dealers and challenged these.

- c. They moved on for the moment to the question of tax benefits which initially appeared as a positive incentive; however, it was cautioned that this means, "That the industry is in trouble."

They considered the advantages of mandatory passive solar being required but this was immediately seen as a violation of free enterprise principles and was very soon dropped. They expressed an interest in photovoltaic technology and thought this would be more effective in the long run than current solar energy. They moved on to other future speculations seemingly as a way of avoiding the issue.

When they were brought back to solar they complained that "Life cycle costs" were too high, that solar systems were useful only for hot water. They began to indicate that this was too high a risk enterprise and that they would need protection. However, the introduction of government protection again posed a challenge to the free enterprise system. It was noted that regulations invariably raised costs and the question of government regulation and protection was subsequently opposed.

Further hesitancy was derived from the high mobility of home owners which constitutes an economic and a psychological obstacle. The obstacle being that of not achieving pay back in the short period of occupancy and ownership.

The group seemed to be warming more and more to their concern with risk and uncertainty and this provided a greater psychological barrier to the acceptance of solar energy. There was a tendency to postpone the discussion and longer and longer periods of nonproductive discussion occurred. They avoided discussion or consideration of immediate applications.

When it was discussed they doubted that the system would work. They questioned that one could sell homes with solar energy and began developing even higher barriers than had existed at the beginning of the discussion.

One saving suggestion was the proposal that a stable vendor like Sears, Roebuck and Co. would provide further confidence in solar energy. They had no confidence in the government. However, they did feel that government subsidies were necessary so long as there were no government regulation.

SUMMARY

This was a group of political leaders and community gate-keepers, sensitive to a business point of view and was an upper middle-class position. They were much taken with the concept of solar at first and are generally pro-solar in the long run; however, they are very wary of its current feasibility. Their decision process reveals a reverberating cycle of caveats about solar leading to a sense of very high risk and tending to postpone until greater assurance is provided. Any recommendations or programs that will reduce risk without infringing their sense of free enterprise would probably minimize their current resistance to solar.

C. THE BAY AREA MIDDLE-MANAGEMENT GROUP

This group is composed of training supervisors, line supervisors, senior secretaries, and a refrigeration system supervisor.

The group began with the positive aspects of solar energy. They were very interested in energy independence both from OPEC and eventually from the utilities. They see the conservation aspects of solar as well and most important, they find benefit in the economic savings derivable from solar.

However doubts begin to appear promptly and in this group the first expression is a relatively passive, helpless, seeking after additional information about solar. They need to know more about solar itself, about the storage aspects, etc. This developed into concern about the value of solar. They have heard that there is no increment or no gain from the use of retrofit solar systems. Therefore, it is promptly urged that new homes in all solar areas be used as an entry wedge for solar. Shortly thereafter though, questions arise about the reliability of the vendors of solar equipment and this becomes a discussion of the high risk of solar and its relationship to the size and level of responsibility of the manufacturers. Risk is also associated with the effectiveness of solar itself.

They appear quite willing to rid themselves of the risk by believing that commercial applications of solar energy are much more viable than home applications.

The ambivalent feelings of the group are even more graphically expressed when it is revealed that they are unsure as to whether solar energy is effective and is being held back by some sinister forces or whether it is ineffective and therefore unable to achieve the stated purposes and the needed purposes.

The source of some of this concern emerges when some ambivalence about utilities emerges. There are positive feelings about them because they are reliable and the consumer is generally dependent upon this energy monopoly. They are quite negative because they believe the consumer to be exploited by the utilities. The more detailed the discussion becomes about the utilities the more ambivalence and conflict within the individuals appears to grow.

In this group the frustration exploded in the form of a broad ranging attack on those who victimize the consumer. This group believed that the solar industries are a rip-off, the utilities are a rip-off and that the government, the universities, the research corporations and even the consumer agencies are victimizing the consumer.

They are skeptical about savings from solar, they feel that the initial costs are bad and that something should be done about them.

