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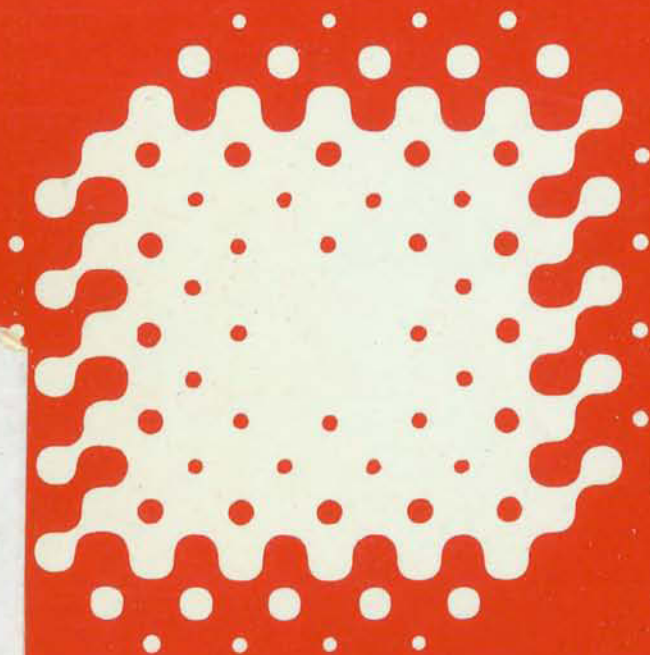
Recherche sur
la consommation
d'énergie:

an annotated
bibliography

une bibliographie
annotée

Volume I
A-G

C. Dennis Anderson
Gordon H. G. McDougall



Consumer and
Corporate Affairs
Canada

Consommation
et Corporations
Canada

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CONSUMER ENERGY RESEARCH: AN ANNOTATED BIBLIOGRAPHY
RECHERCHE SUR LA CONSOMMATION D'ÉNERGIE: UNE BIBLIOGRAPHIE ANNOTÉE

This document is an updated and expanded version of an annotated bibliography by Dr. C. Dennis Anderson and Garret G. McLaughlin, Research from a Consumer Perspective (March 1979). It covers North American English literature, primarily from the United States, in the area of consumer energy research. The authors would like to thank both the information provided and the material submitted by the Consumer Energy Research Council and the National Energy Research Council. The authors would like to thank Dr. Garret G. McLaughlin and Garret G. McLaughlin who are credited as expanding knowledge in the field of consumer and energy research.

In preparing the annotations, the work of three individuals should be noted. First, we thank Garret G. McLaughlin who had the job of collecting the original materials not appearing in published form. Garret G. McLaughlin was one of the researchers and the classification scheme, partly by annotation, partly with a great deal of skill and initiative. Second, we appreciate the efforts of Evelyn Hunter who collected many of the published papers in the area. Third, the work of the entire bibliography was done by Elsie Strain at the University of Manitoba which made our work easier and more enjoyable.

C. Dennis Anderson
University of Manitoba
Université du Manitoba

We are grateful to two agencies for granting permission to include some of their energy research in this annotated bibliography.

and/et

1. The Royal Commission

1700 Main Street

Ottawa, Ontario, Canada

Gordon H.G. McDougall

Wilfrid Laurier University

Université Wilfrid Laurier

2. Energy Abstracts

Technical Information

Department of Energy

Washington, D.C.

These institutions helped us to expand the scope of the bibliography and to shorten its preparation time.

There are a number of other useful bibliographies and reviews for those interested in the consumer energy field. These are:

Beale, Virginia Consumer Research and Evaluation Branch
Consumer and Corporate Affairs Canada
Direction de l'évaluation et de la recherche
Consumption et Corporations Canada
Attitudes and Behavior, New York: Praeger Publishers.



PREFACE

This document is an updated and expanded version of an earlier annotated bibliography by Dr. C. Dennis Anderson and Carman Cullen (Energy Research from a Consumer Perspective March 1979). It covers the recent North American English literature, primarily from the United States in the area of consumer energy research. The authors would like to acknowledge both the information provided and the material assistance granted by the Consumer Research and Evaluation Branch of Consumer and Corporate Affairs Canada. In particular, we are grateful for the efforts of Dr. Geoffrey Hiscocks, Lee G. McCabe and Carman Cullen who are committed to expanding knowledge in the field of consumer and energy research.

In preparing the annotations, the work of three individuals should be noted. First, we thank Warren Howe who had the job of collecting the original materials not appearing in published form. Warren also provided many of the annotations and the classification scheme, tasks he accomplished with a great deal of skill and initiative. Second, we appreciate the efforts of Kelvin Hussey who collected many of the published papers in the area. Third, the Herculean job of typing the entire bibliography was done by Elsie Grogan in a professional manner which made our work easier and more enjoyable.

We are grateful to two agencies for granting permission to include some of their energy abstracts in this annotated bibliography:

1. The Rand Corporation,
1700 Main Street,
Santa Monica, California, #90406
2. Energy Abstracts,
Technical Information Center,
Department of Energy,
Washington, D.C.

These inclusions helped us both to expand the scope of the annotated bibliography and to shorten its preparation time.

There are a number of other useful bibliographies and reviews for those interested in the consumer energy field. These are:

Bemis, Virginia (1977). Energy Guide : A Directory of Information Sources. New York: Garland Publishing Company.

Cunningham, William H., Sally Cook Lopreato (1977). Consumers' Energy Attitudes and Behavior. New York: Praeger Publishers.

Ellis, Peter, George Gaskell (1978). A Review of Social Research on the Individual Energy Consumer. London: The London School of Economics and Political Science, Department of Social Psychology. Unpublished report.

Energy Information Index (Annual), Energy Mines and Resources, Ottawa.

Farhar, Barbara C., Patricia Weis, Charles T. Unseld, Barbara A. Burns (1979). Public Opinion About Energy: A Literature Review. Prepared for the U.S. Department of Energy. Golden, Colorado: Solar Energy Research Institute. SERI/TR-53-155.

Frankena, Frederick (1977). Energy Intensity: A Selected Annotated Bibliography. Council of Planning Librarians Exchange Bibliography No. 1306. Monticello, Ill.: Vance Bibliographies.

Joerges, Bernward (1979). Consumer Energy Research: An International Bibliography, Internationales Institut Fur Umwelt and Gesellschaft. Berlin. Unpublished Report No. IIUG/79-14.

Morrison, Denton E., et al. (1975). Energy: A Bibliography of Social Science and Related Literature. New York: Garland Publishing Company.

Morrison, Denton E., et al. (1977). Energy II: A Bibliography of 1975-1976 Social Science and Related Literature. New York: Garland Publishing Company.

In addition to the bibliographies and reviews listed above, a wide variety of sources were employed. These additional sources are listed in Table 12 (Journals), Table 13 (Papers Presented at Conferences), and Table 14 (Other Sources).

The authors plan to monitor the consumer energy research field on a continuous basis and to print updated versions of the annotated bibliography either annually or bi-annually. Researchers who have conducted studies in the field are encouraged to share their knowledge by forwarding copies of their results to either author.

In conclusion, it is hoped that this bibliography will provide useful information for both practitioners and researchers in the consumer energy field. Improved understanding of consumer energy consumption and conservation is essential if we, as a society, wish to confront and overcome the energy problems which face us today.

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AVANT-PROPOS

Le présent document est une version revue et étoffée de la bibliographie annotée de C. Dennis Anderson et Carman Cullen "Perspective du consommateur sur la recherche en matière d'énergie : une bibliographie annotée", mars 1979. Il répertorie les publications américaines parues récemment en anglais en Amérique du Nord, dans le domaine de la recherche sur la consommation d'énergie. Les auteurs tiennent à remercier la Direction de l'évaluation et de la recherche en consommation de Consommation et Corporations Canada pour les renseignements et l'aide matérielle qu'elle leur a fournis. Particulièrement, MM. Geoffrey Hiscocks, Lee G. McCabe et Carman Cullen qui ont apporté des connaissances précieuses dans le domaine de la recherche en matière de consommation et d'énergie.

Trois personnes ont travaillé à la préparation des annotations. Il s'agit de Warren Howe, qui a recueilli les textes originaux non publiés, rédigé de nombreuses annotations et conçu le système de classification. Il a fait preuve de beaucoup de compétence et d'initiative. Kelvin Hussey, qui a rassemblé un grand nombre de documents publiés dans ce domaine. Et, finalement Elsie Grogan, qui a dactylographié la bibliographie en entier d'une manière professionnelle, rendant ainsi la tâche plus facile et plus agréable.

Nous tenons également à remercier deux agences qui nous ont permis d'ajouter quelques-unes de leurs analyses dans le domaine énergétique à la présente bibliographie annotée :

1. The Rand Corporation
1700, Main Street
Santa Monica, California #90406
2. Energy Abstracts
Technical Information Center
Department of Energy
Washington, D.C.

Ces ajouts nous ont permis d'étendre le champ d'analyse de notre bibliographie annotée et d'abrégier le temps de préparation.

Il existe un grand nombre d'autres bibliographies et d'études utiles pour ceux qui s'intéressent à la consommation d'énergie.

Bemis, Virginia (1977). Energy Guide: A Directory of Information Sources. New York: Garland Publishing Company.

Cunningham, William H., Sally Cook Lopreato (1977). Consumers' Energy Attitudes and Behavior. New York: Praeger Publishers.

Ellis, Peter, George Gaskell (1978). A Review of Social Research on the Individual Energy Consumer. London: The London School of Economics and Political Science, Department of Social Psychology. Rapport non-publié.

Index des données énergétiques (annuel), Énergie, Mines et Ressources, Ottawa.

Farhar, Barbara C., Patricia Weis, Charles T. Unseld, Barbara A. Burns (1979). Public Opinion About Energy: A Literature Review. Prepared for the U.S. Department of Energy. Golden, Colorado: Solar Energy Research Institute. SERI/TR-53-155.

Frankena, Frederick (1977). Energy Intensity: A Selected Annotated Bibliography. Council of Planning Librarians Exchange Bibliography No. 1306. Monticello, Ill.: Vance Bibliographies.

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Morrison, Denton E., et al. (1975). Energy: A Bibliography of Social Science and Related Literature. New York: Garland Publishing Company.

Morrison, Denton E., et al. (1977). Energy II: A Bibliography of 1975-1976 Social Science and Related Literature. New York: Garland Publishing Company.

Nous avons utilisé, en plus des bibliographies et études susmentionnées, une grande diversité de sources qui sont énumérées au tableau 12 (périodiques), au tableau 13 (documents présentés à des conférences) et au tableau 14 (autres sources).

Les auteurs ont l'intention de se tenir constamment au fait de la recherche sur la consommation d'énergie et de publier une fois ou deux par année, des versions à jour de la bibliographie annotée. Tout chercheur qui a effectué des études dans ce domaine est invité à en communiquer les résultats à l'un ou l'autre des auteurs du présent document.

Nous espérons que la présente bibliographie fournira des renseignements utiles aux praticiens aussi bien qu'aux chercheurs dans le domaine de la consommation d'énergie. Il importe de mieux connaître la perspective du consommateur en matière de consommation et de conservation de l'énergie si l'on veut envisager les problèmes énergétiques actuels et tenter de les régler.

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INTRODUCTION

The world is moving from an era of apparent abundance to a new age where many resources are rapidly being depleted. One such resource is energy. Those concerned with addressing this problem and attempting to find solutions are accepting conservation as a critical component in establishing a realistic energy policy. Investments in energy conservation are as critical as investments in energy technology or resource exploitation and development. In fact, there are convincing arguments that, in terms of cost effectiveness and positive environmental impact, energy conservation is a superior option to most supply side investments.

Energy consumed in the residential (consumer) sector constitutes an important and sizeable opportunity for conservation efforts. Up to 40% of the energy in developed countries is used in the residential sector. The potential savings available if a number of conservation measures are adopted is calculated at up to 50%. The critical issue is: What strategies are most effective in achieving these levels of energy savings while maintaining a viable economic system and equity for consumers? The issue is complex, requiring answers to many questions. This annotated bibliography is an attempt to collect some of the answers by bringing together research studies which examine the consumer and energy. By increasing our knowledge of consumers' reactions to this problem, we may be able to move more rapidly to an age where efficient and effective use of energy is the norm rather than the exception.

Objectives and Format

In preparing this annotated bibliography, the authors were guided by three objectives:

1. to provide for both practitioners and researchers, a comprehensive package of the existing information in the consumer energy research field;
2. to provide sufficient detail to enable the reader to appreciate the research and the results; and
3. to provide an index classification system that minimized the search time for a reader interested in a particular aspect of consumer energy research.

To accomplish these objectives the following steps were taken. A concentrated effort was made to collect unpublished material as well as to review journals for relevant published articles. A wide variety of sources were contacted, including governments, utilities, research institutes and private firms. A deliberate effort was also made to include agencies outside North America.

For the most part, the bibliography is limited to annotations of empirical studies. However, it includes a number of descriptive and econometric reports which appeared to make a significant contribution to understanding consumers and energy use. Though over 400 annotations are presented, it must be emphasized that this bibliography is in no way offered as a complete collection of all consumer-related energy research to date. The research in this area appears to be expanding exponentially and it proved difficult and time consuming to gather all the sources that might provide relevant information.

The format of the annotations displays the author, date of publication, title and source of the study at the top of the page. Annotations of descriptive reports and some of those obtained from other agencies are presented under the sole title, "Abstract." Annotations of studies are divided into four sections: objectives, method, variables and findings/implications. The implications noted are those mentioned by the authors of the reports, and deal, for the most part, with public policy decisions and further research efforts.

Care was taken to provide a reasonable amount of detail in the annotations to enable the reader to understand the methodology, the results and the degree to which the implications of the study can be generalized to other situations. It is hoped that sufficient detail is provided so that it is only necessary for the reader to obtain the original source for those studies of paramount interest.

Studies are presented in alphabetical order, according to author. All studies have four-digit numbers with each letter of the alphabet, with the exception of the last three, covering 400 numbers.

The content of the studies reviewed is classified in a series of tables presented in the following pages. The tables are intended to provide a summary of sources, types and foci of the various studies. More importantly they are intended to aid researchers interested in specific topics to locate easily those studies most relevant to their work. The studies are categorized using a number of different classification criteria: for example, methodology used, type of energy form, type of policy initiative and type of consumer activity. Details on the classification system are provided in the section, "How to Use the Bibliography." First, a general overview of the studies is presented.

INTRODUCTION

L'abondance apparente dans laquelle nous avons vécu se transforme et les ressources qui semblaient jadis intarissables s'épuisent. Tel est le cas pour l'énergie. Ceux qui sont conscients du problème et qui tentent d'y trouver des solutions considèrent que la conservation est un élément primordial à l'élaboration d'une politique énergétique réaliste. Les investissements pour la conservation de l'énergie doivent être aussi importants que ceux effectués pour le développement de la technologie, l'exploration et l'exploitation des ressources. En fait, tout porte à croire qu'en termes de rendement des coûts et d'impact positif sur l'environnement, la conservation de l'énergie représente une option supérieure aux autres investissements possibles.

L'énergie consommée dans le secteur résidentiel est un aspect important et quantifiable sur lequel il y a lieu d'axer les efforts de conservation. Le secteur résidentiel consomme jusqu'à 40 p. 100 de l'énergie dans les pays développés et, si un certain nombre de mesures de conservation étaient prises, il serait possible de réduire cette consommation de 50 p. 100. Toutefois, comment peut-on réaliser une telle économie tout en assurant la viabilité du système économique et sans pénaliser injustement les consommateurs? La question est complexe et les réponses sont nombreuses. Cette bibliographie annotée tente de fournir un certain nombre de réponses en regroupant la recherche effectuée dans le domaine de la consommation d'énergie. En apprenant à connaître les réactions des consommateurs face au problème énergétique, nous réussirons peut-être à faire de l'utilisation efficace de l'énergie, une norme plutôt qu'une exception.

Objectifs et présentation

Au cours de la préparation de la bibliographie annotée, les auteurs ont poursuivi trois objectifs :

1. offrir aux praticiens et aux chercheurs un répertoire complet de l'information dans le domaine de la recherche sur la consommation d'énergie;
2. fournir suffisamment de précisions dans les annotations pour permettre au lecteur d'évaluer la recherche et ses résultats;
3. concevoir un système de classification d'index qui facilite le travail du lecteur intéressé à un aspect particulier de la recherche sur la consommation d'énergie.

Pour atteindre ces objectifs nous avons concentré nos efforts sur les documents pertinents non-publiés de même que sur les articles de périodique. Notre consultation s'est effectuée auprès de sources diversifiées, telles que des gouvernements, des services publics, des instituts de recherche et des entreprises privées. Enfin, nous avons pris des dispositions pour obtenir des informations d'agences étrangères.

La bibliographie annotée porte principalement sur des études empiriques. Elle comprend un certain nombre de rapports descriptifs et économétriques qui semblent avoir fortement contribué à faire comprendre les attitudes des consommateurs face à l'utilisation de l'énergie. Plus de quatre cents annotations sont présentées. D'autre part, et nous tenons à le souligner, nous ne prétendons nullement que la présente bibliographie soit un répertoire complet de toutes les recherches sur le consommateur et l'énergie effectuées jusqu'ici. Les recherches dans ce secteur semblent se multiplier de façon exponentielle et, de toute évidence, c'est un travail de longue haleine que de recueillir toutes les sources susceptibles de contenir des données pertinentes.

Selon le mode d'annotation adopté, le nom de l'auteur, la date de la publication, le titre et la source de l'étude apparaissent dans la partie supérieure de la page. Les annotations des rapports descriptifs et celles qui ont été obtenues d'autres sources sont présentées en bloc sous la rubrique "résumé". Les annotations des études se divisent en quatre parties : les objectifs, la méthode, les variables et les conclusions et répercussions. Les répercussions signalées sont celles que mentionnent les auteurs des rapports et elles se rattachent, pour la plupart, à des politiques gouvernementales et à des travaux de recherche complémentaires.

Nous avons pris soin de fournir suffisamment de renseignements dans les annotations pour permettre au lecteur de comprendre la méthodologie, les résultats et la mesure dans laquelle les conclusions de l'étude peuvent s'appliquer à d'autres situations. Nous espérons avoir fourni assez de précisions pour que la source originale ne soit nécessaire que lors d'une étude de première importance.

Les études sont présentées par ordre alphabétique d'auteurs. Toutes portent un code numérique de quatre chiffres et chaque lettre de l'alphabet, à l'exception des trois dernières, correspond à 400 numéros.

Le contenu des études analysées est classé dans la série de tableaux qui suit. Les tableaux ont pour but de fournir un résumé des sources, des types d'études et de leurs thèmes, afin d'aider les chercheurs qui se penchent sur des sujets précis à trouver facilement les études qui leur seront le plus utiles. Les études sont classées à l'aide de plusieurs critères de classification : par exemple la méthodologie utilisée, le type d'énergie, le type de politique et le type d'activité de consommation. Des précisions sur le système de classification sont données dans la section intitulée "Comment utiliser la bibliographie".

Mais d'abord, voici une vue d'ensemble des études.

OVERVIEW OF STUDIES

Origin

Table 1 presents the studies, classified by origin, first by country and then by source. The vast majority of the studies are American in origin and the proportion of non-North American reports is quite small (3%). Attempts were made to locate more international studies but, at the time of publication, only a few studies were obtained. The reader should not be left with the impression that little work is going on outside of North America. Considerable research is being conducted, especially in Europe, but because of language and other barriers few of the studies are reported here. It is hoped this deficiency will be overcome in the next update of the annotated bibliography.

Distribution by source shows the diversity of the reports presented in the bibliography. Studies originate with governments, utilities, individuals, research institutes, private consulting firms and special interest groups. Some studies have a somewhat mixed origin, such as those commissioned by governments and utilities and prepared by private firms. Again, the number of studies originating with utilities (2%) under-represents their activity. Considerable efforts are being made by utilities but many of the studies are not reported externally or are considered proprietary information.

Methodologies

The bibliography consists mainly of empirical studies, including surveys and experiments (Table 2). A number of descriptive and econometric studies which utilize secondary data in their projections and analyses are also included. Many of the descriptive studies appear because they provide excellent summaries of research in specific areas and point out directions for future research efforts. A number of studies contain elements of both empirical and descriptive efforts.

Attitudes and Behaviour

Table 3 provides a summary of the attitudes and behaviour examined by the various studies. One problem with behavioural research in the consumer energy field is that it is often quite difficult to monitor actual behaviour. For example, details of actual driving habits, purchase decisions or home-related energy behaviour would be difficult and expensive to obtain. Instead, studies frequently must rely upon either self-reported behaviour measures or reported behaviour intentions. The majority of the behavioural studies use surrogate measures for actual energy consumption. Some of the problems with this approach become apparent when reviewing the research based on actual behaviour patterns. Specifically, the lack of relationships between actual consumption and self-reported behaviour may lead one to question some of the surrogate measures employed in consumer energy research.

A number of studies probe consumers' attitudes towards various aspects of the energy situation. The apparent hypothesis is that there is some relationship between energy-related attitudes and energy-related behaviour. It is interesting to note that the conclusions and findings of the various attitude studies do tend to substantiate each other. However, as mentioned, there is a serious issue as to whether attitudes and self-reported energy related behaviour exhibit a strong degree of association with actual energy consumption.

As indicated in Table 3, the attitude studies are grouped into nine categories. The first three (belief, seriousness and blame) are self-explanatory. Studies examining the attitudes concerning the individual's role in conservation generally try to discover if consumers feel they have a role to play in conservation of energy or, conversely, if they feel that their individual efforts will have no effect on the nation's energy consumption. Attitudes towards new technology include not only reactions to nuclear power, but also people's belief in science's ability to solve the crisis and their opinions about the feasibility of solar and other energy sources. Attitudes concerning the environment and quality of life delve into consumers' reactions to tradeoffs between pollution, developing energy sources and the perceived effects on quality of life of living with less energy.

Energy Form

Table 4 classifies the studies by energy form and, as was the case for the other tables, some studies are included in more than one category. Several studies did not deal with specific energy forms.

The distribution of the studies by energy form does reflect, somewhat, the relative usage of the form, notably in North America. The dominance of electricity studies, however, likely reflects the ease with which residential electric consumption data can be obtained.

The nuclear studies are largely concerned with consumers' attitudes towards the use of nuclear power. The solar-related studies involve either or both the description of government and utility programs to develop and market solar power or consumers' perceptions of solar power and its potential for use in the future.

Activity Area

In Table 5, the studies are classified by the two general activity areas upon which they focus: home related and transportation related. Some studies cover more than one area and some monitor behaviour in virtually

all activity areas. A large number examine space heating and appliance use in the home. Those concerned with retrofitting range from ones which concentrate on consumers' behaviour regarding retrofitting to those which discuss the effects of tax credits on such behaviour to econometric studies which estimate the effects on a nation's total energy consumption of retrofitting to some minimum standard. Some home audit studies describe actual home audit programs and their effects on household energy consumption.

As might be expected by the dominance of North America studies, the bulk of the transportation-related studies are concerned with the private automobile. Those which involve public transportation deal mainly with attitudes toward alternative modes and attempt to discover why consumers do not utilize public transit to a greater extent.

Consumer Decision-Making Stage

In Table 6, studies are classified by the stage in the consumer decision-making process upon which they focus. The majority focus is on the post-choice or use stage. The few that focus on the choice stage include those concerned with the choice of large versus small automobiles, appliance choices and decisions regarding the choice of one energy form over another (notably for space heating).

Type of Energy Policy

Table 7 classifies studies by the type(s) of energy policy examined, mentioned, recommended, or for which attitudes are assessed. Policies are classified on two dimensions: financial-non-financial, and mandatory-persuasive.

Financial-persuasive policies include those such as tax credits (for retrofitting or buying a smaller car) and rebates (as incentives to consume less energy). Regulatory-financial policies include price manipulations (e.g., through taxation) by government.

Non-financial-persuasive policies are largely informational types of programs. Non-financial-regulatory policies include those involving legislating new standards for buildings, appliances, automobiles, as well as energy labelling (in most cases), rationing and utility load control.

Also noted in these tables are studies which focus on or mention the distributional impacts of the policies. These studies discuss how different groups are affected to varying degrees by energy policies.

It should again be mentioned that the classification categories used are not mutually exclusive. Most studies mention or discuss more than one of the policy types.

VUE D'ENSEMBLE DES ÉTUDES

Origine

Le tableau 1 présente les études classées selon leur origine, d'abord en fonction du pays, puis en fonction de la source. La grande majorité des études est d'origine américaine et la proportion de rapports qui ne sont pas nord-américains est très faible (trois pour cent). Nous avons tenté de trouver plus d'études internationales, mais au moment de mettre sous presse un petit nombre seulement avaient été recueillies. Il ne faudrait pas en conclure que de telles recherches ne sont effectuées qu'en Amérique du Nord. D'importantes recherches sont menées, en particulier en Europe, mais en raison de barrières linguistiques et autres, ces études sont signalées en nombre restreint dans le présent ouvrage. Nous espérons pouvoir surmonter cette difficulté dans la prochaine mise à jour de notre bibliographie annotée.