During this discussion there were suggestions that centralized solar energy was better and esthetically more acceptable than individual collectors on homes. However, they felt that the solar industry was holding back innovation.

As their anxiety grew, the hopeless, dependent manner of dealing with the energy situation also increased. They tended to "table the issue" of solar and demand more research. The meeting ended on this note.

D. SAN JOSE BLUE-COLLAR GROUP

The San Jose Blue Collar Group is composed of skilled craftsmen and maintenance workers.

This group is composed of blue-collar workers who have good mechanical aptitudes and considerable experience with appliances and systems resembling solar energy and its related technologies. However, even this group requires some additional information concerning the operation of the system and its economics.

Very soon after the beginning of the group they indicated their dislike for the entrepreneurial types who are currently dominating solar. They consider this kind of person unproductive in society whereas only those who work with their hands or are creative are making a contribution to the society.

The group questions that much energy is being saved yet they do cite the economic benefits. They like the idea of energy independence for both the nation and the individual and their personalities and their politics would seem to reflect a stronger nationalism than most of the other groups interviewed.

Despite their interest in solar they want multiple alternate energy sources and options to choose among since they are not sure of the success of any single source.

Their indignation at the saliency of the entrepreneurial group develops into a suggestion of a government industry conspiracy to rip off the public and delay the development of alternative sources of power. This is being done by pressure groups from big business and government.

On the other hand they fear that our energy may be running out and although the criteria may be different for different individuals there is a greater sense of urgency in this population.

They also understand the effect of the economic factors and costs of utilization of these alternative sources, thus their skills are not entirely mechanical.

They expressed a need for information on the tax incentives which they consider a part of the "rip-off" because insiders have information on how to obtain these benefits and common people do not. They also note that current incentives deny them tax benefits for the application of their skills in do-it-yourself programs, while the more helpless people who will have less good systems are given tax benefits which they consider grossly unfair. They prefer their own labor to that of unskilled labor and feel that since it is being done in their own homes they are likely to construct very effective systems and are, therefore, entitled to the tax breaks.

Despite its anger at this "injustice" the group demonstrates a calculated approach to problem-solving and the selection of an appropriate energy source. As such when they are approached by any state program they should not be patronized or talked down to. Their reference group is not the usual media or sports hero but a skilled individual like themselves not necessarily richer but with capability, understanding and skill.

They do not want government regulation, they want protection from the government and this gathers itself into a complaint that it has not been and is not being done.

The victim syndrome is exceedingly strong with this group. They feel as though they are being "ripped off" by almost every segment of society around them. They feel that they are the most productive people in the society and, therefore, feel that incentives should reward their skills.

These people tend to occupy their homes longer than most others do and perhaps the most critical thing about their eventual acceptance of solar and about their perceptions of themselves and their homes is that they regard the house they occupy as a home to be lived in, to be comfortable in and to pass along to their off-spring, rather than an investment to be disposed of as soon as there is a sizable capital gain and further upward mobility to be achieved.

SUMMARY

The San Jose Blue-Collar Group is qualitatively different from other groups. They are among the few that fear an energy crisis, they have a sense of being exploited by sizable elements within the population and government. They have the ability to put solar over if sufficient and effective incentives are provided and their attitude toward their houses and homes is such that solar may be more acceptable in the short-run to such a population.

E. THE VALLEY GROUP

The following is a summary of the meeting of the Valley Group on 7/16/79. This is the night after the Carter Speech on Energy. This is a middle-class group earning under \$45,000 per family. The members were administrators, financial aides, real estate salesmen, etc.

The group was, as so many, seemingly pro-solar at the outset. They discussed the fact that this was a clean technology and potentially less expensive than others. They noted that it was a hedge against inflation.

However, this soon faded and the question of the unesthetic nature of solar arose. This is momentarily dismissed as being an individual thing, however it was followed by the mention of the high initial cost of solar which appeared to be a powerful barrier to current acceptance.

It was noted that solar would benefit from mass production and that it was inevitable that it would be used but at some time in the future.