Le classement par source montre la diversité des rapports présentés dans la bibliographie. Les études sont l'oeuvre de gouvernements, de services publics, de particuliers, d'instituts de recherche, de bureaux d'experts-conseils et de diverses associations. Certaines études sont en quelque sorte d'origine mixte, par exemple, celles commandées par des gouvernements et des services publics et réalisées par l'entreprise privée. Le nombre d'études effectuées par des services publics (deux pour cent) sous-évalue le travail de ces organismes dans le domaine. En vérité, les services publics ont à leur actif un grand nombre d'études mais beaucoup d'entre elles ne sont pas publiées. Plusieurs sont considérées comme des documents internes.

Méthodologies

La bibliographie se compose en majeure partie d'études empiriques, portant notamment sur des enquêtes et des expériences (tableau 2). Un certain nombre d'études descriptives et économétriques utilisant des données secondaires pour leurs projections et analyses sont également mentionnées. Beaucoup d'études descriptives sont signalées parce qu'elles fournissent d'excellents résumés de recherches dans des domaines précis et servent de guides aux recherches futures. Un certain nombre d'études contiennent à la fois des éléments empiriques et descriptifs.

Attitudes et comportements

Le tableau 3 présente un résumé des attitudes et comportements analysés dans les diverses études. L'un des problèmes de la recherche en matière de comportement dans le domaine de la consommation d'énergie est qu'il est souvent difficile d'observer le comportement réel. Par exemple, il serait difficile et coûteux d'obtenir des précisions sur les

habitudes au volant, les décisions d'achat ou les habitudes de consommation d'énergie à la maison. Il s'ensuit que les études doivent se fonder la plupart du temps sur les interprétations que les personnes interrogées donnent de leurs comportements ou de leurs intentions. La majeure partie des études sur le comportement utilise des mesures de substitution, faute de données sur la consommation réelle d'énergie. Certains des problèmes liés à cette approche sont mis en lumière lorsqu'on analyse la recherche fondée sur les comportements réels. L'écart qui existe, en particulier, entre la consommation réelle et le comportement signalé par l'individu peut nous inciter à mettre en doute la validité de certaines des mesures de substitution employées dans la recherche sur la consommation d'énergie.

Un certain nombre d'études analysent les attitudes du consommateur face à différents aspects de la situation énergétique. L'hypothèse apparente est qu'il existe un certain rapport entre les attitudes et les comportements en matière d'énergie. Il est intéressant de noter que les remarques et les conclusions sur les attitudes tendent à se confirmer d'une étude à l'autre. Cependant, comme nous l'avons dit précédemment, il importe de déterminer si l'attitude et les comportements en matière d'énergie signalés par les intéressés correspondent étroitement à la consommation réelle d'énergie.

Comme le montre le tableau 3, les études sur les attitudes sont groupées en neuf catégories. Les trois premières (l'existence de la crise énergétique, sa gravité, ses causes et ses responsables) s'expliquent d'elles-mêmes. Les études sur les attitudes face au rôle de l'individu en matière de conservation de l'énergie en général tentent de déterminer si les consommateurs considèrent qu'ils ont un rôle à jouer dans la conservation de l'énergie ou si, au contraire, ils estiment que leurs efforts individuels n'ont aucune incidence sur la consommation d'énergie de la nation. Les attitudes à l'égard de la nouvelle technologie ne portent pas uniquement sur les réactions face à l'énergie nucléaire; elles concernent aussi la croyance dans l'aptitude de la science à résoudre la crise, de même que les opinions quant à la possibilité d'utiliser l'énergie solaire et d'autres formes d'énergie. Les études sur les attitudes face à l'environnement et à la qualité de vie portent sur les réactions des consommateurs devant la recherche d'un équilibre entre la pollution, le développement de nouvelles sources d'énergie et les effets connus d'une consommation d'énergie réduite sur la qualité de vie.

Forme d'énergie

Le tableau 4 classe les études selon la forme d'énergie et, comme c'est le cas dans les autres tableaux, certaines portent sur plus d'un type d'énergie. Quelques études traitent de l'énergie en général.

La répartition des études selon la forme d'énergie correspond assez bien à l'usage relatif de chaque forme en Amérique du Nord. Les études relatives à l'électricité sont nombreuses, probablement parce qu'il est facile d'obtenir des données sur la consommation d'énergie à domicile.

Les études sur l'énergie nucléaire sont largement axées sur l'attitude des consommateurs face à l'utilisation de cette forme d'énergie. Les études sur l'énergie solaire traitent de la description des programmes tant de l'État que des services publics pour exploiter et répandre l'utilisation de cette forme d'énergie. Elles portent aussi sur l'opinion des consommateurs en matière d'énergie solaire et de ses possibilités d'utilisation dans le futur.

Secteurs d'activité

Au tableau 5, les études sont classées selon deux grands secteurs d'activité : la maison et le transport. Certaines études portent sur plus d'un domaine, d'autres analysent les comportements d'à peu près tous les domaines du secteur d'activité. Un grand nombre se penchent sur le chauffage et l'utilisation des appareils ménagers. Les études sur la transformation des habitations sont très diverses. Certaines traitent du comportement des consommateurs face à la transformation des habitations, tandis que d'autres étudient les effets des crédits d'impôt sur un tel comportement. Des études économétriques évaluent également les effets de la transformation selon des normes minimales sur la consommation totale d'énergie du pays. Certaines études sur la vérification du rendement énergétique des habitations décrivent les programmes de vérification et leurs effets sur la consommation d'énergie des ménages.

Comme on pouvait s'y attendre, étant donné la prédominance des analyses faites en Amérique du Nord, la majeure partie des études sur le transport porte sur les voitures des particuliers. Les études sur les transports publics s'intéressent principalement aux attitudes face à d'autres modes de transport que la voiture du particulier. Elles cherchent à découvrir pourquoi les consommateurs n'utilisent pas davantage les transports publics.

Prise de décision du consommateur

Au tableau 6, les études sont classées selon les étapes du processus de prise de décision. La plupart portent sur l'étape de l'après-choix ou de l'après-utilisation. Les quelques rares qui touchent l'étape du choix lui-même portent sur des choix entre une grande ou une petite voiture, entre divers appareils ménagers et entre différentes formes d'énergie (en ce qui a trait au chauffage).

Type de politique énergétique

Le tableau 7 classe les études selon des types de politique énergétique qu'ils soient mentionnés, analysés ou recommandés. Les politiques sont réparties selon deux caractéristiques : mesures financières/non financières et persuasion/réglementation.

Les politiques axées sur l'aspect pécuniaire et la persuasion comprennent les crédits d'impôt (pour la transformation des habitations ou l'achat d'une voiture plus petite) et les remises visant à inciter les gens à réduire leur consommation d'énergie. Les politiques axées sur la réglementation et les mesures financières comprennent des changements de prix à la suite d'une taxe fixée par le gouvernement, par exemple.

Les politiques axées sur la persuasion et ne comportant pas de mesures financières sont souvent des programmes d'information. Les politiques qui sont axées uniquement sur la réglementation et qui ne comportent pas de mesures financières, comprennent l'adoption de nouvelles normes pour le bâtiment, les appareils ménagers, les automobiles, l'étiquetage pour la consommation d'énergie, le rationnement et le contrôle de la consommation de l'énergie distribuée par les services publics.

On trouvera également dans ces tableaux des études qui se concentrent surtout sur l'incidence de ces politiques sur la distribution. Ces études expliquent comment différents groupes sont diversement touchés par les politiques énergétiques.

Il convient de noter que les catégories utilisées ne s'excluent pas mutuellement, la plupart des études mentionnant ou analysant plus d'un type de politique.

HOW TO USE THE BIBLIOGRAPHY

The studies contained in the bibliography are listed alphabetically, by author, and each is assigned a four-digit code number. Except for X, Y and Z, each letter of the alphabet is assigned 400 numbers. This is done to facilitate future updates of the annotated bibliography.

The main use of code numbers is to help the reader to identify studies in an area of interest. Tables 8 through 11 contain tabulations of study code numbers for major classifications of research on consumer energy use. Specifically, these tables are:

Table 8 - Study Code Numbers by Attitude/Behaviour Measures Employed

Table 9 - Study Code Numbers by Energy Form

Table 10 - Study Code Numbers by Activity Area

Table 11 - Study Code Numbers by Type of Energy Policy

To illustrate the use of these tables, a reader interested in the effect of non-financial persuasive policies (e.g., advertising programs encouraging consumers to conserve energy) would use Table 11 and select any or all of the code numbers of the studies listed in that section (general information, government information, etc.). The code numbers would then be used to locate the relevant annotation in the bibliography.

COMMENT UTILISER LA BIBLIOGRAPHIE

Les études répertoriées dans la bibliographie sont énumérées par ordre alphabétique d'auteur et chacune porte un code numérique de quatre chiffres. À part les lettres X, Y et Z, chaque lettre de l'alphabet correspond à 400 numéros. Ce procédé a pour but de faciliter les mises à jour de la bibliographie annotée.

L'utilité principale des numéros de code est d'aider le lecteur à trouver des études dans son domaine d'intérêt. Les tableaux 8 à 11 contiennent des relevés des numéros de code d'étude des principales catégories de recherche sur la consommation d'énergie. Ces tableaux sont les suivants :

Tableau 8 - Numéros de codes des études selon les mesures utilisées pour les attitudes et les comportements

Tableau 9 - Numéros de code des études selon la forme d'énergie

Tableau 10 - Numéros de code des études selon les secteurs d'activité

Tableau 11 - Numéros de code des études selon le type de politique énergétique

Par exemple, un lecteur intéressé aux effets des politiques axées sur la persuasion et ne comportant pas de mesures financières (c'est-à-dire les programmes de publicité incitant les consommateurs à conserver l'énergie) utilisera le tableau 11 et choisira un ou plusieurs numéros de code d'études y figurant (information générale, information gouvernementale, etc.). Les numéros de code seront alors utilisés pour trouver l'annotation pertinente dans la bibliographie.

Table 1

Origin of Energy Studies

Origin	Number	Percentage
<u>Country:</u>		
United States	404	90
Canada	31	7
Other	<u>15</u>	<u>3</u>
	450	100
	—	—
<u>Source:</u>		
Individual	207	46
Research institute/centre	134	30
Government department	51	11
Private organization	40	9
Utilities	11	2
Special interest groups	5	1
Other	<u>2</u>	<u>1</u>
	450	100
	—	—

Tableau 1

Origine des études sur l'énergie

Origine	Numéro	%
<u>Pays</u>		
États-Unis	404	90
Canada	31	7
Autres	<u>15</u>	<u>3</u>
	450	100
	—	—
<u>Source</u>		
Particuliers	207	46
Centres ou instituts de recherche	134	30
Ministères gouvernementaux	51	11
Organismes privés	40	9
Services publics	11	2
Associations	5	1
Autres	<u>2</u>	<u>1</u>
	450	100
	—	—

Table 2

Methodologies Used in Energy Studies*

Methodology	Number
Survey (primary data)	225
Experiment	62
Descriptive (secondary data)	121
Econometric model building	60

* Some studies are included in more than one category.

Tableau 2

Méthodologies utilisées dans les études sur l'énergie*

Méthodologie	Numéro
Enquête (données primaires)	225
Expérience	62
Étude descriptive (données secondaires)	121
Élaboration d'un modèle économétrique	60

* Certaines études font partie de plus d'une catégorie.

Table 3

Energy Consumption and Conservation
Attitudes/Behaviour Studies*

Type of Measure	Number
<u>Behaviour:</u>	
Actual behaviour patterns	88
Self-reported behaviour	160
Behaviour intentions	68
<u>Attitudes:</u>	
Belief/knowledge of crisis	58
Seriousness of crisis	58
Causes/blame for crisis	40
Individual's role in conservation	55
Government role (general)	36
Government role (specific policy)	61
Utilities' role	1
New technology	45
Environment/quality of life	70
Lifestyle	13

* Some studies are included in more than one category.

Tableau 3

Études sur les attitudes et les comportements face à la
consommation et à la conservation de l'énergie*

Type de mesure	Nombre
<u>Comportements</u>	
Comportements réels	88
Comportements signalés par les intéressés	160
Intentions de comportement	68
<u>Attitudes</u>	
Croyance dans l'existence de la crise et connaissance de la situation	58
Gravité de la crise	58
Causes et responsables de la crise	40
Rôle individuel en matière de conservation	55
Rôle du gouvernement (en général)	36
Rôle du gouvernement (politiques spécifiques)	61
Rôle des services publics	1
Nouvelle technologie	45
Environnement et qualité de vie	70
Mode de vie	13

* Certaines études font partie de plus d'une catégorie.

Table 4

Energy Form of Energy Studies*

Energy Form	Number
Nuclear energy	19
Solar energy	13
Electricity	171
Gasoline	97
Fuel oil	39
Natural gas	58
Coal	7
Wood	1
Other	1
General	5

* Some studies are included in more than one category.

Tableau 4

Forme d'énergie examinée dans les études sur l'énergie*

Forme d'énergie	Numéro
Énergie nucléaire	19
Énergie solaire	13
Électricité	171
Essence	97
Mazout	39
Gaz naturel	58
Charbon	7
Bois	1
Autre	1
Généralités	5

* Certaines études font partie de plus d'une catégorie.

Table 5

Activity Area of Energy Studies*

Activity Area	Number
<u>Home-Related</u>	
Space heating	113
Space cooling	77
Water heating	66
Appliances	112
General home	46
Retrofitting	28
Home audits	4
<u>Transport-Related</u>	
Public transportation	20
Car/van pools	24
Private automobile	83
Vacation/leisure travel	6
<u>General</u>	87
<u>Commercial sector</u>	4

* Some studies are included in more than one category.

Tableau 5

Secteurs d'activité visés par les études sur l'énergie

Secteurs d'activité	Nombre
<u>Maison</u>	
Chauffage	113
Climatisation	77
Eau chaude	66
Appareils ménagers	112
Habitation en général	46
Transformations	28
Vérifications	4
<u>Transport</u>	
Transport en commun	20
Transport coopératif en voiture ou en camionnette	24
Voiture	83
Déplacements (loisirs-vacances)	6
<u>En général</u>	87
<u>Secteur commercial</u>	4

* Certaines études font partie de plus d'une catégorie.

Table 6

Consumer Decision-Making Stage of Energy Studies

Stage of Consumer Decision-Making Process	Number
Pre-choice	34
Choice	63
Post-choice (use)	331

Tableau 6

Prise de décision du consommateur
dans les études sur l'énergie

Le processus de prise de décision du consommateur	Nombre
Antérieur au choix	34
Choix	63
Postérieur au choix (utilisation)	331

Table 7

Type of Energy Policy Studies*

Policy Type	Number
<u>Financial:</u>	
Persuasive - general information	1
- voluntary efforts	5
- tax credits	28
- rebates	21
Regulatory - general policy	6
- time-of-day pricing	17
- price changes/surcharge	107
<u>Non-Financial:</u>	
Persuasive - general information	20
- government information programs	55
- energy labelling	16**
- utility information programs	11
- consumption feedback	31
- voluntary efforts	31
Regulatory - general policy	8
- rationing	40
- utility load control	26
- standards	31
- speed limits	1
- bulk metering	5
- environment controls	3
<hr/>	
<u>General Considerations:</u>	
- Equity of policies (i.e., distributional effects)	42

* Some studies are included in more than one category.

** Some energy labelling programs are mandated by governments.

Tableau 7

Type de politique énergétique étudié*

Type de politique	Nombre
<u>Avec mesures financières</u>	
Persuasion - information générale	1
- efforts spontanés	5
- crédits d'impôt	28
- remises	21
Réglementation - politique générale	6
- fixation des prix selon le moment de la journée	17
- changements des prix/surtaxes	107
<u>Sans mesures financières</u>	
Persuasion - information générale	20
- programmes d'information gouvernementaux	55
- étiquetage de la consommation de l'énergie	16**
- programmes d'information des services publics	11
- réactions en matière de consommation	31
- efforts spontanés	31
Réglementation - politique générale	8
- rationnement	40
- contrôle de la consommation de l'énergie distribuée par les services publics	26
- normes	31
- limites de vitesse	1
- contrôle de l'approvisionnement aux heures de pointe	5
- contrôles environnementaux	3
<u>Considérations générales</u>	
- Équité des politiques (c'est-à-dire effets sur la distribution)	42

* Certaines études font partie de plus d'une catégorie.

** Certains programmes d'étiquetage sur la consommation d'énergie sont exigés par les gouvernements.

Table 8

Classification of Energy Studies by Attitude/Behaviour Measures Employed

Type of Measure	Study Code Numbers								
Behaviour: (i) actual behaviour patterns									
0015	0020	0025	0030	0035	0045	0050	0055	0060	0105
0435	0440	0445	0460	0475	0470	0505	0805	0815	0840
0850	0860	0865	0875	0910	0925	0930	0935	0940	1210
1215	1260	1270	1645	2025	2430	2810	2825	2860	2865
2870	2885	2895	2900	2905	2920	2925	4050	4435	4805
4850	4885	5225	5250	6005	6010	6015	6020	6030	6060
6880	7205	7210	7250	7275	7285	7290	7295	7325	7330
7335	7340	7350	7375	7390	7415	7635	8805	8820	8840
8845	8890	8895	8900	8905	8910	9810	9830		
(ii) self-reported									
0010	0065	0070	0075	0085	0090	0115	0120	0125	0405
0410	0415	0430	0435	0450	0455	0520	0525	0535	0540
0550	0555	0560	0565	0825	0835	0845	0855	0915	0920
0925	0950	0955	0960	0965	0970	1220	1240	1250	1255
1265	1615	1640	2005	2010	2030	2410	2415	2420	2435
2445	2450	2465	2470	2835	2840	2875	2880	2910	2965
2975	2980	2995	3630	4005	4015	4020	4030	4040	4080
4815	4865	4870	4875	4885	4910	4920	4940	4960	4965
4970	5005	5215	5235	5245	5250	5255	5620	5625	5650
5655	5660	5665	5670	5675	5685	5695	5730	5740	5745
6005	6020	6025	6040	6045	6050	6055	6080	6405	6410
6815	6820	6825	6830	6835	6840	6845	6875	7205	7225
7230	7255	7260	7265	7285	7290	7295	7300	7315	7320
7325	7330	7335	7340	7350	7355	7360	7370	7385	7400
7410	7605	7615	7625	8010	8015	8405	8410	8805	8815
8825	8830	8835	8845	8875	8880	8885	8925	9505	9805
(iii) behaviour intentions									
0010	0065	0090	0125	0425	0820	0865	0925	0930	0935
0940	0945	0955	0960	0965	0970	0975	1205	1260	1265
1280	1625	1640	2015	2040	2440	2465	2470	2810	2840
2845	2875	2880	2910	2985	4005	4015	4060	4895	4940
4960	4970	5205	5235	5245	5695	5720	5730	5740	6010
6015	6060	6065	6070	6090	6810	6825	6845	7230	7255
7270	7365	8015	8840	8845	8875	8880	8925		
Attitudes Towards Energy Crisis: (i) belief/knowledge									
0120	0420	0425	0540	0885	0890	0895	0900	0960	0965
1250	1280	2005	2040	2405	2440	2445	2450	2455	2830
2845	2910	3615	4030	4810	4865	4870	4895	4915	4920
4945	4955	4960	4965	4970	5000	5220	5255	5605	5620
5675	5710	5735	5755	6040	6825	6865	6875	6880	7240
7385	7605	7615	8825	8830	8835	8880	9815		

Tableau 8

Classification des études sur l'énergie selon les mesures employées
relativement aux attitudes et aux comportements

Type de mesure		Numéros de code des études							
Comportement : (i) comportements réels									
0015	0020	0025	0030	0035	0045	0050	0055	0060	0105
0435	0440	0445	0460	0475	0470	0505	0805	0815	0840
0850	0860	0865	0875	0910	0925	0930	0935	0940	1210
1215	1260	1270	1645	2025	2430	2810	2825	2860	2865
2870	2885	2895	2900	2905	2920	2925	4050	4435	4805
4850	4885	5225	5250	6005	6010	6015	6020	6030	6060
6880	7205	7210	7250	7275	7285	7290	7295	7325	7330
7335	7340	7350	7375	7390	7415	7635	8805	8820	8840
8845	8890	8895	8900	8905	8910	9810	9830		
(ii) comportements signalés par les consommateurs eux-mêmes									
0010	0065	0070	0075	0085	0090	0115	0120	0125	0405
0410	0415	0430	0435	0450	0455	0520	0525	0535	0540
0550	0555	0560	0565	0825	0835	0845	0855	0915	0920
0925	0950	0955	0960	0965	0970	1220	1240	1250	1255
1265	1615	1640	2005	2010	2030	2410	2415	2420	2435
2445	2450	2465	2470	2835	2840	2875	2880	2910	2965
2975	2980	2995	3630	4005	4015	4020	4030	4040	4080
4815	4865	4870	4875	4885	4910	4920	4940	4960	4965
4970	5005	5215	5235	5245	5250	5255	5620	5625	5650
5655	5660	5665	5670	5675	5685	5695	5730	5740	5745
6005	6020	6025	6040	6045	6050	6055	6080	6405	6410
6815	6820	6825	6830	6835	6840	6845	6875	7205	7225
7230	7255	7260	7265	7285	7290	7295	7300	7315	7320
7325	7330	7335	7340	7350	7355	7360	7370	7385	7400
7410	7605	7615	7625	8010	8015	8405	8410	8805	8815
8825	8830	8835	8845	8875	8880	8885	8925	9505	9805
iii) intentions de comportement									
0010	0065	0090	0125	0425	0820	0865	0925	0930	0935
0940	0945	0955	0960	0965	0970	0975	1205	1260	1265
1280	1625	1640	2015	2040	2440	2465	2470	2810	2840
2845	2875	2880	2910	2985	4005	4015	4060	4895	4940
4960	4970	5205	5235	5245	5695	5720	5730	5740	6010
6015	6060	6065	6070	6090	6810	6825	6845	7230	7255
7270	7365	8015	8840	8845	8875	8880	8925		

Table 8 (cont'd.)

Classification of Energy Studies by Attitude/Behaviour Measures Employed

Type of Measure	Study Code Numbers									
Attitudes Towards Energy Crisis (cont'd.): (ii) seriousness										
	0405	0410	0415	0420	0425	0450	0495	0500	0540	0545
	0565	0825	0830	0865	0885	0890	0895	0900	0960	0965
	0970	1255	1280	1285	1290	2005	2045	2435	2440	2450
	2455	2830	2845	2985	2990	3615	4055	4810	4865	4870
	4890	5000	5005	5625	5640	5655	5660	5680	5710	6005
	6055	6870	7295	7365	8015	8825	8880	9805		
(iii) causes/blame for										
	0120	0425	0495	0500	0540	0545	0555	0895	0970	1285
	2005	2440	2445	2450	3615	4870	4875	4895	5000	5005
	5220	5255	5640	5645	5655	5755	6045	6050	6055	6815
	6825	6860	6880	7240	7255	7605	7615	8830	8835	9805
(iv) individual's role in										
	0410	0415	0420	0425	0445	0465	0565	0830	0845	0850
	0865	0885	0890	0895	0900	0915	0920	0960	1205	1285
	1290	1625	1640	2010	2015	2030	2405	2465	2470	2985
	2995	3000	3615	4030	4455	4810	4815	4875	4890	4895
	5005	5220	5235	5620	5645	5710	5735	6020	6840	7280
	7295	7385	8410	8815	8860					
(v) government role in conservation (general)										
	0120	0425	0495	0500	0540	0560	0825	0830	0845	0895
	0975	1285	1290	1650	2010	2410	4810	4865	4920	4960
	4965	4970	5605	5620	5640	6860	6895	7220	7265	7270
	7365	8405	9815	9820	9825	9830				
(vi) specific government role										
	0010	0065	0410	0450	0495	0500	0510	0515	0535	0540
	0545	0555	0805	0835	0850	0900	0955	1240	1285	1620
	2020	2045	2415	2420	2435	2455	2470	2830	2880	2990
	4015	4050	4870	4875	4895	5220	5255	5635	5645	5650
	5655	5660	5675	5680	5735	5750	5755	6070	6080	6405
	6410	6820	6825	6855	6870	7205	7280	7310	8010	8420
	8850									
(vii) utilities' role										
	1220									
(viii) new technology										
	0075	0115	0120	0480	0560	0565	0820	0835	1225	1275
	1280	1290	2005	2405	2975	3625	4010	4420	4425	4430
	4440	4445	4450	4815	4830	4835	4840	4890	5210	5255
	5675	5770	6070	6090	6825	6875	6880	7240	7270	7295
	7355	7420	7425	7610	8420					

Tableau 8 (suite)

Classification des études sur l'énergie selon les mesures employées
relativement aux attitudes et aux comportements

Type de mesure				Numéros de code des études					
Attitudes face à la crise de l'énergie : (i) croyance-connaissance									
0120	0420	0425	0540	0885	0890	0895	0900	0960	0965
1250	1280	2005	2040	2405	2440	2445	2450	2455	2830
2845	2910	3615	4030	4810	4865	4870	4895	4915	4920
4945	4955	4960	4965	4970	5000	5220	5255	5605	5620
5675	5710	5735	5755	6040	6825	6865	6875	6880	7240
7385	7605	7615	8825	8830	8835	8880	9815		
(ii) gravité									
0405	0410	0415	0420	0425	0450	0495	0500	0540	0545
0565	0825	0830	0865	0885	0890	0895	0900	0960	0965
0970	1255	1280	1285	1290	2005	2045	2435	2440	2450
2455	2830	2845	2985	2990	3615	4055	4810	4865	4870
4890	5000	5005	5625	5640	5655	5660	5680	5710	6005
6055	6870	7295	7365	8015	8825	8880	9805		
(iii) causes/responsables									
0120	0425	0495	0500	0540	0545	0555	0895	0970	1285
2005	2440	2445	2450	3615	4870	4875	4895	5000	5005
5220	5255	5640	5645	5655	5755	6045	6050	6055	6815
6825	6860	6880	7240	7255	7605	7615	8830	8835	9805
(iv) rôle de l'individu									
0410	0415	0420	0425	0445	0465	0565	0830	0845	0850
0865	0885	0890	0895	0900	0915	0920	0960	1205	1285
1290	1625	1640	2010	2015	2030	2405	2465	2470	2985
2995	3000	3615	4030	4455	4810	4815	4875	4890	4895
5005	5220	5235	5620	5645	5710	5735	6020	6840	7280
7295	7385	8410	8815	8860					
(v) rôle du gouvernement dans la conservation (en général)									
0120	0425	0495	0500	0540	0560	0825	0830	0845	0895
0975	1285	1290	1650	2010	2410	4810	4865	4920	4960
4965	4970	5605	5620	5640	6860	6895	7220	7265	7270
7365	8405	9815	9820	9825	9830				

Table 8 (cont'd.)

Classification of Energy Studies by Attitude/Behaviour Measures Employed

Type of Measure			Study Code Numbers							
Attitudes Towards Energy Crisis (cont'd.):			(ix) environment/quality of life							
	0075	0120	0425	0465	0515	0535	0545	0555	0840	0865
	0870	0915	0920	1230	1240	1275	1285	1290	1610	1620
	1650	2005	2015	2035	2040	2830	2965	2995	3000	3625
	4010	4025	4070	4420	4425	4430	4440	4445	4450	4810
	4835	4840	4890	4960	4965	4970	4985	5210	5665	5670
	5675	5680	5685	5690	5700	5715	5770	6025	6805	6810
	6815	6820	6825	6870	7235	7265	7420	7425	7610	8420
(x) lifestyle										
	0005	0915	0920	4030	4845	4890	5205	6055	6875	6880
	7240	7250	7295							

Tableau 8 (suite)

Classification des études sur l'énergie selon les mesures employées
relativement aux attitudes et aux comportements

Type de mesure					Numéros de code des études				
(vi) rôle spécifique du gouvernement									
0010	0065	0410	0450	0495	0500	0510	0515	0535	0540
0545	0555	0805	0835	0850	0900	0955	1240	1285	1620
2020	2045	2415	2420	2435	2455	2470	2830	2880	2990
4015	4050	4870	4875	4895	5220	5255	5635	5645	5650
5655	5660	5675	5680	5735	5750	5755	6070	6080	6405
6410	6820	6825	6855	6870	7205	7280	7310	8010	8420
8850									
(vii) rôle des services publics									
1220									
(viii) nouvelle technologie									
0075	0115	0120	0480	0560	0565	0820	0835	1225	1275
1280	1290	2005	2405	2975	3625	4010	4420	4425	4430
4440	4445	4450	4815	4830	4835	4840	4890	5210	5255
5675	5770	6070	6090	6825	6875	6880	7240	7270	7295
7355	7420	7425	7610	8420					
(ix) environnement/qualité de vie									
0075	0120	0525	0465	0515	0535	0545	0555	0840	0865
0870	0915	0920	1230	1240	1275	1285	1290	1610	1620
1650	2005	2015	2035	2040	2830	2965	2995	3000	3625
4010	4025	4070	4420	4425	4430	4440	4445	4450	4810
4835	4840	4890	4960	4965	4970	4985	5210	5665	5670
5675	5680	5685	5690	5700	5715	5770	6025	6805	6810
6815	6820	6825	6870	7235	7265	7420	7425	7610	8420
(x) mode de vie									
0005	0915	0920	4030	4845	4890	5205	6055	6875	6880
7240	7250	7295							

Table 9

Classification of Energy Studies by Energy Form

Energy Form	Study Code Numbers									
Nuclear energy										
0535	1225	1275	1620	1650	2005	2830	2970	4010	4830	
4835	4840	4890	5210	5770	7420	7425	7610	8915		
Solar energy										
0090	0480	0820	0835	0955	1650	2005	4815	6085	7280	
7355	8010	8820								
Electricity										
0015	0020	0025	0030	0035	0040	0045	0050	0055	0060	
0065	0070	0085	0095	0100	0105	0110	0410	0430	0435	
0440	0445	0460	0465	0475	0485	0490	0505	0510	0525	
0550	0560	0565	0850	0855	0860	0875	0880	0900	0905	
0910	0915	0920	0930	0935	0940	0950	0955	0965	1205	
1215	1220	1225	1235	1245	1250	1255	1285	1290	1610	
1615	1625	2005	2015	2030	2410	2435	2440	2460	2470	
2850	2855	2865	2870	2880	2890	2930	2935	2940	2945	
2950	3005	3010	3015	4035	4055	4075	4085	4410	4445	
4430	4435	4445	4450	4805	4810	4850	4855	4875	4880	
4925	4930	4935	4950	4975	4980	4990	4995	5005	5010	
5225	5230	5240	5250	5625	5635	5650	5670	5680	5745	
5760	5765	6005	6010	6015	6020	6025	6040	6045	6050	
6055	6075	6090	6405	6410	6415	6830	6840	6845	6860	
6885	6890	7230	7265	7280	7285	7290	7295	7315	7320	
7325	7330	7340	7350	7370	7415	7620	7625	7635	8410	
8805	8810	8825	8865	8885	8890	8895	8900	8905	8910	
8920										
Gasoline										
0060	0075	0125	0130	0405	0410	0415	0450	0455	0470	
0540	0545	0550	0560	0570	0805	0830	0915	0920	0925	
0955	0965	1205	1250	1260	1265	1270	1285	1290	1645	
2020	2025	2045	2415	2420	2810	2825	2835	2840	2900	
2910	2915	2920	2925	2990	2995	3000	3015	3605	3635	
4005	4015	4035	4050	4060	4065	4405	4875	4895	4910	
4940	5005	5215	5220	5635	5665	5680	5695	5705	5740	
6030	6040	6045	6050	6055	6060	6095	6810	6820	6825	
6835	6870	7205	7225	7310	7360	7365	7390	7400	7405	
7410	7625	7630	8015	8420	8870	8875				
Fuel oil										
0410	0430	0445	0920	1250	1255	1615	2005	2860	2875	
2930	2935	2940	2945	2950	3015	4035	4075	4085	5005	
5225	5240	5670	5745	6025	6040	6045	6050	6055	6830	
6840	6875	6880	7275	7625	8410	8420	8825	8865		

Tableau 9

Classification des études sur l'énergie selon la forme d'énergie

Forme d'énergie		Numéros de code des études							
Nucléaire									
0535	1225	1275	1620	1650	2005	2830	2970	4010	4830
4835	4840	4890	5210	5770	7420	7425	7610	8915	
Solaire									
0090	0480	0820	0835	0955	1650	2005	4815	6085	7280
7355	8010	8820							
Électricité									
0015	0020	0025	0030	0035	0040	0045	0050	0055	0060
0065	0070	0085	0095	0100	0105	0110	0410	0430	0435
0440	0445	0460	0465	0475	0485	0490	0505	0510	0525
0550	0560	0565	0850	0855	0860	0875	0880	0900	0905
0910	0915	0920	0930	0935	0940	0950	0955	0965	1205
1215	1220	1225	1235	245	1250	1255	1285	1290	1610
1615	1625	2005	2015	2030	2410	2435	2440	2460	2470
2850	2855	2865	2870	2880	2890	2930	2935	2940	2945
2950	3005	3010	3015	4035	4055	4075	4085	4410	4445
4430	4435	4445	4450	4805	4810	4850	4855	4875	4880
4925	4930	4935	4950	4975	4980	4990	4995	5005	5010
5225	5230	5240	5250	5625	5635	5650	5670	5680	5745
5760	5765	6005	6010	6015	6020	6025	6040	6045	6050
6055	6075	6090	6405	6410	6415	6830	6840	6845	6860
6885	6890	7230	7265	7280	7285	7290	7295	7315	7320
7325	7330	7340	7350	7370	7415	7620	7625	7635	8410
8805	8810	8825	8865	8885	8890	8895	8900	8905	8910
8920									
Essence									
0060	0075	0125	0130	0405	0410	0415	0450	0455	0470
0540	0545	0550	0560	0570	0805	0830	0915	0920	0925
0955	0965	1205	1250	1260	1265	1270	1285	1290	1645
2020	2025	2045	2415	2420	2810	2825	2835	2840	2900
2910	2915	2920	2925	2990	2995	3000	3015	3605	3635
4005	4015	4035	4050	4060	4065	4405	4875	4895	4910
4940	5005	5215	5220	5635	5665	5680	5695	5705	5740
6030	6040	6045	6050	6055	6060	6095	6810	6820	6825
6835	6870	7205	7225	7310	7360	7365	7390	7400	7405
7410	7625	7630	8015	8420	8870	8875			

Table 9 (cont'd.)

Classification of Energy Studies by Energy Form

Energy Form	Study Code Numbers									
Natural gas										
	0070	0410	0430	0445	0565	0810	0855	0915	0920	1235
	1245	1250	1255	1285	1290	1615	2005	2410	2415	2420
	2875	2930	2935	2940	2945	2950	3015	4035	4075	4085
	4980	5240	5670	5725	5735	5745	6005	6010	6015	6025
	6035	6405	6410	6415	6830	6840	7265	7325	7330	7335
	7340	7350	7620	7625	8410	8420	8865	8895		
Coal										
	0515	1645	4035	4410	4430	4445	4450			
Wood										
	0010									
Other										
	6035									
General										
	0120	0975	1210	1230	1240					

Tableau 9 (suite)

Classification des études sur l'énergie selon la forme d'énergie

Forme d'énergie				Numéros de code des études						
Mazout										
0410	0430	0445	0920	1250	1255	1615	2005	2860	2875	
2930	2935	2940	2945	2950	3015	4035	4075	4085	5005	
5225	5240	5670	5745	6025	6040	6045	6050	6055	6830	
6840	6875	6880	7275	7625	8410	8420	8825	8865		
Gaz naturel										
0070	0410	0430	0445	0565	0810	0855	0915	0920	1235	
1245	1250	1255	1285	1290	1615	2005	2410	2415	2420	
2875	2930	2935	2940	2945	2950	3015	4035	4075	4085	
4980	5240	5670	5725	5735	5745	6005	6010	6015	6025	
6035	6405	6410	6415	6830	6840	7265	7325	7330	7335	
7340	7350	7620	7625	8410	8420	8865	8895			
Charbon										
0515	1645	4035	4410	4430	4445	4450				
Bois										
0010										
Autre										
6035										
Général										
0120	0975	1210	1230	1240						

Table 10

Classification of Energy Studies by Activity Area

Energy Form	Study Code Numbers								
Home-Related:	(i) space heating								
0010	0070	0090	0410	0430	0445	0465	0475	0480	0525
0560	0565	0810	0820	0830	0835	0850	0855	0875	0905
0910	0915	0920	0930	0935	0940	0955	0965	1235	1245
1255	1615	1625	2015	2030	2410	2415	2420	2430	2435
2460	2470	2815	2850	2860	2865	2870	2930	2935	2940
2945	2950	2960	3015	4055	4075	4415	4435	4810	4850
4980	4990	5225	5240	5625	5645	5650	5665	5735	5745
6005	6010	6015	6020	6035	6040	6045	6050	6055	6075
6080	6085	6090	6095	6410	6415	6810	6830	6840	6845
6875	6880	7265	7275	7315	7320	7325	7330	7335	7340
7350	7355	7370	7620	7625	8010	8410	8805	8825	8865
8885	8895	8900							
(ii) space cooling									
0440	0460	0465	0505	0525	0565	0820	0835	0860	0875
0915	0920	0930	0935	0940	0955	0965	1235	1245	1255
1615	1625	2015	2430	2435	2460	2470	2850	2855	2865
2870	2930	2935	2940	2945	2950	2960	3015	4055	4075
4415	4435	4810	4975	4980	5240	5250	5625	5650	5745
6005	6010	6015	6020	6090	6410	6415	6830	6840	6845
7230	7285	7290	7315	7320	7325	7330	7350	7370	7620
7625	8005	8865	8870	8900	8905	8910			
(iii) water heating									
0010	0090	0430	0445	0460	0465	0480	0525	0875	0920
0930	0935	0940	0955	0965	1235	1245	1255	1615	1625
2015	2430	2425	2460	2470	2850	2865	2870	2940	4055
4075	4415	4435	4810	4815	4980	4990	5240	5250	5625
5650	5735	6005	6010	6015	6020	6090	6405	6410	6415
6825	6840	6845	7325	7330	7335	7340	7350	7370	7620
8010	8410	8805	8820	8885	8895				
(iv) appliances									
0075	0085	0435	0440	0445	0460	0465	0475	0485	0490
0525	0550	0560	0565	0850	0855	0860	0875	0880	0900
0905	0910	0915	0920	0930	0935	0940	0955	0965	1205
1220	1235	1245	1255	1615	1625	2015	2430	2435	2440
2460	2470	2815	2850	2855	2865	2870	2880	2890	2935
2940	2945	2950	2960	3005	3010	3015	4055	4075	4415
4435	4810	4850	4875	4880	4980	4990	5240	5250	5625
5650	5680	5745	5760	5765	6005	6010	6015	6020	6040
6045	6050	6055	6090	6405	6410	6415	6840	6845	6885
7285	7290	7295	7315	7320	7325	7330	7340	7350	7370
7620	7625	7635	8410	8805	8825	8885	8890	8895	8900
8910	8920								

Tableau 10

Classification des études sur l'énergie selon les secteurs d'activité

Forme d'énergie			Numéros de code des études						
Maison : (i) chauffage									
0010	0070	0090	0410	0430	0445	0465	0475	0480	0525
0560	0565	0810	0820	0830	0835	0850	0855	0875	0905
0910	0915	0920	0930	0935	0940	0955	0965	1235	1245
1255	1615	1625	2015	2030	2410	2415	2420	2430	2435
2460	2470	2815	2850	2860	2865	2870	2930	2935	2940
2945	2950	2960	3015	4055	4075	4415	4435	4810	4850
4980	4990	5225	5240	5625	5645	5650	5665	5735	5745
6005	6010	6015	6020	6035	6040	6045	6050	6055	6075
6080	6085	6090	6095	6410	6415	6810	6830	6840	6845
6875	6880	7265	7275	7315	7320	7325	7330	7335	7340
7350	7355	7370	7620	7625	8010	8410	8805	8825	8865
8885	8895	8900							
(ii) climatisation									
0440	0460	0465	0505	0525	0565	0820	0835	0860	0875
0915	0920	0930	0935	0940	0955	0965	1235	1245	1255
1615	1625	2015	2430	2435	2460	2470	2850	2855	2865
2870	2930	2935	2940	2945	2950	2960	3015	4055	4075
4415	4435	4810	4975	4980	5240	5250	5625	5650	5745
6005	6010	6015	6020	6090	6410	6415	6830	6840	6845
7230	7285	7290	7315	7320	7325	7330	7350	7370	7620
7625	8005	8865	8870	8900	8905	8910			
(iii) eau chaude									
0010	0090	0430	0445	0460	0465	0480	0525	0875	0920
0930	0935	0940	0955	0965	1235	1245	1255	1615	1625
2015	2430	2425	2460	2470	2850	2865	2870	2940	4055
4075	4415	4435	4810	4815	4980	4990	5240	5250	5625
5650	5735	6005	6010	6015	6020	6090	6405	6410	6415
6825	6840	6845	7325	7330	7335	7340	7350	7370	7620
8010	8410	8805	8820	8885	8895				

Table 10 (cont'd.)

Classification of Energy Studies by Activity Area

Energy Form	Study Code Numbers									
<u>Home-Related (cont'd.): (v) general home</u>										
	0015	0020	0025	0030	0035	0040	0045	0050	0055	0065
	0095	0105	0110	0115	0120	0815	0840	0885	0890	0895
	0950	0960	0975	1210	1230	1240	1250	1290	2950	2965
	2985	4080	4925	4930	4935	4950	4975	4995	5005	5230
	5635	6025	6890	7280	8810	8890				
(vi) retrofitting										
	0010	0090	0480	0835	0910	0955	1210	2410	2415	2420
	2815	2860	2930	2945	2950	2960	4075	4960	4970	5205
	5625	5680	5685	6080	6095	6830	7620	7625		
(vii) home audits										
	1650	4885	6005	7620						
<u>Transportation-Related: (i) public transportation</u>										
	0455	0470	0550	0805	0830	2825	2835	2840	2910	2920
	4015	4060	4405	4910	5215	5220	5690	5695	6060	6870
(ii) car/van pools										
	0060	0130	0470	0805	0815	1260	1265	1270	1645	2810
	2840	2915	2995	3605	3635	4015	4045	4050	4910	5640
	6030	6060	7625	7630						
(iii) private automobile										
	0075	0125	0130	0405	0410	0415	0450	0455	0470	0540
	0545	0550	0560	0570	0805	0830	0915	0920	0925	0955
	0965	0975	1240	1250	1645	2025	2045	2825	2835	2840
	2885	2900	2910	2915	2920	2925	2990	2995	3000	3015
	4005	4015	4060	4065	4405	4875	4895	4910	4940	5005
	5215	5220	5635	5665	5695	5705	5740	6040	6045	6050
	6055	6060	6095	6810	6820	6825	6835	6870	7205	7225
	7310	7360	7365	7390	7400	7405	7410	7625	7630	8015
	8870	8875	8880							
(iv) vacation/leisure										
	2840	4910	4940	5695	8015	8880				

Tableau 10 (suite)

Classification des études sur l'énergie selon les secteurs d'activité

Forme d'énergie				Numéros de code des études					
(iv) appareils ménagers									
0075	0085	0435	0440	0445	0460	0465	0475	0485	0490
0525	0550	0560	0565	0850	0855	0860	0875	0880	0900
0905	0910	0915	0920	0930	0935	0940	0955	0965	1205
1220	1235	1245	1255	1615	1625	2015	2430	2435	2440
2460	2470	2815	2850	2855	2865	2870	2880	2890	2935
2940	2945	2950	2960	3005	3010	3015	4055	4075	4415
4435	4810	4850	4875	4880	4980	4990	5240	5250	5625
5650	5680	5745	5760	5765	6005	6010	6015	6020	6040
6045	6050	6055	6090	6405	6410	6415	6840	6845	6885
7285	7290	7295	7315	7320	7325	7330	7340	7350	7370
7620	7625	7635	8410	8805	8825	8885	8890	8895	8900
8910	8920								
(v) habitation en général									
0015	0020	0025	0030	0035	0040	0045	0050	0055	0065
0095	0105	0110	0115	0120	0815	0840	0885	0890	0895
0950	0960	0975	1210	1230	1240	1250	1290	2950	2965
2985	4080	4925	4930	4935	4950	4975	4995	5005	5230
5635	6025	6890	7280	8810	8890				
(vi) transformations									
0010	0090	0480	0835	0910	0955	1210	2410	2415	2420
2815	2860	2930	2945	2950	2960	4075	4960	4970	5205
5625	5680	5685	6080	6095	6830	7620	7625		
(vii) vérifications									
1650	4885	6006	7620						
<hr/>									
Transport : (i) transports en commun									
0455	0470	0550	0805	0830	2825	2835	2840	2910	2920
4015	4060	4405	4910	5215	5220	5690	5695	6060	6870
(ii) transport coopératif en voiture ou en camionnette									
0060	0130	0470	0805	0815	1260	1265	1270	1645	2810
2840	2915	2995	3605	3635	4015	4045	4050	4910	5640
6030	6060	7625	7630						

Table 10 (cont'd.)

Classification of Energy Studies by Activity Area

Energy Form			Study Code Numbers							
<u>General:</u>										
0005	1630	1640	2005	2010	2040	2405	2440	2445	2450	
4020	4030	4035	4040	4080	4455	4820	4825	4845	4865	
4870	4915	4920	4945	4955	4960	4965	4970	5010	5205	
5235	5245	5255	5615	5620	5630	5640	5655	5660	5675	
5700	5710	5720	5730	5750	5755	6065	6070	6815	6850	
7210	7215	7220	7240	7255	7260	7270	7300	7305	7345	
7375	7380	7385	7395	7415	7605	7615	7640	8405	8415	
8420	8815	8830	8835	8840	8845	8850	8860	8925	9505	
9510	9805	9810	9815	9820	9825	9830				
<u>Commercial Sector:</u>										
1215	2955	3630	6850							

Tableau 10 (suite)

Classification des études sur l'énergie selon les secteurs d'activité

Forme d'énergie			Numéros de code des études						
(iii) voiture									
0075	0125	0130	0405	0410	0415	0450	0455	0470	0540
0545	0550	0560	0570	0805	0830	0915	0920	0925	0955
0965	0975	1240	1250	1645	2025	2045	2825	2835	2840
2885	2900	2910	2915	2920	2925	2990	2995	3000	3015
4005	4015	4060	4065	4405	4875	4895	4910	4940	5005
5215	5220	5635	5665	5695	5705	5740	6040	6045	6050
6055	6060	6095	6810	6820	6825	6835	6870	7205	7225
7310	7360	7365	7390	7400	7405	7410	7625	7630	8015
8870	8875	8880							
(iv) vacances/loisirs									
2840	4910	4940	5695	8015	8880				
<u>En général :</u>									
0005	1630	1640	2005	2010	2040	2405	2440	2445	2450
4020	4030	4035	4040	4080	4455	4820	4825	4845	4865
4870	4915	4920	4945	4955	4960	4965	4970	5010	5205
5235	5245	5255	5615	5620	5630	5640	5655	5660	5675
5700	5710	5720	5730	5750	5755	6065	6070	6815	6850
7210	7215	7220	7240	7255	7260	7270	7300	7305	7345
7375	7380	7385	7395	7415	7605	7615	7640	8405	8415
8420	8815	8830	8835	8840	8845	8850	8860	8925	9505
9510	9805	9810	9815	9820	9825	9830			
<u>Secteur commercial :</u>									
1215	2955	3630	6850						

Table 11

Classification of Energy Studies by Policy Type

Policy Type	Study Code Numbers									
<u>Financial-Persuasive: (i) general information</u>										
0525										
(ii) voluntary efforts										
0885	0890	0895	4865	4920						
(iii) tax credits										
0010	0095	0100	0835	0955	1205	1230	1235	1245	1285	
1630	1650	2005	2405	2460	2805	2815	2865	2905	2915	
5755	6080	6405	6410	6415	6830	7380	9505			
(iv) rebates										
0440	2025	4020	4055	4405	4850	4855	4915	5220	5550	
5555	5630	5680	5700	7240	7335	7340	8805	8895	8900	
8905										
<u>Financial-Regulatory: (i) general policy</u>										
0565	0825	1285	3000	3625	4920					
(ii) time of day pricing										
0015	0020	0025	0065	0435	0505	2015	2435	4805	4810	
4925	4930	4935	4990	5010	5645	7280				
(iii) price changes/surcharges										
0030	0110	0405	0445	0450	0485	0490	0520	0525	0540	
0545	0550	0555	0570	0810	0830	0870	0875	0925	0955	
0970	0975	1230	1235	1245	1250	1285	1610	1625	2005	
2045	2415	2420	2835	2840	2885	2905	2915	2930	2935	
2940	2950	2955	2960	2990	4005	4015	4035	4060	4065	
4085	4415	4810	4820	4870	4875	4895	4900	4905	4940	
4945	4950	4980	4990	4995	5010	5215	5225	5630	5635	
5645	5650	5665	5675	5680	5700	5705	6045	6050	6055	
6065	6070	6090	6405	6410	6825	6835	6845	6860	6870	
6885	6895	7215	7225	7300	7375	7380	7395	7400	7405	
7415	8015	8420	8810	8870	8875	8880				
<u>Non-Financial-Persuasive: (i) general information</u>										
0015	0420	0425	0815	0910	0945	2040	2865	2935	2975	
2980	4055	4915	4945	4990	5630	8890	8895	8900	8905	

Tableau 11

Classification des études sur l'énergie
selon le type de politique

Type de politique					Numéros de code des études				
<u>Avec mesures financières - Persuasion : (i) information générale</u>									
0525									
(ii) efforts spontanés									
0885	0890	0895	4865	4920					
(iii) crédits d'impôt									
0010	0095	0100	0835	0955	1205	1230	1235	1245	1285
1630	1650	2005	2405	2460	2805	2815	2865	2905	2915
5755	6080	6405	6410	6415	6830	7380	9505		
(iv) remises									
0440	2025	4020	4055	4405	4850	4855	4915	5220	5550
5555	5630	5680	5700	7240	7335	7340	8805	8895	8900
8905									
<u>Avec mesures financières - Réglementation : (i) politique générale</u>									
0565	0825	1285	3000	3625	4920				
(ii) fixation des prix selon le moment de la journée									
0015	0020	0025	0065	0435	0505	2015	2435	4805	4810
4925	4930	4935	4990	5010	5645	7280			
(iii) surtaxes/changements de prix									
0030	0110	0405	0445	0450	0485	0490	0520	0525	0540
0545	0550	0555	0570	0810	0830	0870	0875	0925	0955
0970	0975	1230	1235	1245	1250	1285	1610	1625	2005
2045	2415	2420	2835	2840	2885	2905	2915	2930	2935
2940	2950	2955	2960	2990	4005	4015	4035	4060	4065
4085	4415	4810	4820	4870	4875	4895	4900	4905	4940
4945	4950	4980	4990	4995	5010	5215	5225	5630	5635
5645	5650	5665	5675	5680	5700	5705	6045	6050	6055
6065	6070	6090	6405	6410	6825	6835	6845	6860	6870
6885	6895	7215	7225	7300	7375	7380	7395	7400	7405
7415	8015	8420	8810	8870	8875	8880			

Table 11 (cont'd.)