As the group drifted farther from the acceptance of solar, they appeared to alternately find fault with it and then discuss some positive suggestion. It was noted that there was a stronger need for reliability in solar units and security about its effectiveness.

It was indicated that there is a need for more information and education about solar in order to make its areas of effectiveness better-known.

They reviewed reasons why solar was not acceptable and how it could be accepted. They indicated that the problem lay with the builders and that the only way solar could be accepted was in new construction. However, they understood that the builders would not do it and it needed subsidies from the

government. They indicated that the California's state backing for solar was reassuring and that federal research and development was needed to eliminate the inefficiencies of the current systems.

Some of their fears began to emerge when the general discussion favored government support for solar at all levels. A rather considerable fear of redundancy in such a support program surfaced immediately betraying their concerns about government inefficiency.

They moved on to a discussion of industry saying that it was necessary for industry to make it competitive. Thus, the familiar theme of government support and industrial efficiency was repeated.

They returned to the problems of retrofit indicating that new construction, yes, but retrofit, no.

The relative merits of the environmental aspects of the energy sources was next discussed, someone bring up the question of nuclear danger and comparing it with solar and the group agreed that if solar is economically feasible, they would favor it. However, there was again an implicit question, an underlying fear that solar energy is not economic and it appeared to be much stronger than it was expressed. They clearly needed proof of the economic feasibility of solar energy.

At this point the group became interested in a discussion of private influences on government that interfered with the development of new energy sources and the "victim syndrome" emerged with the suggestion that solar energy was being suppressed by these private influences.

They continued to project responsibility to others noting that the commitment of builders, architects and designers is needed.

The group began drifting away from their own situation and thought that solar energy might be useful in other areas, noting that the high cost of utilities in the eastern part of the country would lead to the acceptance of solar energy.

There was a general discussion of government impediments to the acceptance of solar energy which appeared to reflect their own hesitation about commitment to solar energy. This seemed to be true of the local and the federal levels.

They then suggested that solar energy could be sold by television.

The theme of their ambivalence about the federal government took shape again. The principle that the Federal Government should take the lead seemed to be in contrast with their need for the productivity of free enterprise. However they also feared free enterprise. Thus, they were torn between government incompetence and the exploitation of enterprise.

Thus trapped, with their underlying positive feelings about solar frustrated, they demonstrated their resentment and their frustration by requesting more information and indicating the "future" quality of solar energy.

This group seemed positively inclined to solar energy, however continued to find obstacles to its acceptance. They are unable to make a commitment to solar because they fear the risks associated with it. These risks which require support from both government subsidy and industry productivity are frustrated by fear of government ineffectiveness and industrial exploitation.

Thus conflicted the group deferred or tabled any commitment to solar at this time and convinced themselves that it is not yet ready for acceptance.

F. THE ORANGE COUNTY DECISION ANALYSIS PANEL

7/10/79

This panel was a middle-middle class panel including teachers, architects, a low-level engineer, small business men and other comparable persons earning less than \$25,000 a year. The group is very much pro-solar at the beginning, however their position is somewhat abstract.

Very soon after the beginning of the meeting the discussion of the high cost of solar was introduced with the comment that "it would be a luxury."

It was suggested that tax incentives might make it more possible. The discussion of tax incentives produced a demand for information or at least it was so presented. They indicated that they were not well-informed about the subject, that they needed more information, that there was too much confusion in the solar field and a great deal of inconsistency among policy makers.

Other members described solar as ugly and unesthetic.

They felt that information provided about solar by large companies would be acceptable, however information obtained from the government was generally poor. This led to the discussion of government capability and the conclusion that government was not able to cope.

Thus it was indicated that government should be in a position to "sell" solar energy but it cannot. It was suggested that solar could at least be "protected" by the government in the sense that the government would back warranties and provide subsidies. Armed with this temporary reinforcement,

the group discussed the greater safety of solar over nuclear energy. They indicated that it was a clean technology and that it provided energy independence from both OPEC and the utilities.