Classification of Energy Studies by Policy Type

Policy Type		Study Code Numbers								
<u>Non-Financial-Persuasive (cont'd.):</u> (ii) government information										
	0085	0130	0440	0530	0830	0835	0975	1235	1285	1630
	1635	2020	2445	2815	2845	2855	2860	2945	2950	2955
	2960	2985	2995	3610	4020	4815	4825	4860	4895	5005
	5205	5630	5670	5675	5685	5735	5745	5750	5755	6405
	6415	6805	6820	6865	6875	7205	7240	7255	8410	8415
	8420	8825	8850	8865	9805					
(iii) energy labelling										
	0850	0880	0900	1220	1235	1245	1630	3005	3010	4880
	4990	5760	5765	6885	7205	8920				
(iv) utility information										
	0930	0935	0940	1215	1225	2015	5605	5625	6005	6845
	7620									
(v) consumption feedback										
	0440	0460	0465	0505	0830	0860	1630	2865	3610	4055
	4825	4850	4855	4915	4945	6010	6020	6845	6890	7230
	7240	7275	7285	7290	7335	7340	7350	8900	8905	8910
	8930									
(vi) voluntary efforts										
	0470	0805	0885	0890	0895	1260	1265	1270	1645	1650
	2020	2030	2440	2810	4045	4050	4865	4885	4920	4950
	4975	5620	5625	6005	6035	6090	6095	6865	7240	7630
	9025									
<u>Non-Financial-Regulatory:</u> (i) general policy										
	0565	0825	0870	1285	2830	3000	3625	4920		
(ii) rationing										
	0015	0040	0450	0495	0540	0925	1230	1235	1245	1625
	2015	2045	2835	2840	4005	4015	4810	4870	4875	4895
	4940	5215	5635	5665	5670	5675	6060	6070	6090	6825
	6870	7230	7300	7310	7375	7380	8420	8870	9815	9820
(iii) utility load control										
	0015	0020	0025	0035	0040	0045	0050	0065	0095	0100
	0105	0435	0875	1625	2470	4055	4435	4805	4810	4925
	4930	4935	5010	6090	7280	7415				

Tableau 11 (suite)

Classification des études sur l'énergie
selon le type de politique

Type de politique				Numéros de code des études					
<u>Sans mesures financières - Persuasion : (i) information générale</u>									
0015	0420	0425	0815	0910	0945	2040	2865	2935	2975
2980	4055	4915	4945	4990	5630	8890	8895	8900	8905
(ii) information gouvernementale									
0085	0130	0440	0530	0830	0835	0975	1235	1285	1630
1635	2020	2445	2815	2845	2855	2860	2945	2950	2955
2960	2985	2995	3610	4020	4815	4825	4860	4895	5005
5205	5630	5670	5675	5685	5735	5745	5750	5755	6405
6415	6805	6820	6865	6875	7205	7240	7255	8410	8415
8420	8825	8850	8865	9805					
(iii) étiquetage de la consommation d'énergie									
0850	0880	0900	1220	1235	1245	1630	3005	3010	4880
4990	5760	5765	6885	7205	8920				
(iv) information des services publics									
0930	0935	0940	1215	1225	2015	5605	5625	6005	6845
7620									
(v) réactions sur la consommation									
0440	0460	0465	0505	0830	0860	1630	2865	3610	4055
4825	4850	4855	4915	4945	6010	6020	6845	6890	7230
7240	7275	7285	7290	7335	7340	7350	8900	8905	8910
8930									
(vi) efforts spontanés									
0470	0805	0885	0890	0895	1260	1265	1270	1645	1650
2020	2030	2440	2810	4045	4050	4865	4885	4920	4950
4975	5620	5625	6005	6035	6090	6095	6865	7240	7630
9025									
<u>Sans mesures financières - Réglementation : (i) politique générale</u>									
0565	0825	0870	1285	2830	3000	3625	4920		

Table 11 (cont'd.)

Classification of Energy Studies by Policy Type

Policy Type	Study Code Numbers									
<u>Non-Financial-Regulatory (cont'd.): (iv) standards</u>										
	0085	1235	1245	2805	2815	2835	2855	2860	2890	2910
	2915	2930	2935	2940	2945	2950	2960	4075	4405	4875
	4980	4990	5665	6095	6405	6410	6415	7280	7405	8870
	8920									
(v) speed limits										
	0130									
(vi) bulk metering										
	0475	2460	4855	5220	5230					
(vii) environmental controls										
	0515	0535	0545							
<u>General Considerations: - equity of policy (i.e., distributional effects)</u>										
	0005	0495	0520	0855	2460	2805	2835	2885	2895	2905
	4035	4040	4435	4820	4945	4985	4995	5010	5215	5220
	5235	5245	5630	5700	6040	6050	6055	6080	7220	7260
	7300	7310	7365	7375	7395	7400	7405	7410	8810	8820
	8885	9825								

Tableau 11 (suite)

Classification des études sur l'énergie
selon le type de politique

Type de politique		Numéros de code des études							
(ii) rationnement									
0015	0040	0450	0495	0540	0925	1230	1235	1245	1625
2015	2045	2835	2840	4005	4015	4810	4870	4875	4895
4940	5215	5635	5665	5670	5675	6060	6070	6090	6825
6870	7230	7300	7310	7375	7380	8420	8870	9815	9820
(iii) contrôle de la consommation de l'énergie distribuée par les services publics									
0015	0020	0025	0035	0040	0045	0050	0065	0095	0100
0105	0435	0875	1625	2470	4055	4435	4805	4810	4925
4930	4935	5010	6090	7280	7415				
(iv) normes									
0085	1235	1245	2805	2815	2835	2855	2860	2890	2910
2915	2930	2935	2940	2945	2950	2960	4075	4405	4875
4980	4990	5665	6095	6405	6410	6415	7280	7405	8870
8920									
(v) limites de vitesse									
0130									
(vi) contrôle de l'approvisionnement aux heures de pointe									
0475	2460	4855	5220	5230					
(vii) contrôles environnementaux									
0515	0535	0545							
<u>Considérations d'ordre général - équité des politiques (c'est-à-dire effets sur la distribution)</u>									
0005	0495	0520	0855	2460	2805	2835	2885	2895	2905
4035	4040	4435	4820	4845	4985	4995	5010	5215	5220
5235	5245	5630	5700	6040	6050	6055	6080	7220	7260
7300	7310	7365	7375	7395	7400	7405	7410	8810	8820
8885	9825								

Table 12/Tableau 12

Journals Referenced in Bibliography/
Périodiques mentionnés dans la bibliographie

American Economic Review
American Journal of Community Psychology
Applied Social Psychology Annual
Arizona Business Review
Ball State Business Review
Bell Journal of Economics
Bulletin of the Atomic Scientists
California Agriculture
Ecology Modelling
Energy Communication
Energy Policy
Energy Systems and Policy
Environment
Environment and Behavior
Family Economics Review
Forensic Quarterly
Human Ecology
Industrialization Forum
International Journal of Comparative Sociology
Journal of Applied Psychology
Journal of Business Research
Journal of Consumer Affairs
Journal of Consumer Research
Journal of Energy and Development
Journal of Engineering and Power
Journal of Environmental Education
Journal of Environmental Systems
Journal of Home Economics
Journal of Marketing
Journal of Personality and Social Psychology
Journal of Property Management
Journal of the Marketing Research Society
Journal of Social Psychology
Journal of Travel Research
Land Economics
Mechanical Engineer
Monthly Labor Review
Personality and Social Psychology Bulletin
Policy Analysis
Public Opinion Quarterly
Public Utilities Fortnightly
Review of Economics and Statistics
Science
Science and Public Affairs
Scientific American
Simulation

Table/Tableau 12 (cont'd/suite)

Journals Referenced in Bibliography/
Périodiques mentionnés dans la bibliographie

Social Forces
Social Science Quarterly
Survey of Business
The Professional Geographer
Tijdschrift Voor Economische en Sociale Geographie
Traffic Quarterly

Table 13

Conference Proceedings Referenced in Bibliography

Published Proceedings:

Administrative Sciences Association of Canada
American Institute of Decision Sciences
American Marketing Association
Association for Consumer Research
Institute of Electrical and Electronic Engineers

Unpublished Proceedings:

Allied Social Science Association
American Social Science Association
Canadian Association of Applied Social Research
ORSA/TIMS
Regional Science Association
Rural Sociological Society
Society for the Study of Social Problems
Southern Marketing Association

Tableau 13

Comptes rendus de conférences mentionnés dans la bibliographie

Comptes rendus publiés

Association canadienne des sciences administratives
American Institute of Decision Sciences
American Marketing Association
Association for Consumer Research
Institute of Electrical and Electronic Engineers

Comptes rendus non publiés

Allied Social Science Association
American Social Science Association
Canadian Association of Applied Social Research
ORSA/TIMS
Regional Science Association
Rural Sociological Society
Society for the Study of Social Problems
Southern Marketing Association

Table 14

Other Sources Referenced in Bibliography

Government: various governments and departments within governments including;

Bureau of Social Research
Consumer and Corporate Affairs Canada
Energy, Mines, and Resources Canada
State Energy Offices
U.S. Department of Energy
U.S. Federal Energy Administration
U.S. Department of Health, Education and Welfare

Universities: various published and unpublished reports from universities including;

Center for Energy Studies, University of Texas at Austin
Centre for Energy and Environmental Studies, Princeton University
Energy Institute, University of Houston
Institute of Policy Analysis, University of Toronto
Social Research Center, Washington University
Stanford Research Institute, Stanford University
Transportation Centre, University of Tennessee

Private Sector/Other:

Consumers' associations
Electrical associations
Ford Foundation
Institute for Research on Public Policy
Marketing research firms
National Technical Information Service
Oak Ridge National Laboratory
Rand Corporation
Solar Energy Research Institute

Tableau 14

Autres sources mentionnées dans la bibliographie

Gouvernement : divers gouvernements et ministères gouvernementaux, y compris les suivants :

Bureau of Social Research (Bureau de recherches sociales)
Consommation et Corporations Canada
Énergie, Mines et Ressources Canada
State Energy Offices (Bureau de l'énergie de divers États)
U.S. Department of Energy (Département de l'Énergie des États-Unis)
U.S. Federal Energy Administration (Administration fédérale des affaires énergétiques des États-Unis)
U.S. Department of Health, Education and Welfare (Département de la Santé, de l'Éducation et du Bien-être social des États-Unis)

Universités : divers rapports publiés et non publiés par les universités, y compris les suivants :

Center for Energy Studies (Centre d'études sur l'énergie), université du Texas à Austin
Center for Energy and Environmental Studies (Centre d'études sur l'énergie et l'environnement), université Princeton
Energy Institute of Policy Analysis (Institut d'analyses de politiques), université de Toronto
Social Research Center (Centre de recherches sociales), université de Washington
Stanford Research Institute (Institut de recherches de Stanford), université de Stanford
Transportation Centre (Centre des transports), université du Tennessee

Secteur privé/autres :

Associations de consommateurs
Associations dans le domaine de l'électricité
Fondation Ford
Institut de recherches politiques
Entreprises de recherches en marketing
National Technical Information Service (Service d'information technique nationale)
Oak Ridge National Laboratory (Laboratoire national d'Oak Ridge)
Rand Corporation
Solar Energy Research Institute (Institut de recherches sur l'énergie solaire)

BIBLIOGRAPHY / BIBLIOGRAPHIE

Abt, Clark C.

1977 Energy Shortages and Changing Lifestyles.
 Technological Forecasting & Social Changes, 10, 2, 113-120.

Abstract: The degree and scope of lifestyle changes during a period of energy shortages is necessarily a function of the degree and rate of increase of the attendant crisis. If the shortage is large, more lifestyle changes will be required than if it is small. If a large energy shortage occurs very suddenly, the impact on lifestyle will be more pervasive than if the same amount of shortage develops gradually and allows enough time for compensating adjustments. Concretely, the net effect of energy shortages on marginal groups, such as the poor and the aged, is characterized by an adverse turn in the health and longevity of the two groups.

0010

Action Research Inc.

1978 Final Report On the Use of Wood as a Heat Source and the Quality of Insulation in Vermont Households.
Prepared for the State of Vermont Energy Office.

Objective: To measure wood use and perceived insulation quality, and the changes in those two variables since 1976

Method: A telephone survey of 628 Vermont residents was conducted in January and February 1978.

Variables: Dependent: wood use; type of wood burning device; proportion of heat derived from wood; source and type of wood used; type, number and uses of wood stoves; intention to buy wood stove; presence of insulation and its thickness and quality; awareness of insulation type; improvements in insulation and intentions to improve; attitudes toward insulation tax credit; use of storm windows, storm doors, weatherstripping, etc.

Independent: demographics, dwelling description

Findings/implications: The use of wood increased considerably since 1976 (67% of homeowners burn wood vs. 50% in 1976). In those households, wood accounted for 41% of total heat (vs. 26% in 1976). Wood users in general tended to be of various ages, from households with \$10,000 or more in income, college educated and from larger households. The use of wood stoves also increased, from 31% in 1976 to 42% in 1978. Most of the homeowners (nearly 90%) claim that their homes are insulated and 75% claim that their insulation is more than adequate. About 25% improved their insulation over the previous three years. Those making improvements tended to be from households with an income of \$10,000 to \$19,999, college educated, and from households with two to four family members. Older homes are less likely to be insulated. Few (10%) of the homeowners whose homes are not insulated intend to insulate them within the next three years. An insulation tax credit is favoured by a majority (75%) of Vermont residents.

Acton, J.P.

1976 The Move Towards Marginal Cost Pricing in Electricity.
 (Publication No. P-5673)
 Santa Monica, Ca.: The Rand Corporation.

Abstract: This report discusses the feasibility of using marginal cost pricing for electricity rates. Present rate structures charge less per unit as the customer consumes more. Since these structures were established, there have been dramatic increases in the amount of electricity consumed, as well as changes in patterns of use. Beginning in 1965, utilities began to encounter increases in capital and operating expenses. There are also long-term environmental and conservation reasons for changing the present rate structure. Rates based on the marginal cost are appropriate and have been shown in Europe to be administratively feasible. A residential experiment conducted by the Los Angeles Department of Water and Power and the Rand Corporation using 2,000 households is described. Reaction to a variety of experimental rates will be measured to observe the number of kilowatt hours consumed, changes in consumption during peak and off-peak periods, and the impact of these rates on consumption of natural gas.

Acton, J.P.

1977 Electric Ratemaking -- An Overview.
 (Publication No. P-5894)
 Santa Monica, Ca.: The Rand Corporation.

Abstract: This report comprises an overview of findings from recent Rand research on electricity rate structures. Accurate pricing of electricity can help to conserve important resources. Such prices will reflect the true cost of providing the service. This requires peak-load or time-of-day rates that reflect the daily and seasonal variations in the cost of generation and supply. Some significant findings are that: (1) U.S. industry can respond to peak-load pricing of electricity, thereby lowering its own electricity bill as well as the operating cost of the utility companies; (2) the expected savings to U.S. utilities from peak-load pricing are significant; (3) the response of residential and small commercial customers to peak-load pricing is uncertain and additional information is needed before such a policy is implemented; and (4) peak-load pricing of electricity will require equipment and administrative changes, but is not more difficult to implement and administer than traditional rate structures.

Acton, J.P.

1979 Testimony Before the Ontario Energy Board. Prepared Evidence.
 (Publication No. P-6289)
 Santa Monica, Ca.: The Rand Corporation.

Abstract: This report deals with the evidence submitted in January 1979 to the Ontario Energy Board, prepared for the Public Interest Advocacy Center on behalf of the National Anti-poverty Organization of Canada. The author argues that marginal cost pricing of electricity is feasible, would provide a sound basis for ratemaking, and would promote economic efficiency, fairness and financial adequacy. There is abundant evidence that electricity customers can adjust satisfactorily to time-of-day electricity rates, and that these adjustments are beneficial to both the utility and customers in achieving lower electricity bills. Time-of-day rates give customers opportunities for cost saving that conventional rates do not. In many cases, it increases the competitive advantage of industrial customers to have time-of-day rates available. The line management proposal to create a "diversity benefit" subsidy and to apply it selectively to certain large customers constitutes discrimination in rate-making not based on differences in costs of supply.

0030

Acton, Jan Paul, M.H. Graubard and D.J. Weinshroft

1974 Electricity Conservation Measures in the Commercial Sector: The Los Angeles Experiment.

(Publication No. R-1592-FEA)

Santa Monica, Ca.: The Rand Corporation.

Objective: To determine some of the reasons for the especially successful adaptation of the ordinance (The Emergency Energy Curtailment Plan of the City of Los Angeles) to reduce consumption by 10 to 20% in the first phase and 12 to 33% in the second. A failure to comply with the ordinance resulted in a 50% surcharge.

Method: Extensive contacts were made with people involved in all aspects of energy conservation procedures to provide an overview of the situation, the problems and the successes. Also, a target population of 35 establishments was contacted for further input on ability to comply with the ordinance.

Variables: The measures utilized by commercial consumers to reduce consumption and comply with the ordinance

Findings/implications: Despite some confusion and disruption, compliance with the ordinance was characterized by widespread public cooperation. One of the major measures used by virtually everyone was to reduce the use of lighting which, in turn, decreased consumption by 20% in most cases. With severe dislocation and was perceived as a viable goal. Selective backsliding did occur, although the rate increases have not underscored the desirability of using less electricity. Large commercial customers found it advantageous to go beyond lighting and look at scheduling and equipment use. Almost no one had prepared any type of standby plan should another energy crisis hit the area. Most commercial establishments relied upon the Department of Water and Power to monitor their meters and set the allowable consumption rate. Measures were quickly conceived, and the time and cost involved for implementation were relatively minor.

The plan is generally transferable to other sectors, with certain adjustments. The fact that city council acted swiftly and that the response was generally positive gives certain credibility for future activities that may function similarly to the ordinance. The savings in the commercial field were relatively high, and projections for the residential sector yield a possible 30% reduction.

Acton, J.P., Mitchell, B.M., and R. Sohlberg

1978 Estimating Residential Electricity Demand Under Declaring-Block
 Tariffs: An Econometric Study Using Micro-Data.
 (Publication No. P-6203)

Santa Monica, Ca.: The Rand Corporation.

Abstract: Declining block rates for electricity may cause a bias in empirical investigations of demand because the marginal price per unit of electricity is not constant. This study was able to measure the marginal price faced by households, control for eight major appliances and take account of weather variations by adopting a disaggregated approach to estimating demand equations. It is based on micro-level data for 3,825 geographic areas in Los Angeles County. Own-price elasticities of demand range from $-.35$ in two-year pooled samples of cross-sections to $-.70$ in cross-sections for a single billing period. Income elasticities of demand are approximately $.40$. Natural gas has a crossprice elasticity of $.75$ to $.90$. In the long run, changes in major variables will alter the stock of appliances as well as utilization patterns and result in larger elasticities than estimated by this study. These improved empirical estimates permit richer and more accurate policy analysis of rate changes.

0040

Acton, Jan Paul, and Ragnhild Mowill

1976 Regulatory Rationing of Electricity Under a Supply Curtailment.
Land Economics Vol. 52, #4 (November), 493-508.

Objective: To study the nature of the Los Angeles Plan, its immediate and long-term effects on electricity consumption, and the desirability of such an approach in another crisis

Method: The impact of the ordinance and accompanying factors on total energy consumption was analyzed by means of: (1) a year-by-year comparison of monthly electricity production and sales; (2) a comparison of the adjusted effects of weather, price, economic activity and minutes of daylight for expected and observed results; and (3) year-by-year changes of the Department of Water and Power with three other California utility companies.

Variables: Dependent: consumption, sales

Independent: time, company, end use classes, price, economic activities, temperatures, daylight

Findings/implications: All classes of consumers met and exceeded the required amount of reductions as entailed in the first phase of the plan. Generally, sales and consumption levels were well below the 1973 levels. The main reasons for the reductions were changes in the usage of lighting systems. When the estimated data were compared to the observed behaviour for the period December 1970 to August 1973, energy prices and economic activity had positive effects on consumption. When the Department of Water and Power (DWP) was compared to the three other companies, it produced significant reductions overall, except for the commercial sector in terms of sales. However, in actual energy consumption, DWP produced reductions of 15 to 20% as compared to the other utility companies. The ordinance proved very successful in reducing consumption through the provision of economic disincentives for failure to comply. The implication here is that either price increases or economic incentives are viable measures to cause reductions in consumption.

The plan is generally transferable to other sectors, with certain adjustments. The fact that city council acted swiftly and that the response was generally positive gives certain credibility for future activities that may function similarly to the ordinance. The savings in the commercial field were relatively high, and projections for the residential sector yield a possible 30% reduction.

Acton, Jan Paul, Mitchell, Bridger M., and Willard G. Manning

1979 Peak-Load Pricing of Electricity.

In Peter Nemetz (ed.), Energy Policy: The Global Challenge, Institute for Research on Public Policy, Montreal, 349-362.

Abstract: The paper summarizes a series of analytic studies on the potential effects of peak-load pricing of electricity in the United States. The question of the effects of time-of-day pricing on the amount and timing of energy use is addressed. The analysis is concentrated on large industrial and commercial customers. European data show that some large manufacturing companies are quite responsive to peak-load pricing, reducing their peak-load usage below their off-peak usage. Data obtained from 250 European firms were used to estimate the potential impact in the United States of a time-of-day tariff that would apply for six hours a day, five days a week. European evidence suggests that adjustment to peak-load pricing takes some time, perhaps up to ten years for the full effects to be felt. It is estimated that 44.4 billion kilowatt hours (35% of current peak-load) could be shifted from peak to off-peak hours. The expected reduction in operating costs for utilities ranges between \$0.04 and \$1.8 billion per year (in the short run). In the long run, the savings could increase to between \$1.3 and \$3.5 billion per year. The evidence suggests that plans should be made to apply the concept of peak-load pricing in specific utility systems.

0050

Acton, Jan Paul, Mitchell, Bridger M., and Willard G. Manning

1978 Projected Nationwide Energy and Capacity Savings From Peak-Load
Pricing of Electricity in the Industrial Sector.

(Publication No. R-2179-DOE)

Santa Monica, Ca.: The Rand Corporation.

Abstract: This report examines, quantitatively, the long-run benefit of introducing peak-load pricing into electricity rates (for U.S. manufacturing customers). The value of peak-load or time-of-day pricing depends on the economics of a given electrical utility and consumers' response to the plan. Peak-load pricing has been in effect in some parts of Europe for 20 years, and the projections in this study are based on data gathered in Europe. It is impossible to estimate the statistical demand relationship between price and electricity consumed at different times of the day. If U.S. firms shifted their loads to the same extent as similar firms in Europe, savings could amount to between \$1.3 and \$3.5 billion per year. European experience suggests that firms can make the adjustment to peak-load pricing without a great deal of difficulty.

0055

Acton, Jan Paul, Mitchell, Bridger M., and Ragnhild Mowill
1976 Residential Demand for Electricity in Los Angeles: An Econo-
metric Study of Disaggregated Data.
(Publication No. R-1899-NSF)
Santa Monica, Ca.: The Rand Corporation.

Abstract: The study attempts to improve on the quality of currently available estimates of demand functions in order to provide more accurate predictions of the consequences of changes in energy prices and other factors on household consumption of electricity. Estimates of the determinants of household demand for electricity based on data from Los Angeles from mid-1972 to mid-1974 are presented. The results are highly significant statistically and accord with the predictions of economic theory. The short-run price elasticity of electricity is estimated to be -0.35, and the long-run elasticity about -0.70. The income elasticity of demand for electricity is estimated to be about 0.4. Estimates of price elasticity should be used in forecasting capital requirements or determining revenue requirements for a utility. Any rate restructuring should take estimated price responsiveness into account. Important differences in the price elasticity in different blocks of the rate structure can be expected, with low consumption blocks exhibiting a smaller price elasticity of demand than high consumption blocks.

0060

Adams, Gerald H.

1976 Car Pools (A Bibliography with Abstracts).

National Technical Information Service, Springfield, Va.

Abstract: This annotated bibliography describes the feasibility, methodology and benefits of cooperative automobile use, or "car-pooling," in urban areas.

0065

Agarwal, M., and D. Johnson

1977 Consumers' Attitude Toward Energy Conservation In A Middle-Size City.

Presented at UMR-DNR Conference on Energy, Rolla Missouri, October.

Abstract: This study explores the attitude of household consumers towards conservation in their electrical usage. It examines whether a time-of-day pricing structure will influence their response to shifting their electrical usage from peak to non-peak hours. It also attempts to measure their perceived elasticity of electricity consumption.

Note: Abstract obtained from:
Technical Information Center
Department of Energy
Washington, D.C.

Ahern, W.R., et al.

1975 Energy Alternatives for California: Paths to the Future.
 (Publication No. R-1793-CSA/RF)
 Santa Monica, Ca.: The Rand Corporation.

Abstract: The results are provided of a major Rand study to identify and analyze energy policy issues facing California, with emphasis on developing a coordinated state policy response. The study assembles information bearing on these issues, defines key alternatives for the state and discusses the implications of these alternatives for state energy policy. Following an overview of past and future resources and uses of energy in California to the year 2000, the study addresses nine energy supply issues: West-East oil movement, offshore oil and gas development, a northern California deep-water port, liquified natural gas, gas transportation from the North Slope of Alaska, natural gas regulation, natural gas allocation policies, electricity generation and the development of alternative energy sources. Conservation measures are examined in the transportation, residential, commercial and industrial sectors. Finally, the implications of three different scenarios of California's energy future are discussed, each with a different set of policy actions.

Ahmed, Sadrudin, De Camprieu, Lenaud, and Haider Sayeed

1979 Energy Conservation, Durable Product Purchase, and Rokeach Value Scale.

Paper presented at the Canadian Association of Applied Social Research, Montreal, June.

Objective: To extend the use of the Rokeach scale so that government can better understand the role of the energy conservation ethic in the purchase of consumer durable products

Method: 417 residents of the Ottawa/Hull area were surveyed. An effort was made to include respondents of different incomes, education levels, ages, sex and language.

Variables: Dependent: importance placed on various attributes in making (1) an appliance purchase and (2) a car purchase. Appliance attributes included: a detailed brochure on all aspects of the appliance; features that will reduce cleaning time and give more material comfort; features that are new and unique "to prove I bought a first-rate product"; energy saving features that benefit the whole society; "energy saving features that benefit me personally"; a salesperson that can give a logical reason to buy the product; a "salesperson whom I can trust." Car attributes included: appearance; speed; mileage; lifetime energy cost; lifetime total cost; distinctive features; emotional appeal; durability

Independent: values (36 in all; e.g., a comfortable life, a world of peace, freedom, salvation, cleanliness, honesty, politeness)

Correlation and multiple regression analyses were performed.

Findings/implications: In making an appliance purchase, the attribute "energy features that benefit me personally" was ranked first, followed by "detailed brochure." Least important were new and unique features. In making a car purchase, durability was ranked as most important, followed by car mileage, lifetime total cost and lifetime energy cost. Least important were speed and emotional appeal. For the appliance purchase decision, values best explained the variation in "energy features that benefit the whole society" ($r^2 = .15$) and "features that are new and unique" ($r^2 = .13$). For the car purchase, values provided the lowest level of prediction for the attribute, car mileage, ($r^2 = .02$) and the highest for appearance ($r^2 = .17$) and distinctive features ($r^2 = .15$).

It may be possible to reach the more socially conscious segments of the market by making appeals which are based on certain values.

0080

Albrecht, Stan L.

1976 Socio-Cultural Factors and Energy Resource Development in Rural Areas of the West.

Unpublished manuscript, Department of Sociology, Brigham Young University.

Objective: To examine the impact of energy resource development on nearby communities

Method: A theoretical model was developed of the sociocultural impact of boom growth communities based upon social and demographic data from several such communities in Wyoming and Montana which face extensive population growth due to large-scale energy resource development. Secondary data, mostly from the U.S. Bureau of Census for 1960, 1970, and 1974, are utilized.

Variables: The effect of energy resource development upon population growth and social change in adjacent communities

Findings/implications: Data from the impacted communities suggest that they experience interpersonal, family and community social problems; problems in the delivery of social services; and impacts on the physical environment that have social or quality of life implications.

Anderson, C. Dennis

1977 Consumer Behavior and Energy Information Labels for Home Appliances.

In G.H.G. McDougall and R. Drolet (ed.s), Marketing 77: The Canadian Perspective, Marketing Division Proceedings, Administrative Sciences Association of Canada, 1977, 276-286.

Objective: To determine the nature of consumers' appliance purchase decision in terms of the importance consumers attach to various appliance attributes, and the extent of perceived differences among competing appliances on these attributes

Method: A research study was generated via personal interviews with a convenience sample of recent buyers of new refrigerators and freezers. Subjects were given a structured questionnaire to measure: (1) the three most important reasons for choosing the particular appliance; (2) ratings of a closed-ended list of appliances' attributes; (3) ratings of the differences among appliances of the type chosen among selected attributes; and (4) various cost perceptions for the appliance chosen.

Variables: Attributes of appliances, the importance attached to that attribute, cost associated with various attributes, information labels and consumer attitude and behaviour

Findings/implications: (1) No respondents mentioned energy concerns in response to the open-ended question on reasons for choosing the particular appliance item; (2) energy-related attributes are not determinant attributes for the purchase of refrigerators or freezers; (3) the value of energy labelling is questioned; (4) purchasers appear unwilling to trade off operating cost savings for the convenience of frost-free operation; and (5) knowledge of cost savings alone will not ensure choice of energy-efficient appliances.

Given that consumers may disregard energy information labels as an integral part of their purchase decision-making, the possible options available for policy makers are: (1) intensive education of the public regarding energy information labels; (2) economics incentives towards the purchase of products that are less energy intensive; and (3) indirect legislation affecting the performance/efficiency standards of products.

Anderson, C.D. and Robert Lloyd

1978 The Effects of Alternative Appeals on Consumer Attitudes and Purchase Intentions for Solar Home Heating Products.
University of Manitoba working paper.

Objective: To examine the effects of different appeals on consumer attitudes and purchase intentions regarding solar home heating products

Method: A field experiment, post-test only with a control group. The sample was approximately 300 Winnipeg residents selected at random from the Winnipeg Telephone Book.

There were two test groups and a control group. The first test group received a financial appeal (i.e., a "personal financial savings" information treatment). The second test group received a nationalistic appeal (i.e., a "savings to the nation" information treatment).

Variables: Dependent: the importance of choice criteria in selecting a home heating system, self-reports, objective measures of behaviour

Independent: the messages, various socioeconomic dimensions

Findings/implications: There was no significant treatment effect. Subjects reporting the highest behavioural intention of adopting solar heating systems were generally already engaged in energy-conserving behaviour. The most important reason for re-insulating houses was reported to be monetary savings (77% of subjects); only 11% reported energy saving as the most important reason for re-insulating. Consumers who appeared most receptive to solar products generally had less than a college education, were middle income and over 44 years old.

Consumers appeared confident that technology would advance rapidly enough to make solar heating viable in the near future.

Solar heating systems were perceived as safe and inexpensive; however, they were also perceived as less reliable and more expensive to repair than conventional heating systems.

0095

Anderson, Kent P.

1972 Residential Demand for Electricity: Econometric Estimates for California and the United States.
(Publication No. R-905-NSF)
Santa Monica, Ca.: The Rand Corporation.

Objective: To identify and assess the quantitative impacts of important electricity demand-determining factors in the United States and California

Method: Data used for the analysis consisted of 1947-69 figures for California, and 1969 figures for the United States.

Variables: Dependent: level of consumption (demand)

Independent: average per capita income; average size of household; fraction of population living in non-metro areas; average January and July temperatures; number of all-electric customers per 100 utility customers; electricity and gas costs; time (accounting for the introduction and diffusion of new types of appliances)

Least squares regression techniques were applied to the data.

Findings/implications: The 50-state regression results yield statistically significant evidence that residential demand is influenced by all explanatory variables except the cost of gas and average January temperature. The proportion of all-electric homes has an important influence upon demand, but is not sufficient to account for all of the influence exerted by energy costs and income on demand. The proportion of all-electric households is, however, related to energy costs and the average number of persons per household. For California, the time-related phenomenon is responsible for a substantial portion of the growth in average demand between 1947 and 1969. It may become necessary to impose limitations directly upon demand if the demand grows as estimated by 2000 (to four times as great as 1972, and perhaps eight times as great). Taxes levied on electricity or appliance wattages might be used to curtail demand.

Anderson, Kent P.

1972 Some Implications of Policies to Slow the Growth of Electricity Demand in California.

(Publication No. R-990-NSF/CSA)

Santa Monica, Ca.: The Rand Corporation.

Abstract: The study examines the external costs of "externalities" that might be incurred by resorting to policies whose immediate objective is to slow the growth of electricity consumption. The slowing of electricity growth is one way of mitigating the difficulties presently anticipated regarding the needed expansion of electrical production facilities. Attention is given to the various effects of a taxation policy which might be implemented to slow the growth in demand for electricity. Potentially adverse effects might include: (1) short-run market disequilibrium and temporary financial hardship; (2) loss of manufacturing investment; (3) accelerated growth of natural gas demand; and (4) slowed growth of gross state product and employment. Short-run problems can be avoided through proper design and timing of policies. Early action by California may actually attract industry, if they believe that such action will mean avoiding brownouts and blackouts. Policies designed to reduce demand might exempt certain industries. Firms in non-electricity-intensive industries might be enticed to locate in California if there is slowed growth in the electricity-intensive industries. Coordination of policies with neighbouring states would probably avoid any industry relocation problems. Electricity conservation measures that stimulate increased demand for natural gas are not desirable because the supply of gas is dwindling.

Anderson, Kent P.

1973 Residential Energy Use: An Econometric Analysis.
(Publication No. R-1297-NSF)
Santa Monica, Ca.: The Rand Corporation.

Abstract: The study intends to provide: (1) more insight into the relationship between energy use and energy prices; and (2) a more comprehensive picture of residential energy demand behaviour. Recent studies have not clearly outlined the relationship between energy use and price and the role of inter-fuel substitution compared with the role of alterations in usage or the role of new equipment. Static and demand relationships for residential energy use are estimated using cross-sectional data for 50 states for 1960 and 1970. Explanatory variables include energy prices, appliance prices, household income, household size, urbanity, housing structure and winter and summer temperatures. A number of the directly estimated cross-elasticities are negative, whereas all indirectly estimated ones are positive. The calculated own-price elasticities for gas and electricity are substantially lower in absolute value than their counterparts obtained from the energy consumption equations.

0110

Anderson, K.P.

1974 The Price Elasticity of Residential Energy Use.
 (Publication No. P-5180)
 Santa Monica, Ca.: The Rand Corporation.

Abstract: The long-run elasticity of household energy consumption with respect to price can be expressed as the sum of a usage-level and a fuel-choice elasticity. Using 50-state data for 1960 and 1970, this study describes procedures for estimating mean values for both total elasticity and its two components. The procedures involve the estimation of equations for predicting stocks of energy-using equipment by energy type as well as equations for predicting energy consumption. For "own-prices," the resulting estimates suggest a mean usage-level elasticity of about one-third for electricity and (less certainly) utility gas and a mean fuel-choice elasticity of about 0.8 for electricity and 1.7 for gas. Mean cross-price elasticities vary depending on the energy type and price considered.

Anderson, Richard W., and Mark W. Lipsey
1978 Energy Conservation and Attitudes Toward Technology.
 Public Opinion Quarterly, (Spring), 17-29.

Objective: to explore the relationships between attitudes and values with the acceptance of technical applications; (2) to examine the relationships between general attitudes towards conservation technology with attitudes and behaviour during the energy crisis of 1973/74; and (3) to compare college students with residents of a small urban community

Method: A survey was conducted of a sample of homes (N = 155) and students (N = 100) during the spring of 1974 in Claremont, California.

Variables: Dependent: general attitudes towards scientific and technical progress; approval/disapproval of special technical programs; desirability of owning various technical products; response to energy shortages

 Independent: college/community residents, effect of technology

Findings/implications: The utility effect of technology was perceived as high by 48% of the community respondents, whereas 37% of the students saw it as low and only 35% saw it as high. On the question of whether technology changed the respondents' lifestyles, the data show a high correlation between those who perceive the effect as high and those who rate the changes as for the best. Those who perceived the effects as low also saw the effects on lifestyles as for the worse. The majority perceived the speed of change as just about right. They also believed that technology will solve some of the energy problems confronting them. Students tended to rate the effects of technology as low to ambivalent, but they were generally favourable to owning various technical products. In response to the energy crisis, community respondents generally reduced consumption in terms of conservation as opposed to students. The study indicates that the general population generally had positive attitudes towards technology as well as conservation behaviour. Further research is needed to ascertain why the population expressed these attitudes towards technology. However, since households are the major consuming segment, information and education programs should stress the positive advantages and effects of technology with emphasis on the household sector.

0120

Angell and Associates, Inc.

1975 A Qualitative Study of Consumer Attitudes Toward Energy Conservation.

Chicago: Bee Angell and Associates.

Objective: To examine, in depth, consumer attitudes towards energy conservation and the energy crisis

Method: A marginal frequency analysis was undertaken of public attitudes and conservation behaviour, with respect to the energy situation, involving interviews with a series of ten focus groups of eight to ten per group from four different regions of the United States. Participants were given a cash incentive and were selected from a heterogeneous cross-section of the population. The study is ongoing.

Variables: Attitudes and conservation behaviour

Findings/implications: Respondents were willing to make sacrifices in energy consumption only if the need was severe and the responsibility was shared by all. They generally reacted to energy shortage with frustration and a sense of helplessness, felt the general public was exploiting the situation, and tended to blame the oil companies, public utilities, "business" and the government -- not the Arabs or the OPEC countries. Based on perceived U.S. technological know-how, respondents felt optimistic about the future. Since the energy situation was not regarded as critical, they were generally skeptical of suggestions for large environmental sacrifices.

Appleby, M.R., B. Hodge and G. Miller

1979 Motorists' Attitudes Towards Fuel Economy and Other Automobile Characteristics.

In R.A. Fazzolare and C.B. Smith (ed.s), Changing Energy Use Futures, New York: Pergamon Press (Vol. 2, 849-856).

Objective: To determine the attitudes and preferences of motorists in Southern California regarding fuel economy and other automobile characteristics

Method: Three surveys of 5,804 in 1974, 3,538 in 1976 and 3,602 in 1978 were conducted on the Membership Advisory Group of the Auto Club of Southern California.

Variables: Dependent: fuel economy, auto size, auto characteristics

Independent: age, sex, income, education

Findings/implications: On the first area of concern, fuel economy, it was generally found that the minimum acceptable fuel economy increased with each survey. For example, those favouring or accepting 12 or less miles per gallon decreased from 20% in 1974 to 2% in 1978. When the level of 25 or more miles per gallon was examined, the change was from 14% in 1974 to 31% in 1978. Younger respondents wanted higher fuel economy whereas older respondents were less concerned.

Most respondents rated the intermediate-sized car as the best car they have owned, yet in both 1976 and 1978, the majority owned a full-sized car. Females and older respondents favoured larger cars, whereas males and highly educated respondents preferred smaller cars. The majority considered technical performance, style and comfort more important than fuel economy.

The study demonstrates that people are fuel economy conscious, but not sufficiently so to rank it more important than other characteristics. Small cars or even intermediates are perceived more favourably than larger or full-sized cars. The study provides some valuable insight into the composite nature of possible target groups for future policies. What is needed in the future is a careful balance between size, characteristics and fuel economy, but this requires further research on attitudes and preferences.

Arnold, Stephen, and Ronald Turner

1979 Change Strategies for Energy Conservation.

Kingston, Ontario: Queen's University.

Abstract: Since energy conservation is largely dependent on the behaviour of consumers, technical solutions may not be adequate. The attitudes and behaviour of consumers must be changed. The strategies that might be used to induce changes in behaviour and attitudes are described: (1) compliance, where the first change is behavioural based on extrinsic motivation; (2) consistency, where the first change is behavioural based on intrinsic motivation; (3) identification, where the first change is attitudinal based on extrinsic motivation. Applications of the four strategies to transportation energy conservation are discussed. The applications are examined in terms of three types of conservation actions: introducing priority lanes for multi-occupied vehicles; lowering the speed limit; and promoting the purchase of fuel-efficient models. The use of priority lanes could result in fuel use reduction of 1 to 5%. An identification strategy, using prominent personalities to encourage the behavioural change, would probably be most successful. Lowering the speed limit to 50 mph could reduce fuel usage by 3.5% if 50% of drivers complied. The consistency strategy would probably elicit the desired behaviour better than the present compliance strategy. The consistency strategy would involve a multi-stage process and would take several years to implement. As 25 mpg fleet average could result in a 20% fuel saving, so the potential for reducing fuel consumption by increasing the efficiency of new automobiles holds promise. An internalization strategy which would change attitudes towards the inefficient models would probably be most successful. In general, the compliance strategy seems best for changing behaviour in the short term, but its effects are not long lasting. The consistency strategy seems to offer the highest probability of behaviour change, but it is more complex than the other strategies. The strategies can be blended and used in conjunction with each other.

0405

Barnaby, David J. and Richard C. Reizenstein

1975 Perspectives on the Energy Crisis: Gasoline Prices and the South-eastern Consumer.

Survey of Business, September/October, 1975, 28-31.

Objective: To examine consumers' attitudes towards the energy crisis, and their actual behaviour patterns in terms of gasoline consumption

Method: See 0415.

Variables: Attitudes towards various energy-related statements were studied along with reported private vehicle gasoline usage and the price of gasoline.

Findings/implications: (1) Neither set of respondents considers carpooling a desirable means of significantly reducing gasoline consumption. (2) The attitude statements appear to indicate a substantial concern with the energy shortage, a realization of its impact on resource utilization and an improved petroleum company image. (3) As a result of the substantial increase in gasoline prices during 1974, the number of gallons reported utilized by respondents decreased. (4) The authors conclude that gasoline pricing is one potential method of promoting energy conservation.

0410

Barnaby, David J. and Richard C. Reizenstein

1975 Profiling the Energy Consumer: A Discriminant Analysis Approach.
Paper presented at ORSA/TIMS Conference, Chicago, Illinois,
April.

Objectives: To define homogeneous groups in terms of their gasoline usage and home heat preference, and to examine the attitudinal differences between the groups

Method: Multivariate discriminant analysis was carried out of behavioural and attitudinal responsiveness to the energy crisis and consumer segments willing to reduce energy consumption. The analysis was based on a survey conducted February 1974 and repeated October 1974. Data were gathered from a random sample of mail questionnaires (N=2500) of Columbus, Georgia; Charlotte, North Carolina; and Chattanooga, Tennessee.

Variables: The effect of the energy crisis on consumer groups and home heat preference groups, in terms of attitudes and behaviour

Findings/implications: Profiles of high, medium and low gasoline consumer groups and home heat preference groups are given. The major factor which seems to identify the energy-conscious consumer (for both gasoline and heat) is exposure to media and sources of personal information. Income is also an effective discriminator. A negative attitude towards energy conservation and pollution abatement exists among those respondents who desire to maintain the status quo. Major changes between February and October 1974 seem to be increased awareness that energy resources are running short, greater agreement that rationing will become necessary and increased agreement to controlling home temperature by law. Also, fewer respondents agree that oil companies which advertise their efforts to develop new energy sources are more concerned with public relations than with resource development.

0415

Barnaby, David J. and Richard C. Reizenstein

1977 Consumer Attitudes and Gasoline Usage: A Market Segmentation Study.

A paper presented to the Marketing Track, National AIDS Conference, October 1977.

Objective: To compile demographic profiles of groups of (high, medium, low) gasoline users

Method: In February 1974, at the peak of the Arab Oil Embargo, a mail questionnaire was sent to 2,500 residents of three medium-sized (100,000-350,000 population) southeastern U.S. cities; of these, 922 were returned in usable form. Data were analyzed by multiple discriminant analysis. A second mail survey using the respondents of the February 1974 study was conducted in October 1974; 382 of the original 922 returned the second questionnaire.

Variables: A set of 42 attitude, interest and opinion (AIO) variables was included in the survey. The dependent variable is reported gasoline consumption during October 1974, approximately eight months after the cessation of the oil embargo

Findings/implications: Profiles of three gasoline consumption groups were isolated:

(1) Group 1 (less than 10 gallons/week) -- N=65

- mostly male, some female
- mostly married, some separated, divorced or widowed
- average of three people in household
- average income is \$12,000 per year
- own approximately 1.5 automobiles
- agree most that the energy crisis will create personal hardships
- agree least that stringent home energy conservation measures are necessary
- friends and magazines little help as an information source

Barnaby, David J. and Richard C. Reizenstein (cont'd)

(2) Group 2 (10-19) gallons/week) -- N=211

- almost all male
- almost all married
- average of three people in household
- average income is \$15,000 per year
- most own two automobiles
- agree that the energy crisis will create personal hardships slightly more than Group 3 but less than Group 1
- agree that stringent home energy conservation measures are necessary slightly more than Group 1 but less than Group 3
- friends little help as information source, but more than Group 1
- magazines some help as an information source

(3) Group 3 (more than 19 gallons/week) -- N=114

- almost all male
- almost all married
- average of 3.5 people in household
- average income is \$16,000 per year
- most own two automobiles
- agree least that the energy crisis will cause personal hardships
- agree most that stringent home energy conservation measures are necessary
- friends some help as an information source
- magazines more help as an information source than for Group 2

0420

Barnaby, David J. and Richard C. Reizenstein.

1978 Energy/Pollution AIO Segments and Information Source Utilization.
Paper presented at Southern Marketing Association Annual Conference: New Orleans, Louisiana, November.

Objective: To define homogeneous attitudinal segments in terms of their associated demographic characteristics and frequently used energy-related information sources

Method: A questionnaire was mailed to 2,500 residents of three southeastern cities; 922 usable responses were obtained.

Variables: Thirty-one attitude, interest and opinion (AIO) variables included in survey were factor analyzed, yielding eight factors. Howard-Harris Cluster Analysis was used to establish three homogeneous groups. Demographic and information source variables were identified for groups by multiple discriminant analysis.

Findings/implications: Major AIO characteristics of the three groups were as follows. Group 1 felt that energy problems were not of primary importance, that personal sacrifice was not required and wanted to maintain the status quo regarding the energy situation. Group 2 viewed pollution as of secondary importance until energy problems are solved, were adversely affected by air pollution and believed that the energy crisis has a silver lining. Group 3 considered energy problems of primary importance, with personal sacrifice required and were not affected by air pollution. Overall discrimination analysis was statistically significant. Two of the 15 demographic variables significantly contributed to discrimination: income (Group 3 was highest, followed by Groups 1 and 2); education (similarly). Eight of the 15 information sources contributed to discrimination: personal experience (Group 1 less than other groups); children, spouse, friends, relatives, civic clubs, radio and direct mail (Group 2 more than other groups).

Personal information sources and radio and mail offer opportunities for differential impact on energy/pollution attitudes. More research is needed into why visually oriented mass media, which have universal appeal, do not have differential impacts.

Bartell, Ted

1976 The Effects of the Energy Crisis on Attitudes and Lifestyles of Los Angeles Residents.

Paper presented at 69th Annual Meeting of the American Sociological Association, Montreal (August). Also reported in "Political Orientations and Public Response to the Energy Crisis," Social Science Quarterly, Vol. 57, #2 (September), 430-435.

Objective: To examine the energy crisis in its political context -- in particular, the unique context of an incumbent national administration struggling not only for citizen compliance with its policies but also, concomitantly, for its very right to govern

Method: A probability sample (N=1069) was taken of Los Angeles adults between February 12 and May 21, 1974. A multiple regression analysis was used to determine the behavioural and attitudinal effects of the energy crisis and the likely impact on general political orientations and public policies.

Variables: The effects of the energy crisis on beliefs about its severity and duration, feelings about who is to blame, general perceptions of governmental institutions and actors, preferences among alternative energy policies, and expectations concerning future economic conditions and employment

Findings/implications: The only significant predictor of personal energy conservation appeared to be an anticipated effect on one's future employment. Although some changes in basic lifestyle were reported, these were generally perceived as causing minimal personal difficulties. Certain sociodemographic characteristics and energy-related expectations were significantly related to beliefs about who was responsible for the energy crisis. Blacks, women and persons of lower socioeconomic status tended to blame the President; men and non-blacks tended to blame the oil companies. Energy policies having a negative effect on the environment were most often supported by persons more highly integrated into the social order. The findings of this study would predict increasing support for environmentally detrimental activities if the crisis worsens. The data also reveal that a low level of system support or trust would reduce the level of belief in the energy crisis, the level of conservation behaviour, and the tendency to blame the President. A greater level of system support or trust is needed, as this would enhance the government's position in dealing with the energy crisis.

0430

Barth, Michael, et al.

1974 The Impact of Rising Residential Energy Prices on the Low Income Population: An Analysis of the Home-Heating Problem and Policy Alternatives.

Washington, D.C.: U.S. Department of Health, Education, and Welfare, Office of the Assistant Secretary for Planning and Evaluation, Office of Income Security Policy, December. Technical Analysis Paper No. 3.