There was a discussion of the role of the utilities which was a clear indication that the consumers present do not trust them with solar energy.

However, they do have some positive feelings toward the utility.

This ambivalence produced a discussion of alternative methods and a diversion from the earlier discussions. It was concluded that they would leave the issue of solar energy to the next generation. They feel that "they do not want to sacrifice, the older generation is not able to sacrifice." It is accustomed to cheap energy.

They indicated that solar would produce a water shortage and that there were price inconsistencies and that solar energy was unreliable. Thus, after a period of "lack of conviction," and conflict about the decision-making and commitment to solar, they lapsed into a recitation of the negative aspects as though to relieve themselves of the burden of commitment.

However, it was stated that the cost might drive them to solar if the dealers were reliable. However, there was not much conviction that dealers would be reliable.

They ignored a discussion of the tax break available for solar when that was introduced and proceeded to deny that there was an energy crisis, stating that the government simply has not looked at alternate sources of energy.

It was indicated that solar is premature and they also fairly certain that solar was ineffective. As the meeting progressed, they became increasingly aware of the risks and fears associated with solar energy and the conflict with existing life-style and institutions.

Thus despite positive attitudes toward solar energy that exist, they could not deal with the deep-seated fears, the risk of unreliability, of economic costs and, in spite of reassurance with regard to the possibility of an improved technology delivery system, they could not accept solar energy and make a commitment to it.

At the close they made an appeal for better merchandising to overcome their fears returning again to the Sears syndrome. That is the idea that an ideal merchandiser might protect them from problems of manufacturer reliability, warranty service, etc.

G. THE COASTAL GROUP (Newport Beach Area)

This is a group of architects, engineers and associated professionals with incomes of over \$45,000.

Basically the group is pro-solar; however, as with others they immediately launched into a long list of well-supported objections to the current acceptance of solar. An interesting observation was made and agreed to by several of the members. They believe that anti-nuclear forces are using solar as a front for their anti-nuclear position and have no real interest in furthering solar technology.

This is further a group that is not fully involved in social and community affairs. They feel as though they have not been included in the decision or involved in policy-making, although they are possibly better informed than people who are. As a result they appear to feel somewhat alienated from the area of solar energy and from the government decision-making process. This may be true of many professionals whose understanding is considerable and yet failure to be involved or consulted, leaves them highly critical of the government policy process.

Indeed this group is highly critical of the California Energy Commission and of the state government and the federal government in general. They state that there is a need for popular acceptance of solar energy and this can best be developed through the development of confidence in the vender-installer.

They then proceeded to list the other recommendations that are characteristically made in this field including the need for additional education, for standardization of equipment, for a change in the building codes to meet the requirements of solar, etc.

They were particularly vocal in their statement of the need for the improvement of the technology delivery system. This, they felt, was a very important requirement. However, it was qualified by their concern over the manipulation by big business of the developing TDS.

They feel the public is not receptive to solar; that they fear the vulnerability of the solar industry and the solar technology. (One wonders about the level of projection of their own feelings in this case).

They are, as with many other groups, ambivalent about government. They want government standards and government support and subsidy; however, they do not favor government interference in the development of the industry.

The need for a warranty with an adequate back-up is strenuously stated.

They are critical of existing government operations indicating that incentive programs are hard to understand and even more difficult to obtain.

Thus the group ended with a rather pessimistic attitude toward solar and for the series of requirements for it if it is to become a viable source of energy.

SUMMARY

This was a group of well-informed, high income people who are fundamentally pro-solar but generally do not accept the possibility that solar will be applied on a large scale in the very near future. Part of this may be associated with reality, a fair portion would seem to arise from the rather negative attitude of the group participants toward a decision making process which has not included them despite their evident talents in the area. Their focus was on areas that reveal some evidence of risk arising from the acceptance of solar. However, there is not as great a sense of danger or risk as was present in lower socio-economic groups and/or those more concerned with the cost of solar.

H. THE SAN DIEGO PROFESSIONALS

7/13/79

This is a group of high-income professionals who are engaged in research and development in science, architecture, the behavioral sciences, medicine, etc.