Objectives: (1) to study the effects of rapidly rising residential energy prices, specifically for home heating fuels, on the lower-income population; and (2) to analyze various policy alternatives to ameliorate these impacts

Method: Home heating is discussed with respect to climate, housing characteristics, fuel type and fuel prices. Regional variations in home heating cost increases and the problems faced by low-income households are given special attention.

Variables: The effect of increased energy costs on the low-income population in the United States.

Findings/implications: There are wide variations in heating cost increases as a result of regional differences in energy price levels and in price changes, coupled with variations in climate and type of fuel used. Low-income households spend an average of more than 11% of their income on natural gas and electricity. This compares with less than 2% for households with annual incomes over \$16,000. Yet the poor consume only 56% as much electricity and 82% as much natural gas as the non-poor. The home heating needs of the poor are lower than for other income classes because low-income households are generally located in warmer climates, involve smaller sized homes and are less likely to be single-unit dwellings. But they also have fewer energy-saving features. The net effect is that low-income households pay about three-fourths of what is spent by other households for home heating. However, while actual dollar increases will be somewhat smaller for the poor, the increases must be covered out of considerably smaller incomes.

0435

Battalio, Raymond C., and John H. Kagel

1976 Household Demand Responsiveness to Peak Use Pricing: Implications Drawn from Experimental Studies of Consumer Demand Behavior of Both Humans and Animals.

Paper presented at the Third Annual UMR-MEC Conference on Energy, Rolla, Missouri, October.

Objective: To study the responsiveness of household electricity demand to peak use pricing

Method: An experimental economics approach is taken to the study of consumer demand behaviour -- in particular, peak pricing responsiveness. Both human and laboratory animal experiments are brought to bear on the problem. Data are presented from several sources, including a summer 1975 experimental study of 129 College Station, Texas residential electricity customers.

Variables: Demand responsiveness to peak use pricing

Findings/implications: Experiments involving, respectively, laboratory animals and alcoholic drinkers demonstrate that daily behavioural patterns which are seemingly unresponsive to economic contingencies do adjust when economic variables in the environment are altered. Suggestive parallels to the study of peak use of electricity are discussed. Regarding the latter, the authors believe that where demand is not transferable (e.g., for space heating and cooling), there may be substantially less smoothing of demand in response to time-of-day pricing differentials.

Battalio, Raymond C., et al.

1979 Residential Electricity Demand: An Experimental Study.
Review of Economics and Statistics, 61, 1 (May), 180-189.

Objective: To present information on: (1) the design of and problems encountered in conducting a field experiment in household energy use; and (2) findings concerning responses of households to changes in the price of electricity and information concerning electricity use

Method: The experiment involved two phases and was conducted in College Station, Texas, with more than 100 households participating. In Phase 1, there were five treatment conditions: (1) the high price rebate group, which was eligible for rebates of 1¢ per 1% reduction in KWHR/week, with a maximum of \$15/week and, as well, was provided with feedback on usage; (2) the low price rebate group, which received feedback, along with a rebate of 1.3¢/KWHR reduction/ week; (3) feedback; (4) information; and (5) control. In Phase 2, the information-only group was placed on a modified high rebate plan, and the control group was given information. Feedback and rebates were discontinued for the two rebate groups for the last two weeks of the six weeks of Phase 2.

Variables: Dependent: actual electricity consumption

Independent: demographics, treatment

Findings/implications: In Phase 1, mean changes in usage were: high rebate, -3.5%; low rebate, -4.6%; feedback, +1.7%; information, +7.3%; and control, -.9%. Rebate groups and control differ significantly (at .05) from the information group. In Phase 2, the mean changes were high rebate, -8.3%; low rebate, +1.4%; information (now modified high), -7.6%; and control (now information) +.95%. Withdrawal of rebates and feedback from the rebate groups led to an increase in usage relative to that during Phase 1, indicating a somewhat lingering effect from the initial treatments. In evaluating the responses of the information-only groups, it is hypothesized that the information may have resulted in a downward revision of the estimated costs for some activities, thereby promoting their use. It is advised that direct extrapolation of these results to the national average is not warranted.

Baughman, Martin, and Paul Joskow

1975 The Effects of Fuel Prices on Residential Appliance Choice in the United States.

Land Economics, 5, 1, 41-49.

Objective: To estimate the effects of fuel prices on the fuel choice decisions by residential consumers for four important energy usage categories for which consumers face two or more fuel alternatives: space heating, water heating, cooking and clothes drying

Method: An econometric model is used, with the data taken from a cross-section of 48 states for 1969.

Variables: Dependent: proportion of appliance utilization in each category accounted for by gas, oil and electricity

Independent: price of gas, electricity and oil; household income per capita; mean January temperature

Findings/implications: All price variables are significant at the 5% level. For space heating, higher winter temperatures cause electricity to be favoured over gas and oil. Higher incomes generally lead to a preference for gas over electricity and, in space heating and water heating, higher incomes also lead to favouring electricity over oil. It would appear that fuel prices play an important role in appliance choices. There are substantial possibilities for fuel switching in the residential and commercial sectors which should not be ignored in making energy policy.

Initially, the majority of respondents did not make any type of behavioural change during the crisis, while those who did tended to carry these changes fully or partially into the post-crisis period. The demographic breakdowns provide policy makers with target groups for their future policies. However, further research is needed to explore the rationale behind the changes as well as a further examination of other alternatives.

Bearden, William O., et al.

1977 Consumer Preference: Gasoline Rationing or Higher Prices?
 Atlanta Economic Review, 27, 6 (November-December), 43-47.

Abstract: Several studies of consumer attitudes towards the current energy crisis are surveyed. A study was initiated to segment consumers by preference for gasoline rationing vs. preference for higher prices, based on data collected at a time when attitudes should have stabilized. These attitudinal segments were characterized along demographic, general psychographic and media-usage dimensions. Sampling and surveying procedures are described. When compared with respondents having preferences for higher gasoline prices, respondents who favoured gas rationing were more likely to be younger, have lower family incomes, be less educated, have smaller families and have a working spouse. The community studied contained a sizeable segment of consumers who favoured limiting gasoline consumption through regulatory actions, such as rationing, rather than through economic control measures, such as price increases. Other results are addressed and implications for public policy planners are summarized.

Note: Abstract obtained from:
 Technical Information Center
 Department of Energy
 Washington, D.C.

Becker, B.W., Daniel Brown and Philip B. Schary
1976 Behavior of Car Owners During the Gasoline Shortage.
Traffic Quarterly, Vol. 3, July, 469-483.

Objective: To study how the energy crisis affected the transportation market in terms of what kind of people were willing to respond, how they responded and the underlying reasons for their responses

Method: A survey was conducted of 493 Portland residents during the summer of 1974. The sample was part of a 2,400 sample-based survey done by the Oregon Department of Transportation.

Variables: Dependent: effect on use, types of changes, post-crisis changes

Independent: family size, age, income, education, occupation, sex, urban/rural, city size

Findings/implications: The initial response to the energy crisis was that 52% made changes in behaviour, 26% switched modes of transportation and 18% reduced travel. Of those who made changes, 26% continued their changed behaviour during the post-crisis period, while 51% made a partial return to their pre-crisis behaviour. In terms of demographics, the lower the age, the larger the family size, the higher the occupational status, the smaller the number of cars, the lower the income and for urban residents, the higher or greater the tendency for behavioural change.

Initially, a substantial minority of respondents did not make any type of behavioural change during the crisis, while those who did tended to carry these changes fully or partially into the post-crisis period. The demographic breakdowns provide policy makers with target groups. However, further research is needed to explore the rationale behind the changes as well as a further examination of other alternatives.

Becker, Lawrence J.

1978 Joint Effect of Feedback and Goal Setting on Performance: A Field Study of Residential Energy Conservation.
 Journal of Applied Psychology, Vol. 63, 4, 428-433.

Objective: To examine in a field setting the motivational effects of feedback and goal setting on the performance of a task that involved residential energy conservation

Method: One hundred families living in identical dwellings in central New Jersey were assigned to one of five experimental groups: (1) difficult goal (reduce electricity consumption by 20%), feedback; (2) difficult goal, no feedback; (3) easy goal (2% reduction), feedback; (4) easy goal, no feedback; and (5) control --no goal, no feedback. The experiment took place from August 9 to 31, 1976. Meters were read and feedback given three times weekly.

Variables: Dependent: actual electricity consumption

 Independent: treatment

Findings/implications: The 20% feedback group consumed the least electricity and, in fact, was the only group to consume significantly less than the control group. This implies that families who want to conserve energy should be encouraged to adopt a specific difficult goal and should obtain feedback about their performance. It is not clear that the 20% goal represents the optimal level of difficulty. Conservation efforts may have been due to participation in the experiment. It is not known how long the effects of the goal-setting and feedback would carry on, or if they would linger once feedback was stopped.

Becker, Lawrence J., Seligman, Clive, and John M. Darley
1979 Psychological Strategies to Reduce Energy Consumption: Project
Summary Report.
Princeton, N.J.: Center for Energy and Environmental Studies,
Princeton University.

Abstract: The report is intended to: (1) discuss research on the attitudinal determinants of residential energy consumption; (2) present research into the conservation effect of providing homeowners with feedback about their energy consumption; and (3) discuss miscellaneous "one-shot" studies and surveys bearing on a variety of matters. People have an important role in any comprehensive energy conservation plan, as the energy consumption of a house cannot be completely understood without reference to the people in the house. There is little evidence that relates homeowners' attitudes to actual energy consumption. Three attitudinal surveys conducted by the authors revealed that the best predictor of actual energy consumption is the residents' attitudes about thermal comfort. The implication for residential energy conservation programs and appeals is that people should be told of the ways they can save energy and be comfortable at the same time. To influence actual behaviour, energy conservation must be made more important in a way that involves the whole family, maintains interest in conservation over time and makes salient energy use. Feedback meets these three criteria.

The authors review eight experiments which involved 620 households and the effects of feedback on energy use. These experiments underlined three conditions crucial for the success of feedback. (1) There must be an initial commitment to energy conservation on the part of the residents, as only motivated people will make use of feedback. (2) Feedback must be given in a form that enables residents to evaluate how well or poorly they are doing with respect to their desired level of conservation. (3) The feedback must be credible. The miscellaneous studies revealed that an automatic multi-setback thermostat may increase energy conservation behaviour. Moreover, "average payment" plans, in vogue with some utility companies, have no effect on electrical consumption.

A residential energy knowledge survey led the authors to the following conclusions. Most people do not have a good idea of how much energy they use in their homes or how much they pay for energy. They have inadequate knowledge about the impact of various energy-using devices on total energy consumption, and this lack of knowledge can deflect people from the more effective conservation actions. Finally, many people seriously overestimate the costs and underestimate the benefits of improving the energy efficiency of their homes.

0470

Beeson, John D., David, Frank W., and Frederick J. Wegmann

1977 The Knoxville Transportation Brokerage Project. Volume II:
Operations and Management.
Knoxville, Tennessee: The University of Tennessee, Transportation Center.

Abstract: This report describes the operational development of the commuter transportation brokerage system that was in operation in Knoxville, Tennessee from October 23, 1975 through June 30, 1977. When the Knoxville Commuter Pool (KCP) was established, the concept of a transportation broker came into effect. If it proved workable, it was to become an arm of the proposed City Department of Transportation. Commuter services were the primary object, since commuters composed the group which was most easily identifiable and where the greatest possible benefit would be felt. The initial purpose of this research was to develop and put into operation a multimodal public and private transportation service throughout the Knoxville metropolitan area. This plan would allow each form of transportation to provide the service that it could most effectively furnish, and would offer transportation options to most parts of the community that could not be served at that time. The instrument through which the project objectives would be obtained was the transportation broker, who could coordinate all modes of transportation. The broker would not promote one mode of transportation over another, but would promote all modes in order that the broad objectives of the community would be met. Each individual commuter or group requesting service would be provided with a series of transportation alternatives that permitted the highest level of service at the lowest possible cost. These alternatives included vanpooling, which this study addresses extensively. Although this report covers a two-year period, only approximately 18 months were used for operational purposes. KCP is now working under the City Department of Transportation, and its future plans include a contained effort to find better ways to promote all forms of ridesharing within the metropolitan area. There was no time to realize the full potential of the brokerage concept by June 30, 1977. However, sufficient accomplishments were achieved to show that the concept has the potential to solve many of the transportation problems with which cities are now faced.

0475

Bell, P.C., and R.M. Knight

1978 The Effect of Individual as Opposed to Master Metering of Electrical Service for Apartment Buildings in London, Ontario.
London, Ontario: The University of Western Ontario.

Objective: To identify and evaluate the potential costs and benefits of converting existing and/or new apartment buildings to individually metered units

Method: Thirty-seven apartment buildings were sampled in London, Ontario (33 yielded usable data--1,121 units). Occupants provided data on apartments and themselves; landlords provided data on their buildings; contractors provided data on the cost of conversion; and the London Public Utilities Commission (PUC) provided data on the cost of individual billing.

Variables: Dependent: power consumption

Independent: type of apartment (townhouse, low rise, high rise, electrically heated, average rent/suite, average number of bedrooms, number of elevators, year of construction, number of floors, percentage of window air conditioners, percentage of external outlets, number of rental suites, percentage of electrically heated garage spaces); sociodemographic/behavioural (not specified)

Findings/implications: Note: landlord and tenant data is not analyzed or explained in this report.

Bulk metered townhouses consume, on average, 5,627 kwh per annum more than individually metered counterparts; suites in low rise buildings, 2,090 kwh per annum more; electrically heated suites, 5,034 kwh per annum more (tentative estimate); but there is no significant effect for suites in highrises.

The significant variables (found by multiple regression) affecting power consumption are: for all 33 buildings (electric sauna, electric heating, townhouse, meter type); for all buildings except one luxury low rise that had particularly high power consumption (townhouse, electric heating, meter type); for 31 buildings without electric heating (average rent, townhouse, electric sauna, meter type).

Individual metering of all existing townhouses and lowrise apartments in London would save 17.4 million kwh per annum, which is less than 1% of London PUC billings to end users. Projections for Canada estimate that individual metering would save .44% of total billings to end users.

Bell, P.C., and R.M. Knight (cont'd)

The estimated cost of conversion for low rise buildings was \$350 per suite and, for highrises, \$350-\$500, depending on the type of panels used in construction. Some buildings are impossible to retrofit. The cost of meter reading and billing was estimated at \$12.88 per Ontario customer (1975 figures).

Berkowitz, M.K., and G.H. Haines, Jr.

1979 A Multi-Attribute Analysis of Consumers' Attitudes Toward Solar Heating.

Toronto, Ontario: University of Toronto, Institute for Policy Analysis.

Objective: To study the relation between overall preferences and heating system attributes or characteristics to discover how to translate these overall preferences into consumer action

Method: Data was collected from 2,019 households across Canada. Preferences towards four heating modes (gas, electric, oil and solar) were determined through the use of pairwise mode comparisons and by asking respondents to state their preferences. Respondents were asked to evaluate the importance of 16 attributes in their purchase decisions.

Variables: Preference for specific heating mode (gas, electric, oil or solar). Four of the 16 attributes were most frequently mentioned and were used for the attitude measures were: reliability; absence of fumes or odors; safety; future availability of fuel supply.

Four tests were performed. First, an examination was performed of the proportion of respondents within the sample whose attitude score ranked a heating mode highest and for whom that mode was also identified as most preferred. Two comparisons were done, the second including cost variables. Second, a regression was carried out of the individual's most preferred heating mode vs. the attitude score for that mode. Pairwise mode preference comparisons were made by respondents and attitude scores were then regressed for each mode against the corresponding preference value for that mode. Finally, an examination was conducted of the confusion matrix of heating mode rankings by attitude scores vs. the rankings derived from the ordinarily measured overall preference values.

Findings/implications: The results generally supported the contention that consumer preferences for heating modes can be disaggregated into their preferences for the characteristics which comprise each heating mode. For example, in Test 1, 50% of respondents ranked a heating mode highest in both stating preferences and on attitude score. Costs are not as important a variable in forming a preference for solar heating as they are for the conventional modes. For those preferring solar heating, the four attributes mentioned above are more important in forming their preference. If a transition to solar heating is to be realized, these characteristics must be incorporated into the solar technology as well as being demonstrated to exist to consumers.

0485

Berman, M.B., M.J. Hammer, and D.P. Tihansky

1972 The Impact of Electricity Price Increases on Income Groups:
Western United States and California.

(Publication No. R-1050 NSF/CSA)

Santa Monica, Ca.: The Rand Corporation.

Objectives: To determine: (1) whether new prices for electricity affect different income groups equally; (2) the changes in residential consumption; (3) consumers' burdens as a result of governmental actions; (4) what can be done to eliminate unequal impacts; and (5) information on the patterns of consumption

Method: Econometric analysis based on: (1) Western U.S. data from the Bureau of Labour Standards and the Federal Power Commission for 1960-61 with a sample of 1,770; and (2) California data from Los Angeles utilities for 1970 with a sample of 1,000.

Variables: Dependent: income in conjunction with stock of appliances, size of household, size and volume of housing unit, variance of outside temperature, time spent away from home

Independent: prices

Findings/implications: Consumers with incomes over \$5,000 (60% of the sample) consumed 80% of the electricity demanded in the residential sector, whereas those with incomes below \$3,000 (17% of the sample) consumed only 6%. Low-income groups had more difficulty reducing consumption in 1970 than in 1960/61. Furthermore, high-income earners consume the most electricity, pay the lowest percentage of income for electricity and have the highest saturation of consuming appliances. The data indicates that the ability to reduce consumption increases with income, which is related to their high levels of consumption, costs and product saturation.

0490

Berman, M.B., and M.J. Hammer

1973 The Impact of Electricity Price Increases on Income Groups: A Case Study of Los Angeles.

(Publication No. R-1102-NSF/CSA)

Santa Monica, Ca.: The Rand Corporation.

Objective: To estimate the differential effects of electricity price increases on the various income groups in the residential sector of the Los Angeles area

Method: A sample survey of 1,736 meter reading units was carried out across 55 census tracts of the Los Angeles area. The data were collected through bi-monthly meter readings between December 1970 and November 1971. The census tracts were selected from the 1960-70 U.S. Bureau of Census information and land use surveys done by the Los Angeles Department of Water and Power.

Variables: Dependent: energy consumption, energy costs, appliance end use

Independent: income, number of rooms, number of people

Findings/implications: The study found that lower-income groups spend a greater percentage of their income on energy-related expenses, especially electricity. Furthermore, high-income groups have a greater ability to conserve/reduce consumption when faced with higher costs. Also, higher-income groups tend to have a larger stock of appliances in their homes. They are able to shift from electricity to natural gas when prices become too high. Finally, economic incentives for conservation tend to favour the higher-income groups. This is seen in the capability of higher-income groups to pay high initial costs to receive long-term savings.

The overall implications of this study are that low-income groups are significantly affected by electricity price increases. Price increases tend to be regressive towards the lower-income groups, which spend a higher percentage of their income on energy while consuming a smaller percentage of energy (electricity). Their ability to affect energy consumption is adversely affected by their income level, whereas the higher-income groups are generally favoured.

0495

Blakely, Edward J.

1976 Energy, Public Opinion, and Public Policy -- A Survey of Urban, Suburban, and Rural Communities.
 California Agriculture, 30, 8 (August), 4-5.

Objective: To examine the relationship between place of residence and:
 (1) attitudes about the causes and potential consequences of
 the energy crisis; (2) energy-related community behaviour
 and lifestyle; and (3) preferred alternatives in terms of
 public policy on energy

Method: Questionnaires were mailed to samples of metropolitan Sacramento (N=800), the nearby small city of Winters (N=600), and rural Capay Valley (N=200). The return rate pursuant to reminders was 62.5%. Results were weighted for the marginal frequency analysis.

Variables: The effect of place of residence on attitudes, behaviour and preferences concerning the energy crisis and public policy towards it

Findings/implications: Respondents across residence and location classes held similar opinions on the energy crisis and its overall consequences for themselves and the nation. The real dichotomy between urban and rural respondents was with regard to the role of government in solving the problems. Rural and suburban respondents were more opposed to direct government intervention and controls than urban residents. Rationing was disapproved of by all segments of the samples, with rural and suburbanite respondents the most antagonistic.

0500

Blakely, Edward J., and Howard G. Schutz

1976 Energy, Community, and Quality of Life in California: A Survey of Urban, Suburban, and Rural Communities.

The Journal of Energy and Development, 2, 1, 224-238.

Objective: To ascertain whether place of residence (urban, suburban, rural): (1) affected a person's attitudes toward the causes and potential consequences of the energy crisis; (2) had differential effects on the availability of goods and services for individuals and households; and (3) influenced respondents' current or future actions

Method: Questionnaires were sent to 1,600 residents of the Sacramento Valley in California. The response rate was 63%. Tests revealed no significant non-response bias.

Variables: Dependent: opinions on the cause of the energy crisis, the potential duration of the crisis, public officials' capacity to respond to the crisis, preferred alternatives to solve the crisis, community behaviour and lifestyles, public morale and confidence

Independent: place of residence, demographics

Findings/implications: There were no significant differences among the opinions held by the three different groups regarding the causes of the energy crisis, the duration, the reaction of public officials to the crisis or the preferred production alternatives. About half the respondents felt that the crisis was contrived by the oil companies. About two-thirds believed that the crisis would endure for many more years. Public officials and institutions were generally rated poorly for their response to the crisis (the government and the oil companies were rated as good and excellent by about 10% of the respondents, public utilities by about 28%). Respondents endorsed building the Alaska pipeline, improving public transportation and investing whatever money it takes to develop new energy sources; they were generally against building nuclear plants. It was felt that the energy crisis was having a negative impact on the morale or spirit of the nation. Suburban and rural people were less negative (40%) about the crisis than were urban residents (46%). The rural lifestyle was revealed to be more frugal, meaning that rural residents have fewer plausible sacrifices to make regarding energy use. Rural and suburban residents were much more reluctant to use government intervention as a device to insure adequate fuel supplies. There is a need for public confidence in the government and institutions before any policies can be implemented regarding the energy crisis. Policies should be formulated so as to allow their differential application according to the local situation. Energy policies can in themselves dictate the pattern of settlement, and this should be considered when policies are being developed.

0505

Blakely, Elbert

1978 The Effect of Feedback on Residential Electrical Peaking and Hourly Kilowatt Consumption.

Thesis presented to The School of Graduate Studies, Drake University.

Objective: To study the effects of 15-minute feedback on overall consumption and on peaking during the summer months when air conditioners were in use

Method: Three families (two in an apartment complex, one in a single family dwelling) participated in the experiment. Each family had a stove, refrigerator, television, radio, dishwasher and an air conditioning unit. Each dwelling was equipped with a feedback device and a recording device. The feedback device consisted basically of a light bulb and a buzzer, and the recording device monitored electric consumption during every 15-minute period of the day (96 of them). When the family consumed more than some predetermined amount in a 15-minute period, the buzzer sounded and the light went on.

Variables: KWH consumption per 15-minute period and per day; number of peaks (number of times the predetermined level was reached); duration of peaks (cumulative minutes in each 15-minute period consumption was above level)

Findings/implications: Using data gathered only on "humid" days, all three families decreased consumption from baseline to feedback condition. Two families showed a reversal to baseline once the feedback was removed, while reversed data could not be gathered from the third. Feedback decreased consumption in both peak and non-peak periods during the day. Research is needed to compare the relative effects of weekly, daily and 15-minute feedback procedures. Differential rate structures based on time-of-day use may be more effective in reducing consumption during peak periods than informational approaches.

0510

Blevins, Audie L., Jr.

1976 Public Response to Municipally Owned Utilities in Wyoming.
 Land Economics 52, 2 (May), 241-245.

Objective: To examine consumers' attitudes toward municipally-owned utilities

Method: This report is based on a 1972 survey of 215 randomly selected households in five communities with municipally-owned electrical distribution systems and of two communities with privately owned electrical systems.

Variables: Attitudinal perceptions of municipally-owned power systems

Findings/implications: Residents in the communities with municipally-owned utilities favour public power, are satisfied with the cost of electricity, and believe that public power is an equitable way to raise revenue. Respondents in communities with private power generally favor municipally-owned power and are equally divided over the issue of their community entering the power business.

0515

Blevins, Audie L., Jr., et al.

1974 Assessing the Social Impact of Energy Related Growth in Wyoming.
 Paper presented at the Annual Meeting of the Society for the
 Study of Social Problems, Montreal, August.

Objective: To examine consumers' attitudes towards coal development

Method: A January 1973 random sample survey of 219 persons was
 taken, representing a cross-section of individuals in Camp-
 bell County, Wyoming.

Variables: Attitudinal perceptions of social impacts of coal develop-
 ment

Findings/implications: A large percentage of the respondents are fearful
 of the damage strip-mining will do to the physical environ-
 ment and their lifestyles. They would like to see strict
 reclamation controls instituted.

0520

Bloom, Martin, et al.

1975 The Effect of Rising Energy Prices on the Low and Moderate Income Elderly.

Washington, D.C.: Federal Energy Administration, March.

Objective: To study the effects of energy cost changes on the income and expenditures of the low and moderate income elderly

Method: Expenditure data are from the 1973 Washington Center for Metropolitan Studies Nationwide Sample (N=1455) and its sub-sample (N=115) of poor households where the age of the head is 65 or over. Secondary data on household consumption patterns and prices are taken from the U.S. Bureau of Labor Statistics documents. The climatic data are from an atlas put out by the U.S. Department of Commerce.