The group felt that natural gas was prohibitive for swimming pool heating at current rates and that solar energy was quite valuable and necessary for this purpose. However they were not sure about further applications at the moment. This is the only group that felt that OPEC and ecology were not primary factors in the eventual emergence of solar energy.

Their determination "to think for themselves" was demonstrated when it was stated that a popular and well-known figure in the San Diego, La Jolla area had built himself a solar home. However, they were skeptical of his decision at this time. (The person is not well known for his mechanical aptitude and it may be this group is being very discriminating in their election of gate-keeper figures). They demonstrated their knowledge as well as their hesitancy about solar by turning their interest to wind power. However, here again, they felt that it was uneconomical and that it was the wrong time. There was an extended discussion of utility systems and how some private producers were able to sell power back to the utilities. They concluded however that the utilities have a basic advantage over the consumer and that they were trapped by the utilities in many areas in their daily lives. Thus, again the "victim syndrome" emerged.

They announced and agreed that the individual is entitled to buy what he

wants and can afford and they therefore were very positive about and like the idea of solar as "future source" of energy.

For the moment they felt the payback period was too high at 6 to 7 years (most of these people have or will occupy their homes longer than that). They feel also that the government is not able to protect them from inflation or special interests or to supply their energy needs in which case they may be driven to solar. The group does express a fear of running out of fuel, although there are differences as to the time required. It was stated that the gas lines may drive us to solar, that we need a crisis to produce such change and that OPEC may be a beneficial motivator. It emerged very soon afterward though that these people do not like to feel helpless or hopeless (this is a high dominant group) and feel frustrated by such conditions. Their allusion to gaslines earlier triggered the discussion of the primacy of the automobile. They consider the availability of fuel for the automobile possibly more significant than other fuel supplies. (Note the climate of San Diego /La Jolla).

It was suggested that if conservation is to be achieved or solar energy is to be developed, it is necessary to reward those who are instrumental in doing so, particularly the consumer in their case. Discussion of rewards suggested that solar was probably infeasible; that it is, at this time, a cottage industry (poor technology delivery system); that most retrofit efforts are infeasible and pointless (this would necessarily be their mode of acceptance of solar energy).

There ensued a discussion of which was more motivating, the cost of fuel or the availability of fuel. It was not resolved but the general impression was that availability was more important than cost. The group returned to a discussion of their independence of the utilities. They were still troubled by the sense of being controlled and victimized by the utilities.

They then turned to the solar energy industry and indicated that they were sure that the equipment was not reliable at this time. The builders were also seized upon as exploitive and it was noted that if subsidies were used by government the builders will probably take the subsidy and raise prices as well.

They were troubled by their inability to deal with exploitation by a number of groups e.g. builders, oil etc. They sought further information and behaved as though they were far more uninformed than they actually are.

The next ploy was to put solar off to the future through various methods indicating that it is not ready or that there is more oil available at relatively low cost than we realize, etc. They also indicated that photovoltaics are really required and would be a better solution.

It was clear that the group was asking for some kind of protection from being exploited or ripped off and that they did favor a subsidy incentive. They wanted, also to be protected from fly-by-night sales personnel and more basic, they sought a more idealized concept of a stable and responsible vendor (in this case, again, Sears Roebuck).

They were able to state quite directly that the risk is just too great.

They do not want to "be the first on the block".

On the other hand they do want to be free of control by large corporations and utilities through their expressed desire for decentralization of power sources.

The group throughout was concerned with their immediate personal situations while they tended to be abstract at certain times as defense against their own feelings. They focused largely on meeting their own family and personal needs and were rather frank. Cost reliability, loss of face and risk reduction were the primary issues that they faced which were summarized in some ways in the sense of being victimized by a number of forces related to the energy field. They sought some agency that would relieve them of such victimization but were not able to place the hope of responsibility on any particular institution.

I. THE SAN DIEGO RETIRED GROUP

7/12/79

These are a group of low income, perhaps higher capital owning retired persons in the San Diego - La Jolla area.