Variables: The effects of increasing energy costs on the elderly in the United States, particularly as related to age, income, climate and type of fuel at the national, regional and SMSA levels

Findings/implications: Nationally, the elderly poor consume less energy than any other age-income group. Energy expenditures increase gradually as income levels rise for all ages combined, but for the age group 65 and over the increase is dramatic from the lower-middle-income level to the upper-middle-income level. There were smaller differences in expenditures across income levels for natural gas relative to electricity and gasoline. For all U.S. regions, lower-income elderly couples spent a disproportionate amount of their budget on fuel and utilities, compared to similar intermediate or higher budget households. The reverse was found regarding expenditures on transportation. Elderly households spent a much higher portion of their budget for energy in colder than in warmer regions. Energy price inflation hit hardest in the New England and middle Atlantic States, and least in the south and southeast. Overall, the rapid rise in energy prices was found to have imposed a severe economic strain on the elderly.

0525

Blumstein, Carl, et al.

1979 Residential Electricity Demand in California: Results and Methodology.

In R.A. Fazzolare and C.B. Smith (ed.s), Changing Energy Use Futures, New York: Pergamon Press (Vol. 1, A30-A40).

Objective: To present forecast results using a model of electricity end-use developed by the California Energy Commission

Method: An econometric model is used to forecast electricity demand. Data were collected by various California utilities in 1977, surveying more than 50,000 households. Demand is disaggregated by 12 end uses, three housing types and 11 climate zones. Six alternative scenarios (from baseline) were evaluated.

Variables: End uses: refrigeration, freezing, cooking, hot water heating, dishwashing, clothes washing, clothes drying, television, lighting, space heating, air conditioning, pumping for swimming pools; housing types: single family, multiple family, mobile home; population; number of persons per household; appliance saturation; new construction; fuel choice availability; energy consumption per end use

Scenarios: growth rates in households (high/low); energy prices (high/low); conservation efforts (high/low)

Findings/implications: High/low price and high/low population scenarios do not diverge materially from baseline projections. Baseline growth statewide is 2% per year. Growth projections for the various alternatives are: high price, 1.85% per year; low price, 2.13%; high population, 2.17%; low population, 1.61%; low conservation, 3.17%; high conservation, 1.23%. The model should perhaps incorporate behavioural differences in appliance choice and usage along the income and family size dimensions. More precise data on sales of electricity by customer type could also be used.

0530

Bottinelli, Charles

1979 The Status of U.S. Energy Education Policies.

In R.A. Fazzolare and C.B. Smith (ed.s), Changing Energy Use Futures, New York: Pergamon Press (Vol. 2, 667-674).

Objective: To determine the status of state policies and practices regarding energy education at various state levels

Method: A survey was conducted of 50 state educational agencies, state offices of energy, governors' offices, and state legislatures between May 1978 and July 1978.

Variables: Dependent: staff involvement, recommendations on energy education, in-service assistance, awareness of others

Independent: four levels of state involvement

Findings/implications: Of all levels of state government, the state educational agencies are the most actively involved with energy education. These agencies generally have a staff member in charge of energy education (75%), whereas the other three levels reported no specific staff member involved with energy education. Furthermore, the state educational agencies generally provide a high percentage of educational recommendations, as well as a moderate amount of in-service assistance (41%). However, state energy offices have moderately incorporated energy education into their programs (41%). In the case of awareness, over 50% of the state educational agencies were aware of the activities by the other levels. The state legislatures were moderately aware, especially towards the educational agencies and energy offices.

The major finding of this study is that there exists a high degree of poor communication between the four levels, as demonstrated by the low levels of awareness. However, both the state educational agencies and state energy offices are assuming a greater role and a higher percentage of federal funds in energy education. What is needed is a more intense and integrated program with one agency or office in charge, primarily the state educational agency.

Bowman, Carole H., and Martin Fishbein

1978 Understanding Public Reaction to Energy Proposals: An Application of the Fishbein Model.

Journal of Applied Social Psychology, 8, 4, 319-340.

Objective: To demonstrate relationships for voter decision-making in the energy area concerning actual voting behaviour, behavioural intentions, attitudes toward the behaviour, and subjective norms

Method: The first stage involved interviewing potential voters on nuclear power related referenda, 17 in Colorado and 19 in Oregon. Five hundred questionnaires were subsequently mailed to subjects in Portland, Oregon, during October 1976. Eighty-nine usable responses were obtained. Followup calls were made to these 89 and to 40 others to determine actual voting behaviour (voting took place November 2, 1976).

Variables: Dependent: actual voting behaviour

Independent: demographics; behavioural (voting) intention; attitude toward the act of voting "yes"; evaluations of consequences; belief about act; subjective norm; normative belief; motivation to comply; attitudes towards construction of more nuclear power plants, a halt in the operation of nuclear power plants and the use of nuclear energy

Findings/implications: Voting intention strongly predicted actual voting behaviour ($r=.89$) and intention, in turn, was predicted by attitude towards the act and subjective norm ($r=.92$). Demographic variables failed to correlate significantly with either intentions or behaviour. The predictive power of the Fishbein model is clearly demonstrated. The overall trend was for "yes" and "no" voters to agree upon the goodness or badness of the outcome, but to disagree consistently on the perceived benefits of the ballot proposal. Two beliefs distinguishing the two concerned the dangers of nuclear waste and the economic effects of plant construction. Both groups perceived those close to them to hold similar beliefs to their own. Scientists were held in the highest esteem in terms of inspired confidence. The Fishbein model may be useful in understanding and predicting public reaction to future energy proposals.

0540

Brunner, James A., and Gary F. Bennett

1977 Coping with the Energy Shortage: Perceptions and Attitudes of
 Metropolitan Consumers.

 Journal of Environmental Systems, 6, 3, 253-268.

Objectives: (1) to ascertain how consumers in Toledo, Ohio perceive the energy crisis, its seriousness, consequences and effect upon their lifestyles; and (2) to determine what measures consumers feel would be most appropriate for dealing with the situation.

Method: The survey was conducted in 1974 and 1975. Questionnaires were mailed to 600 and 940 consumers, with returns from 360 and 564.

Variables: Dependent: perceptions of the existence/duration/causes of the energy problem, degree of concern about the problem, attitudes toward measures the government could take and current government actions

 Independent: demographics

Findings/implications: In 1975, 65% of respondents agreed that an energy problem existed (vs. 62% in 1974). More educated, middle-aged and higher-income families were more concerned about the problem than the general population. Over half the respondents felt that the energy problem was one of long-term duration. The oil companies were singled out as one of the main causes of the problem by 55% in 1975 and 63% in 1974. "Unconcerned" persons were more apt to blame the oil companies than were "concerned" persons (71% vs. 47%). More people (37%) blamed federal regulations for the problem in 1975 than in 1974 (18%). Concerned respondents were generally less opposed to gasoline rationing and higher gasoline prices than those who were unconcerned (39% and 21% vs. 25% and 8%). There was a decline in the efforts made by respondents to conserve gasoline from 1974 to 1975. In 1975, concerned respondents took more energy-conserving actions than those who were unconcerned. Most people (65% in 1975) felt that the federal government was not doing a good job in terms of making an effort to solve the problem. Many (74%) indicated that a rise in gasoline prices of 10¢/gallon would prompt them to consider gasoline economy in the purchase of a new car.

0545

Brunner, James A., and Gary F. Bennett

1978 The People Speak on Resolving the Energy Problem and the Proposed
Solutions: Perceptions of Metropolitan Consumers.
Energy Communications, 4, 3, 239-256.

Abstract: Perceptions of metropolitan consumers concerning the seriousness of the energy problem and its roots are detected and delineated. Opinions about proposed solutions offered by President Jimmy Carter are measured. Interviews were conducted in the spring of 1977 in the Toledo, Ohio area. Only one-third of those surveyed agreed with the President's assessment of the gravity of the energy problem, and 60% favoured construction of nuclear power plants. Only dramatic increases in gasoline prices will affect consumption. Energy vs. environmental concerns are also polled.

Note: Abstract obtained from:
Technical Information Center
Department of Energy
Washington, D.C.

0550

Bullard, Clark W., III, and Robert A. Herendeen
1975 Energy Impact of Consumption Decisions.
 Institute of Electrical and Electronic Engineers Proceedings, 63,
 3 (March), 484-493.

Objective: To determine the energy cost of goods and services, based
 largely upon a 360 factor input/output analysis of the U.S.
 economic system

Method: The model is applied to illustrative problems, including (1)
 the total energy cost of an automobile and an electric
 mixer, (2) the energy impact of urban bus and auto transpor-
 tation, (3) the total energy impact of a family's expendi-
 tures, (4) the impact on energy and labour of government
 spending, (5) industrial energy dependence, (6) national
 import-export energy balance and (7) an energy conservation
 tax. Secondary data are used and are taken from various
 statistical sources for the year 1963.

Variables: The direct and indirect effects of consumption decisions in
 selected sectors of the economy on energy consumption

Findings/implications: A set of tables is provided which summarizes the
 results of the analysis of the seven problems listed above.
 Regarding the energy impact of a family's expenditures for
 the lowest-income group, energy purchases account for two-
 thirds of the total purchases while, for the highest-income
 group, the fraction drops to one-third. Estimates of the
 impact of direct energy use only might therefore be mis-
 leading.

Bultena, Gordon L.

1976 Public Response to the Energy Crisis: A Study of Citizens' Attitudes and Adaptive Behaviors.

Ames: Iowa State University.

Objective: To examine the energy-related attitudes and behaviour of three socioeconomic groups

Method: A random sample interview survey was undertaken of 190 persons from different socioeconomic groups in Des Moines, Iowa. Questions focused on attitudinal and behavioural responses to the 1974 energy crisis. Differences between the three social-class groups were tested for statistical significance using Chi Square.

Variables: Attitudes/perceptions of the crisis, impact of shortages on behavioural patterns, socioeconomic effects, and sociopolitical actions of respondents, all referenced to upper (N=56), middle (N=74) and lower (N=60) class groups

Findings/implications: Most respondents attributed shortages to the actions of large oil companies, not to dwindling energy reserves. Middle- and lower-class respondents more often blamed activities of large oil companies and concomitant government favouritism. Upper-class respondents tended to perceive the energy shortage in terms of dwindling energy reserves. More upper-class persons reported taking energy conservation measures than middle- or lower-class persons. Upper-class respondents also emphasized environmental quality goals, whereas lower-class respondents reported a major interest in keeping energy prices down.

0560

Burdge, Rabel J., Paul D. Warner, and Susan D. Hoffman
1976 Public opinion on energy.
Unpublished paper, University of Kentucky.

Objective: To investigate consumers' attitudes towards the energy situation and possible government interventions

Method: Marginal frequency analysis of opinions on various energy conservation and utilization measures based on a statewide survey taken in Kentucky (N=3,438).

Variables: Energy use for transportation, home consumption, new energy sources, government regulation of energy use

Findings/implications: Respondents were willing to accept energy conservation measures in personal transportation and home use and to support the development of new energy sources with government funding.

Burnette, Paula and Don C. Carner

1979 California's Residential Energy Commission Profiles...

In R.A. Fazzolare and C.B. Smith (ed.s) Changing Energy Use Futures, New York: Pergamon Press, Vol. 2, 845-873.

Objective: To study the relationship between attitudes and social structure of the subjects, the capacity of the subjects' homes and appliances to consumer energy, the interaction of the home with climatic variables and the actual consumption pattern.

Method: A survey was conducted of a random stratified sample of 499 California households during the summer of 1978 by the California Energy Commission. The study was done in three stages: (1) interviews to obtain information on knowledge, attitudes, preferences and behaviour; (2) a physical profile of the home; and (3) actual consumption patterns.

Variables: Dependent: consumption (electricity and natural gas)

Independent: attitudes towards the problem, conservation and the future; home characteristics, behaviour or product use; demographic information (age, income, family size and education)

Findings/implications: Families which were fairly well off in terms of demographic backgrounds consumed the highest percentage of energy, while those of lower demographic characteristics consumed the lowest percentage of energy. The electricity consumption of the affluent families was affected by such factors as the number of freezers, attitudes towards conservation, electric heat type, space cooling type and attitudes towards the future. In the case of natural gas, the main influential factors were winter day exposure, walls of home, income, family size, heating degree days and having a pool or hot tub. When the electricity consumption of the average family was analyzed, the most important factors were income, number of freezers, heating/cooling degree days and thermostat settings. As for natural gas, the factors were size of home, income, thermostat settings, whether the spouse worked, walls and product features. However, the study does not ascertain the reasons behind the variances in consumption.

0570

Burright, B.K., and J.H. Enns

1975 Econometric Models of the Demand for Motor Fuel.

(Publication No. R-1561-NSF/FEA)

Santa Monica, Ca.: The Rand Corporation.

Abstract: This report reviews recent studies of the response of motor fuel demand to price changes. Two methodologies are developed for estimating short-run and long-run demand relationships. Empirical estimates are set forth using both national and state pooled time-series data and are compared with those of other recent studies. It is found that the first-year elasticity of highway motor fuel use with respect to real price is low -- probably between -0.1 and -0.3; however, the long-run elasticity is higher -- between -0.60 and -0.85. Higher gasoline prices would cause new car sales to drop temporarily, but improved new car fuel efficiency could stimulate sales and offset some of the decline. A 10% increase in real gasoline price would cause a 2 to 3% decline in long-run automobile ownership. A given percentage increase in fuel efficiency would not cause a commensurate decrease in fuel use.

Buttel, Frederick H.

1977 Agricultural Structure and Energy Intensity: A Comparative Analysis of the Developed Capitalist Societies.

Paper presented at the annual meeting of The Rural Sociological Society, Madison, Wisconsin, September.

Objective: To test the hypothesis that energy use in the agricultural production sector is of great importance in shaping the overall energy intensity of developed capitalist nations

Method: UN-type data is analyzed for 25 "developed market economies" (as defined by the United Nations) for 1965. Four indicators of agricultural organization -- agricultural composition of the labour force and economy, mechanization and average farm size -- are deduced and their product-moment correlations established.

Variables: The effect of the percentage of the labour force in agriculture, agricultural share of GDP (gross domestic product), mechanization and average farm size on energy intensity in 25 developed capitalist societies

Findings/implications: The four indicators of agricultural structure are found to be highly intercorrelated. Agricultural composition of the labour force and economy proved to be inversely related to energy intensity, while mechanization and average farm size were positively related. The agricultural share of the GDP was the agricultural structure variable most closely associated with energy intensity. It had substantial direct effects on the dependent variable when per capita GNP (gross national product) and urbanization were held constant. The multivariate impacts of the other agricultural structure variables were less clear because of multicollinearity and parameter estimation problems. The author concludes that agricultural structure seems to have broad implications for resource/energy use in developed capitalist societies, extending far beyond resource use in the agricultural production sector itself.

Buttel, Frederick H.

1978 Social Structure and Energy Efficiency: A Preliminary Cross-National Analysis.

Human Ecology, Vol. 6, 2, 146-64.

Objective: To study the bivariate and multivariate associations of several structural characteristics of world nation-states with energy efficiency

Method: The study is based on a survey of 118 nation-states and a subsample of 25 nation-states with developed market economies. The data are taken from Taylor and Hudson (1972), World Handbook of Political and Social Indicators based on UN-type data for 1965. The cross-national analysis employs multiple correlation and regression analysis of the ratio of gross national product to total inanimate energy consumption.

Variables: Dependent: energy efficiency (a ratio of gross national product to total inanimate energy consumption)

Independent: gross national product per capita; gross domestic product from agriculture; labour force; urbanization; military expenditures; size; population density

Findings/implications: The level of production, division of labour outside the agricultural sector and population density exhibit substantial inverse relationships with energy efficiency. The main indicator of energy efficiency is the gross national product per capita. Territorial size bears little bivariate relationship to the cross-national patterns, but proves to have a discernible inverse relationship at the multivariate level. Levels of urbanization and defence expenditures have substantial bivariate relationships, but only small multivariate relationships. The main indicators of energy efficiency are gross national product, the labour force and the gross domestic product associated with agriculture. The results indicate that there is a need for "de-development" in terms of repopulating rural areas and reducing the flow of energy. However, this should not reduce the gross national product as this is the main indicator of energy efficiency.

Cambridge Systematics Inc.

1979 Interim Evaluation of the Minneapolis Ridesharing Commuter
Services Demonstration.

Springfield, Virginia: National Technical Information Source.

Abstract: This report presents an interim evaluation of the impacts of ridesharing brokerage at three multiemployer work sites in the Minneapolis metropolitan area. In this demonstration, the Metropolitan Transit Commission coordinates a variety of brokerage functions which are designed to encourage increased ridership in high occupancy vehicles to non-Central Business District work sites. The modes being promoted are carpooling, vanpooling, subscription and regular bus.

This evaluation focuses on an analysis of pre-demonstration survey data. Site characteristics and work conditions are described in detail, including parking availability, observed variance in start-end times, worker overtime requirements and business need for a car. It is shown that these work conditions and the relatively short commute distances to the demonstration site impose major barriers to successful demonstration results. A series of market penetration measures are presented to evaluate the effectiveness of the broker's marketing efforts. The results suggest that formal employee presentations are much more effective than passive marketing tools in attracting commuter interest in ridesharing.

0810

Camm, F.A.

1978 Average Cost Pricing of Natural Gas: A Problem and Three Policy Options.

(Publication No. R-2282-DOE)

Santa Monica, Ca.: The Rand Corporation.

Abstract: Current regulation of wholesale and retail natural gas encourages overconsumption of gas and discourages use of solar heaters, heat pumps and other "new" residential and commercial energy technologies. This report uses the tools of public finance to compare the desirability of three alternative policies with that of current regulation. The alternatives include marginal cost pricing with consumer compensation, average cost pricing with taxes and/or subsidies, and utility ownership of new energy technologies.

Carrington, A. David

1977 A Report on the Potential of Consumer Animation for Energy Conservation.

Saint John, New Brunswick: Community Planning Association of Canada.

Abstract: The report examines the work of the "Pilot Diffusion Project," an experiment in community participation in energy conserving activities in Saint John, New Brunswick. The project began in February 1977 and ended four months later. Its objectives were to test the acceptability of various approaches to community group animation and to assess the effectiveness of these approaches. The approaches and findings were as follows. (1) Material and literature were surveyed and organized for reference. There is a need for a uniform series of pamphlets organizing material into broad groupings. (2) The personal contacts approach had positive results. (3) The results of school visits were negligible. (4) Liaison with similar programs yielded two seemingly fruitful contacts. (5) The results of carpooling were poor or negligible. (6) Employee contact at work may be worthwhile. (7) Three public meetings were held, with attendance of 35, four and three persons. (8) Some personal contacts were made at a display table at public fairs. (9) Contact with housing groups, specifically co-ops, was very encouraging. Most consumers seemed ready to commit themselves to energy conservation, but lack of cohesion in neighbourhoods is a barrier to group animation. Synergistic effects in promoting energy conservation do show some potential.

0820

Cartee, Charles

1976 Solar Energy Installations: Trends and Lender Attitudes.
 Journal of Property Management, 41, 1 (January-February), 21-28.

Objective: To examine the attitudes of lender institutions towards solar heating and cooling

Method: A marginal frequency analysis was carried out of the attitudes of representatives of lending institutions towards solar heating and cooling of residences and the feasibility of advancing funds for this, based on a questionnaire survey (N=300).

Variables: Lender attitudes towards solar heating and cooling with respect to fuel savings, reliability, insurability of home, etc., as well as their feasibility for purposes of finance

Findings/implications: Nearly three-fourths believed solar energy would represent a feasible alternative energy source for the heating and cooling of single family residences during the next ten years. Financiers indicated a preference for making loans on solar homes. Concern was expressed about the expected life of solar equipment and the associated maintenance costs.

0825

Carter, Lewis

On- Interactive Monitoring System for Evaluating Energy Policy
going Effects on Private Nonindustrial Consumption.
Washington State University: Social Research Center.

Objective: A longitudinal study of consumer energy conservation

Method: A continuously updated interactive data retrieval system was established to monitor consumer energy conservation and the effects of energy shortages and policies. A rotating panel design was used, with six panels selected each year from a random area stratified sample (N=300) of Washington state residents. Differences in matched time-lag changes, displacement of time-series data and perturbation within specific periods are examined. Data are from utilities, interviews and questionnaires.

Variables: Changes in consumer conservation attitudes and behaviour pursuant to changes in energy policy and availability

Findings/implications: Not yet reported

0830

Carter, Lewis

1977 On the Public "Need to Know" Concerning Energy Policy Alternatives.

Pullman, Washington: Social Research Center, Washington State University.

Abstract: This report: (1) indicates what information the public may need for informed democratic participation or for reasons of personal solvency; and (2) provides illustrations of the information available. The public must be told that the United States needs to produce more energy domestically and/or use less and that this fact is the basis for the shortages dislocating American life. The consumer sense of equity would be increased greatly by public disclosure of use rates in the various sectors (military, agricultural, industrial, individual) and indications of the degree of conservation in each sector.

The individual sector uses 34% of all energy consumed; 76% of that is for personal travel and space heating. Concerted conservation/efficiency thrusts in the individual sector should thus be directed at these two points. Long-term changes are preferred to short-term changes: they result in larger savings; they are less reversible; and they make the inconvenience of short-term changes less necessary.

Policies aimed at the personal travel sector include: increasing the use of mass transit from 4% to 40% (saving 2.8% of total fuel use); eliminating tourism (1%); maximizing existing automobiles' efficiencies (1%); and banning Sunday driving (1.5%). A more viable policy, and one that would save more energy, would be to increase the efficiency of the automobile fleet. Policies required in the personal travel area include: an education program concerning where fuels are used and how they may be conserved with minimal lifestyle disruption; and serious tax incentive/penalty systems to motivate the use of efficient automobiles.

Space-heating energy requirements make up 38% of personal use and 13% of total energy use in the northwest United States. Every effort should be made to provide use information and feedback to occupants of dwellings by invoking these policies, among others: forbidding renting on a "utility paid" basis; establishing retrofitting standards for landlords; banning averaged payments plans of utility companies; and establishing thermal disclosure rules to be followed when renting or selling dwellings.

Carter, Lewis (cont'd)

In short, the public needs honest assessments of the inconveniences vs. efficiencies that can be affected by different practices, rather than the misguided exhortations to save energy in ways which have only token or symbolic significance. They also need incentives to make efficiency attractive, financing to make it possible and feedback so that it might be monitored.

Cesta, John R., and Patrick G. Decker

1978 Speeding Solar Energy Commercialization: A Delphi Research of Marketplace Factors.

Journal of Business Research, 6, 311-328.

Objective: To collect opinions on the market's receptiveness and determine the significant barriers related to the solar energy concept and products for the current situation through 1987

Method: Questionnaires were mailed to 660 users/sellers/producers of solar related products; 216 responded. This questionnaire was used to identify demand stimulating and inhibiting factors. A second questionnaire, focusing on these factors, was mailed to the original respondents, 147 of whom provided usable responses.

Variables: Survey I: demographics; solar energy knowledge; solar energy purchase behaviour; perceptions of factors inhibiting/stimulating current/future demand for solar energy products

Survey II: perceived importance/likelihood of factors stimulating/inhibiting current/future demand; recommended government actions to speed commercialization; likelihood of government taking such action

Findings/implications: In Survey I, the largest inhibiting factor in terms of current demand was high initial costs (mentioned by 68% of respondents). Other important factors were lack of information available (45%) and poor quality (28%). Stimulating factors included the high cost of energy (74%) and favorable publicity (27%). In Survey II, the perceived importance and likelihood of the factors affecting future demand were high energy costs (importance, 96%; likelihood, 86%); increased quality (77%, 66%); favourable publicity (73%, 60%); high initial cost (79%, 70%); lack of support from government (53%, 60%); poor quality (62%, 50%). The three actions seen as necessary for government were funding research and development, public education and tax incentives. Respondents felt there was only a 50% chance that such actions would be taken. Business actions perceived as required included research, educating the public and reducing prices.

0840

Charpentier, J.P., and J.M. Beanjean

1976 Toward A Better Understanding of Energy Consumption.. II. Factor
Analysis: A New Approach to Energy Demand.
Energy, 1, 4 (December), 413-428.

Abstract: The relationship between energy consumption and lifestyle standards is not yet fully understood. Major studies in this field have failed to consider variables other than the gross national product. This article attempts to obtain a better understanding of the complex interface of lifestyle and energy consumption. Factor analyses to quantify the relation between energy use and economic development have been performed for 35 developed countries and 15 OECO countries. The authors state that their measures of the relation between degrees of development and energy consumption may prove to be of more general applicability for forecasting than the widely used correlation between per capita energy consumption and per capita GNP.

Note: Abstract obtained from:
Technical Information Center
Department of Energy
Washington, D.C.

0845

Childress, R.B.

1977 Preliminary Investigations of Energy Education/Conservation Attitudes of a Selected Group of East Tennessee Educators.
Journal of Tennessee Academy of Science, 52, 4 (October), 127-131.