The group had a perspective that was limited to the state of California. They seldom dealt in national issues. Their initial theme and one that continued to appear throughout had to do with the issue of energy independence from OPEC.

While solar was potentially beneficial in this way and could eventually produce some small savings, they felt that overall it was not useful to senior citizens where the upfront cost were much too high for them to bear. While they did not say so, it was clear that no one was confident that the pay-back period could be achieved, not by the equipment but by the person.

They stated that senior citizens are different from others, that they can withstand hardship if necessary and can put a sweater on if needed.

Then somewhat confused and a little upset by the consideration of having to do without, they reached for more information, appeared to be very confused about the cost figures, that they had been very sure about a few moments before and even more uncertain about the capability of solar equipment and the back-up requirements.

It emerged that there was an intense fear of the "fast buck," "fly-by-night," entrepreneur. They want government protection from being cheated.

They know that solar energy is a "better deal" in new homes (most of

these people will not be buying new homes.)

They have an intense concern about the quality of installation, the value of the warranty and the honesty of the vendor.

As senior citizens, they state that they do not want a subsidy (pride?) and they pointed out the tax rebates are not useful in their tax situation (it is likely that few of them pay much in taxes).

Returning to a more abstract discussion of solar, they felt there was much to be gained from mass production. There is good reason to believe that it is not just the economics of mass production that are seen as beneficial but the sense of a large, well-capitalized manufacturer being in the field, that they picture as being better protection).

Again there is the insistence that they are uninformed about the tax advantages and they may indeed be although there was evidence of some sophistication earlier. The group falls back on the benefit that would best meet the needs of this particular demographic group - they want utility rates reduced and they do not care what energy source it is that provides them with power.

Eventually they link solar with the federal government and reject both in a build-up of frustration. This appears to be a reaction to a growing dependence on the government, a lack of response by the government to the inflationary situation and a general sense of having been let down by state and federal government.

They note that they are not environmentalists. It is too expensive and

there is the implication that the environmentalists are helping drive up the cost of living which is harmful to the senior citizens.

Their frustration is expressed even more when they note that other countries can use solar. "Israel learned how to, why didn't ours?"

SUMMARY

This is a group to whom solar is attractive. It is idealistically and abstractly a desirable source of energy, however for apparently realistic reasons in their minds, the risk of employing solar is too high and ultimately they turn against solar energy. The reasons for doing so are only partially related to solar energy in large part, they are related to the generally disenchantment with the institutions that have promised to benefit them in the past, and have not done so.

Relevant Previous Research and Development
Research Reports
Joseph B. Margolin, Ph.D. and Marion Ruth Misch, Ph.D.

Analysis of Policy Options for Accelerating Commercialization of Solar Heating and Cooling Systems (with Bezdek, et al)
Program of Policy Studies in Science and Technology, The George Washington University, 1977

Socio-Economic Aspects of Thermal Energy Storage Decision Analysis of Individual Customer (with Cambel) Office of Energy Programs, School of Engineering and Applied Science, The George Washington University, 1979

Psycho-Economic Factors Affecting the Decision Making of Consumers and the Technology Delivery System: Solar Energy Incentives Analysis (with Misch, M.R.), U.S. Department of Energy, 1978

Incentives and Disincentives to Ridesharing: Preliminary Report (with Misch, M.R.) Transportation Research Board Meeting, Washington, D.C. January 1976

Rural Women's Group as Potential Change Agents: A study of Columbia, Korea and the Phillipines, (with Misch, M.R.) U.S. Agency for International Development, 1975

Consumer Motivation and Participation in Planning and Use of Transportation Services, U.S. Department of Transportation, 1975

Revitalization of Small Communities: Transportation Options, 1974

Evaluation of the Effectiveness of Illustrated Print Media on Family Planning Attitudes Among Colombians (with Misch, M.R.) U.S. Agency for International Development, 1973

Principles of Energy Conservation, U.S. Department of Energy in progress (with Misch, M.R.)