Abstract: A major responsibility for changing present energy resource utilization and conservation attitudes and practices rests with the public education system. To date, few research efforts have been focused on determining the attitudes of public school elementary and secondary teachers in the area of energy education/conservation. In the spring of 1975, 75 elementary and secondary school teachers from the Kingsport City School System were surveyed concerning their attitudes relative to six major aspects of energy education/conservation. Conclusions pertinent to each area are presented.

Note: Abstract obtained from:
Technical Information Center
Department of Energy
Washington, D.C.

Claxton, John D., and C. Dennis Anderson

1979 Energy Information at the Point of Sale: A Field Experiment.
In Jerry C. Olsen (ed.), Advances in Consumer Research, vol. VII,
Proceedings of the 10th Annual Conference of the Association for
Consumer Research, San Francisco, California.

Objectives: To investigate : (1) the initial impact on consumers of Canada's new energy labelling program for major appliances, Energuide; and (2) the role of the retail sales force in providing energy information and influencing consumers' appliance decision-making process

Method: The experiment took place at 12 stores in western Canada (six others were monitored for control purposes. There were four treatments (2x2 design). Consumers who purchased refrigerators during the experiment (720 in all) were mailed a questionnaire which collected post-purchase information (the response rate was 42%). As well, sales personnel were surveyed upon completion of the experiment.

Variables: Dependent: refrigerator chosen, importance of product characteristics when choosing refrigerator, consumer decision-making style, importance of energy information to salesperson

Independent: treatments (2x2): information label format (kilowatt hours or dollars), degree of sales force emphasis on energy (no sales push or sales push)

Findings/implications: This paper does not present an analysis of treatment effects. The findings indicate that potential savings to consumers, and to the nation in terms of energy saved, of having consumers buy more energy-efficient refrigerators are substantial. Energy information was not considered particularly important by consumers in making their product choice. "Operating costs of electricity" was ranked 15th of 19 product characteristics in terms of importance when making the product choice. Only 26% thought there were major differences in energy consumption from model to model, but 92% thought the government should embark on an energy labelling program for major appliances. Based on responses from consumers, 44% were judged to be "independent" purchasers (did not accept aid from salesperson), 27% to be "aided" (accepted information and then made their own decision), and 29% to be "dominated" (abdicated their decision to the sales person). Salespeople felt generally that consumers were not interested in energy information. Trained shoppers used in the experiment found that salespeople used the energy information provided about 47% of the time.

A model (IMPACT) was derived to assess alternative initiatives to maximize consumers' response to Energy Information at Point of Sales (EIPS), depending on the decision style

Claxton, John D., and C. Dennis Anderson (cont'd)

(independent, etc.), importance of operating costs in refrigerator choice, and exposure to and understanding of the energy labels. Four types of initiatives were identified by the model: (1) education of retail salespeople (this alternative has the greatest potential); (2) changing consumer attitudes energy labels more obvious; and (4) helping consumers more fully understand the labels. The labels alone are likely to have only a minimal impact without other point of sale information, most of which should come from an informed and motivated retail sales staff.

0855

Cohen, Reuben

1976 Setting Equitable National Goals for Household Energy Conservation.

Paper presented at the annual meeting of the American Sociological Association, New York, August.

Objective: To determine the major factors which affect energy use by households

Method: Two specific conservation levels or targets for electricity and natural gas were studied. These conservation targets are based on an analysis of the distribution of energy consumption by households in the United States. Data were obtained through personal interviews from a May-June 1973 national probability sample (N=1,500) of households. Low-income households were oversampled and weighting procedures were used to compensate for the disproportionate sampling. Data were also obtained from utilities for one-third of the sampled households. A multiple regression analysis was performed.

Variables: The effects of household and climatic characteristics on consumption of natural gas and electricity; the potential for energy conservation in relation to specific targets based on the effects established

Findings/implications: About one-third of the variation among households was explained by factors including size of household, use of fuels for such essentials as hot water and cooking, and climatic conditions. The top-income group used about 50% more natural gas and 160% more electricity, on a per household basis, than the lowest. The author relates these findings to target #1 (that U.S. households consume no more energy than the average reported in 1972-73 for households with these characteristics) and finds that 18% of electricity and 13% of natural gas consumption could be conserved. Overall, the biggest per-household share of the savings would have to come from upper-income groups. Target #2 (that households occupy no more than the median number of rooms reported for households of the same numbers of persons, and consume no more energy than the average reported for households of that type) would entail a similar saving, requiring a disproportionate reduction by the upper-income groups relative to lower because of the more discretionary expenditure for living space at upper-income levels.

0860

Collins, Lynn D.

1976 Social Comparison and Objective Standard Feedback as Means of Reducing Residential Energy Consumption.

Ph.D. dissertation, George Washington University.

Objective: To examine the effectiveness of social comparison and objective standard feedback as means of reducing residential energy consumption

Method: Seventy-eight subjects were assigned to one of four groups: (1) social comparison, in which daily feedback was received on relative standing with regard to gas consumption; (2) objective standard, in which daily gas consumption was compared to an objective physical standard; (3) clock, with no feedback given but daily consumption monitored; and (4) control, with consumption monitored weekly. A post-test questionnaire was administered to all subjects.

Variables: Dependent: weekly gas consumption (for seven weeks)

Independent: treatment

Findings/implications: The gas consumption of the social comparison group was not significantly lower than that of the others. The lack of significant results is considered to be because of a ceiling effect in terms of conservation. Subjects had earlier reduced their gas consumption by 14%, as a result of measures taken due to the oil embargo of 1973. The reduction was due in part to the presence of Princeton University researchers (Becker et al.) who were studying the effects of feedback on energy consumption. It is considered unlikely, however, despite the results obtained, that social comparison theory is inappropriate for the problem of energy conservation.

Collins, Thomas A., et al.

1979 Establishing Positive Attitudes Toward Energy Conservation in Intermediate-Level Children.
Journal of Environmental Education, 10, 2 (Winter), 18-23.

Objective: To establish positive attitudes towards conservation and wise use of energy resources by presenting key principles regarding energy and the environment to intermediate-level school children

Method: Subjects were 431 fourth- through sixth-grade students from Preble County, Ohio (plus 53 in a control group). Students were administered an attitude questionnaire pre- and post-test. Treatment consisted of a nine-day field trip in April 1978, during which energy principles were taught and reinforced. Actual design consisted of three different contexts, two energy principles for each context, and three learning activities for each principle.

Variables: Dependent: change in attitude

Independent: treatments (contexts -- past, present, future); principles (energy sources, net energy; trophic levels, recycling; energy conservation, second law of thermodynamics); activities (18 in all); grade level; sex; community type

Findings/implications: The experimental group increased its score 17.5% on the post-test. The control group did not show any significant changes, nor was there a significant difference between control and experimental groups on the pre-test. No significant differences were found regarding sex, grade or community type. Older children tended to change attitudes to a greater degree than younger children. It is not known if the attitude changes would be long lasting, but it is speculated (based on other research), that they would. An understanding of basic energy principles, it is concluded, can lead to an establishment of new attitudes.

0870

Committee on Science and Technology

1977 Energy Demand, Conservation Potential, and Probably Lifestyle Changes.

Hearing before the Subcommittee on Advanced Energy Conservation Research, Development and Demonstration, U.S. House of Representatives, Ninety-Fifth Congress.

Abstract: The hearings on April 4 and 5, 1977 were conducted to lay groundwork for pending energy legislation and technology proposals facing the subcommittee. Of particular interest are the differences in energy demand forecasts, the potential for conservation and the lifestyle changes that may result between now and the 21st century. Many of the witnesses made forecasts of energy needs over the next 25 years. Each forecast implies some level of annual energy growth rate and conservation, both implying lifestyle or quality of life changes forced either by price increases or regulations or both. Witnesses appearing on April 4 were Drs. Chauncy Starr, Gene G. Manella, John D. Christie, Joel Darmstadter, Richard W. Barnes and Denis A. Hayes. Drs. John H. Gibbons and William W. Hogan and Prof. Lawrence R. Klein were the witnesses on April 5.

Note: Abstract obtained from:
Technical Information Center
Department of Energy
Washington, D.C.

0875

Connecticut Power and Light Co.

1976 Hartford, CN, Experimental Study.

Reported by the Associated Press in the New York Times, Saturday, August 21.

Objective: To determine if home users of electricity would change their lifestyle to reduce their power bills

Method: This year-long experiment began October 16, 1975 and entailed 239 residential customers of Connecticut Power and Light, representing a wide range in level of demand. Of these, 40 constituted the control group. Each home was outfitted with a meter to record use during 15-minute segments. Subjects were charged a much higher price during peak demand periods and a reduced rate during power lulls. Charges were, respectively, 16 cents and 1 cent a kilowatt-hour, with 3 cents a kilowatt-hour being levied the rest of the day, on weekends and designated holidays. These rates were applied in from January to March 1976.

Variables: The effect of pricing incentives and disincentives on peak period use of electricity by residential customers

Findings/implications: Few customers in the experimental group significantly changed their power use during the warmer months, but nearly all used less electricity during peak periods in winter than did the control group or the average company customer.

0880

Consumers' Association

1978 Energy Efficiency Labelling.

Report prepared for the Department of Energy (U.K.).

Objective: To assess the likely effects on U.K. consumers of the proposed EEC energy-efficiency labelling scheme

Method: A stratified sample of 498 people was surveyed in May 1977.

Variables: Knowledge of appliance energy usage, factors taken into account in making a major appliance (refrigerator) purchase and opinions on the energy label concept

Findings/implications: Generally, respondents: (1) overestimated the running costs of appliances; (2) made no attempt to relate electrical charges to use of their own appliances; (3) did not feel there are any differences in running costs between different brands of same appliances (when in fact there are); and (4) severely underestimated costs of electrical central heating.

The main factors taken into account in making a refrigerator purchase include exterior dimensions (mentioned by 42% of respondents), capacity (31%) and price (27%). Running costs were mentioned by only 5% of respondents. A simulated purchase of a washing machine revealed that saving £10 per year in electricity costs was ranked fourth in importance as a reason for choosing a particular brand (after most reliable, washes cleanest, good repair service). Most respondents (91%) felt that energy efficiency labelling would be useful.

National savings could range from £179 million to £466 million per annum if consumers purchased the more energy-efficient appliances.

A labelling scheme should be extended to include all fuels, not only electricity. Energy labelling would be used if consumers understood the information. Labelling could encourage manufacturers to consider consumption in appliance design.

0885

Contemporary Research Centre

1975 A Study of the Canadian Public's Attitudes Toward the Energy Situation in Canada, Wave I.

Conducted for Energy, Mines and Resources Canada.

Objective: To examine Canadians' attitudes towards the energy crisis and possible government interventions

Method: Telephone interviews were conducted in seven Canadian cities with 1,821 people over the age of 15.

Variables: The study measures Canadians' attitudes, behavioural intentions and behaviour with respect to energy

Findings/implications: Only 8% of the sample spontaneously mentioned energy as a problem facing Canadians. Only 46% of the sample judged the energy crisis as "very" or "somewhat serious." One out of four respondents felt that a gasoline shortage was imminent within the next five years. Almost nine out of ten believe individual efforts to conserve energy can be of some importance; however, the likelihood that individuals will cut back on energy consumption is seen as remote. Respondents prefer voluntary conservation to legislated controls. The majority would like to see the government act in an advisory capacity in the energy situation.

0890

Contemporary Research Centre

1976 A Study of the Canadian Public's Attitudes Toward the Energy Situation in Canada, Wave II.

Conducted for Energy, Mines and Resources Canada.

Objective: To examine Canadians' attitudes and behaviour in response to the energy situation and possible government interventions

Method: Telephone interviews were conducted in seven Canadian cities with 1,840 people over the age of 15.

Variables: Canadians' attitudes, behavioural intentions and behaviour with respect to energy

Findings/implications: More than six out of ten judged the energy shortage as "very" or "somewhat serious." The majority of subgroups indicated increased concern over the energy situation in comparison with Wave I. Most Canadians surveyed believed gasoline and heating oil shortages were likely. Fear of short-term fuel shortages has decreased since Wave I. The individual is seen as able to make a significant contribution to solving the energy crisis by nine out of ten; however, the individual is deemed likely to make this effort of his own volition. Respondents preferred voluntary conservation to legislated controls but felt that, if the government was to get involved, it should be in an advisory capacity.

The most frequently reported energy conserving behaviour reported by consumers is turning lights off more often (81% of respondents) followed by turning thermostats down (68%).

Contemporary Research Centre

1977 A Study of the Canadian Public's Attitudes Toward the Energy Situation in Canada, Wave III.
Prepared for Energy, Mines and Resources Canada.

Objective: To examine Canadians' attitudes and behaviour in response to the energy crisis and possible government interventions

Method: Telephone interviews were conducted in seven Canadian cities with 1,815 people over the age of 15. The sample was approximately 50% male and 50% female.

Variables: Canadians' attitudes, behavioural intentions and behaviour with respect to energy.

Findings/implications: More than six out of ten judged the energy shortage as "very" or "somewhat serious." Francophones were less likely to rate the energy situation as serious than anglophones. White-collar and professional groups showed an increased awareness of the seriousness of the energy shortage.

The majority of Canadians surveyed believed gasoline and heating oil shortages were likely. Fear of short-term fuel shortages has diminished, but the possibility of a fuel shortage in the future is seen as a more serious threat today than it was two years ago.

More than nine out of ten people feel individual efforts to conserve energy can be of some importance. However, respondents are not strongly convinced that individuals will work to cut down their own fuel consumption.

Although there is a growing proportion of people who feel that stronger measures are needed, respondents prefer voluntary conservation to legislated control; more than three out of four favour some form of voluntary conservation. The Canadian public appears to want the government to play an advisory or educational role. More than half the public surveyed was unaware of any federal energy policy. Of those who were aware of a federal energy policy, three out of four judged it as "adequate" or "poor."

Insulation is perceived as a good investment, but the public is less certain of the monetary benefits. Despite this uncertainty, increased numbers of respondents are adding insulation to their homes and six out of ten are planning to have their insulation checked.

Two out of three people surveyed expressed concern that the energy situation would affect the quality of Canadian life, but respondents were confident that technology change, combined with a changed lifestyle, would ultimately solve the

Contemporary Research Centre (cont'd)

the energy problem. Young people, the better educated, and the francophones were least pessimistic about any possible negative effects of energy conservation on living standards and employment.

The blame for oil and gas increases of recent years is primarily attributed to the Arabs and oil company profits.

Respondents claimed to be actively involved in a variety of efforts to conserve energy. The most often reported actions taken by Canadians are: turning off lights more often (88% of the sample), keeping thermostats down (77%), using returnable bottles (76%), turning to public transportation (61%), taking better care of one's car (60%), using less hot water (54%) and servicing furnaces a minimum of once a year (51%). Personal efforts to conserve energy are more likely to be initiated by anglophones than francophones. Rationing and taxes are unpopular conservation methods. Gasoline is seen as the most likely source of energy to be conserved.

Seven out of ten respondents claimed they would be willing to increase their initial expenditure on an appliance to save energy. More than eight out of ten claimed a car's gas mileage is of some importance to them when buying a new car.

Contemporary Research Centre Limited

1977 Study of a Qualitative Study on Energy Efficiency Label Designs.
Prepared for Consumer and Corporate Affairs Canada.

Objectives: (1) to evaluate four alternative label designs in order to choose one for use on refrigerators; (2) to explore consumers' attitudes towards energy conservation in general and energy consumption of appliances in particular; and (3) to explore factors considered important by consumers in making a major household appliance purchase decision

Method: Six group discussions -- three in English in Toronto and three in French in Montreal -- were held. A total of 30 couples were involved drawn from three groups: (1) potential first-time refrigerator purchasers; (2) potential repeat purchasers; and (3) recent purchasers. General discussions on energy conservation and energy usage by appliances were held, and participants answered specific questions about energy usage of refrigerators relative to other household appliances. Individuals ranked the four energy labels presented. Labels gave the same information but had different shapes and layouts.

Variables: Dependent: label chosen, ranking of refrigerator's energy usage relative to that of other household appliances, criteria used to select refrigerator model, attitudes towards energy conservation

Independent: group (see above), anglophone/francophone

Findings/implications: Refrigerators were not perceived as heavy energy users (ranked third to fourth among six items, when they were actually first). Energy consumption was mentioned as a criterion in the choice of refrigerator model by one or two people of 60. Little difference between the various models in terms of energy usage was perceived. The country's need to conserve energy was not seen as great; in fact, there was doubt that an energy crisis existed. Any incentive to conserve was purely financial -- motivated by the desire to save money. No conclusive choice between the four label designs was made. However, one, an elliptical shape, appeared to be clearly not preferred by both francophones and anglophones. A strong need exists for an introductory publicity or promotional campaign for the Energuide Program, stressing the importance and relevance of the scheme. The Energuide concept encountered no reverse negative attitudes among the target groups.

0905

Cook, Stuart W., et al

1976 Encouraging Energy Conservation in Master-Metered Buildings.
through Ongoing study at the University of Colorado, September 1976
1977 through June 1977.

Objective: An experiment on how to encourage occupants to conserve energy when they do not directly pay their energy bills

Method: A management method and a user method, the former involving a leader and the latter occupant participation, are to be contrasted in four pairs of University of Colorado office-classroom buildings and in three pairs of dormitories. In a second study, one of a pair of married student apartment complexes will institute a program of rewards (lottery tickets) for residents found in random checks to have their thermostats set below a specified level. The second complex will serve as the control. Actual use after implementation will be compared with predicted use through multiple regression.

Variables: The effect of management and user-oriented methods on energy consumption by occupants of master-metered office and residential apartment buildings

Findings/implications: Not yet reported

0910

Cook, Stuart W., et al.

1976 A Comparison of Three Methods of Encouraging Homeowners to
through Install Insulation.

1977 Ongoing study at the University of Colorado, September 1976
through February 1977.

Objective: To determine what type, or combination of types, of persuasive communication is most effective in encouraging homeowners to install attic insulation

Method: The subjects are firemen who own homes in the Denver metropolitan area. Either 2x2x2 analyses of variance or Chi-square analyses are used to evaluate attitudes and behavioural intentions, acceptance of insulation inspection and actual installation of insulation.

Variables: The effect of seven types of communications (e.g., an energy crisis appeal or an economic appeal) on subjects' willingness to install insulation

Findings/implications: Not yet reported

Corr, Michael, and Dan MacLeod

1972 Getting It Together.

Environment, 14, 9 (November), 2-10.

Objective: To study an alternative lifestyle and its effect on energy consumption

Method: A 1972 study of energy and lifestyle, using a questionnaire on energy consumption habits, was administered to 12 communes in the Minneapolis area totalling 116 members.

Variables: The effect of commune living on consumption of natural gas, electricity and gasoline, and on energy use in appliances and automobiles

Findings/implications: Communal lifestyle appears to make a pronounced difference in personal energy consumption compared with the average for households nationally and, in some cases, for the Minneapolis area.

Corr, Michael, and Dan MacLeod

1975 Home Energy Consumption as a Function of Life-Style.
In Commoner, Boksenbaum and Corr (ed.s), Energy and Human Welfare
-- A Critical Analysis. Vol. III., Macmillan Information, New
York.

Objective: To discover if a lifestyle which leads to communal use of facilities will make a pronounced difference in personal energy consumption

Method: Questionnaires were administered to 116 members of 12 communes in the Minneapolis area. The sample was not selected in a random fashion, and measurement of some of the consumption involved making rough estimates.

Variables: Appliance ownership; appliance saturation; energy usage (gasoline, electricity, natural gas, fuel oil); vehicle ownership and mileage; energy used specifically for space and water heating

Findings/implications: About 25% of Minneapolis homes had airconditioners, but the communes had none. There were also no dishwashers or food freezers, and only two clothes dryers (one-eighth the national average). The average per capita saturation for 19 appliances on a national basis was 24%, while for the communes it was only 6%. Altogether, the savings of energy by commune individuals amounted to 19.3% of total U.S. national per capita energy consumption. Gasoline consumption per capita was 36% below the national average, and mileage per individual was 68% below. The communes used 40% less gas and 82% less electricity per individual than comparable Minneapolis families. Attitudes towards energy use in the home seem to be closely tied to cultural attitudes about comfort and leisure. Domestic energy needs are not necessary absolutes but are based to some extent on decisions of taste and culture.

Corsi, Thomas M., and Milton E. Harvey

1977 Travel Behavior Under Increases in Gasoline Prices.
 Traffic Quarterly, 31 (October), 605-624.

Objectives: To investigate: (1) the changes in household travel behaviour caused by the continuing increases in fuel prices; (2) the price level at which the majority of households will make travel changes; (3) the relationship between gasoline prices and the types of strategies households may employ to ease a situation; and (4) the relationship between a household's behavioural intentions and actual behaviour.

Method: A questionnaire was mailed to 9,881 persons in southeast Wisconsin during November 1975. 1,461 usable responses were obtained.

Variables: Dependent: adjustments reported in travel behaviour since gasoline price increases began in 1973; intentions regarding further adjustments in response to further price increases; intentions regarding adjustments to potential restrictions; attitudes regarding existing or prospective transportation facilities and costs

Independent: demographic and economic attributes of the household

Findings/implications: At a price of 50-59¢ per gallon, only 10% of respondents indicated that their travel behaviour would change significantly. At 80-89¢, 82% would change their behaviour, and at \$1 or more 100% would change. Attempts to induce a conservation would probably be effective only if a large proportion of the population was willing to change behaviour. The threshold level (price at which travel behaviour would change) is significantly related to the age of the household head (negatively), income (positively) and education (positively). As well, households that do not own small cars tend to have lower thresholds than households that do. There is also a significant relationship between thresholds and gasoline policy preferences (three were presented). Those with low price thresholds prefer rationing schemes to those which increase prices. Those with higher thresholds prefer higher prices to either rationing or a combination of rationing and price increases. There appears to be a pyramidal hierarchy of strategies employed by households to cope with increases in the price of gasoline. Households initiate their own individual strategies when they encounter a stress situation. Any fuel policy must consider ways for helping the most seriously affected subpopulations in the interests of social equity.

0930

Craig, C. Samuel and John M. McCann

1977 Communicating Energy Conservation Information to Consumers: A Field Experiment.
 American Marketing Association Proceedings, Series No. 41, 432-436

Objective: To test alternative information strategies' effects on consumers': (1) interest in learning about energy conservation; (2) intentions to conserve energy; and (3) actual consumption behaviour

Method: A field experiment was carried out involving 2,000 residential consumers of electricity in the Con Edison service territory who consumed more than 5,000 kilowatt hours per year and whose July-August consumption was at least 20% higher than for the period December-January.

Variables: Dependent: consumers' interest, intentions, actual consumption

 Independent: source of communication, channel used to communicate, nature of the appeal

Findings/implications: None of the experimental manipulations was successful in getting consumers to reduce their actual consumption of energy. The combined communication factors frequently resulted in a significantly greater conservation intention than the control group, which received no communication. In summary, this study indicates that feedback communication often results in consumer interest and intention changes, but not in actual consumption changes.

Craig, C. Samuel and John M. McCann

1978 Assessing Communication Effects on Energy Conservation.
 Journal of Consumer Research, 5 (September), 82-89.

Objective: To determine the effect of one and two repetitions of a message containing energy conservation information

Method: Subjects were 1,000 Con Edison customers, randomly assigned to four experimental groups and one control group. Criteria for inclusion in the sample were: use of 5,000 kwh per year per household; July-August consumption at least 20% above that for the December-January period; and all meter reading and billing done on the same day. Communications were mailed out in August. Meters were read in September and October.

Variables: Dependent: number of subjects who returned the card, amount of electricity consumed for two months after receipt of communication

Independent: source of communication (the communication, describing 11 ways to reduce air conditioner electricity consumption, was identified as coming either from Con Edison or the New York State Public Service Commission); the communication, included in the bill with a postage-paid return card that subjects could send in to receive a booklet on ways to control an electric bill; repetition, achieved by sending some consumers the same communication in two consecutive bills (one month apart)

Findings/implications: The source of the communication had a significant effect on the requests for information, but the repetition did not. The Public Service Commission messages had an 18% response rate, compared with a 10% rate for the Con Edison messages. Both messages (August and September) generated a 14% return rate. Neither the source nor the repetition had any significant effects on actual consumption. It may be, however, that the drop in temperature over the period of the experiment negated any of the experimental effects. The act of returning a card in the mail may not be an indication of a willingness (or unwillingness) to conserve energy.

Craig, C. Samuel and John M. McCann

1978 The Impact of Persuasive Communications on Energy Conservation.
Energy Systems and Policy, 2, 4 (April), 433-447.

Objective: To test the viability of alternative information strategies on consumers': (1) interest in learning about energy conservation; (2) intention to conserve energy; and (3) actual conservation behaviour

Method: Subjects were 2,400 Con Edison customers, randomly assigned to 12 experimental groups of 200 each (2x2x3 design). Criteria for inclusion in the sample were: use of 5,000 kwh per year per household; July-August consumption at least 20% above that for the December-January period; and all meter reading and billing done on the same day. Communications were mailed out in August. Questionnaires (398 returned) were later distributed to all subjects.

Variables: Dependent: number of subjects who returned the card, subjects' intention to conserve energy, amount of electricity consumed during the month following receipt of the communication

Independent: two appeals ("save dollars" and "independence"); two recommendations ("easy ways" and "ventilate"); three sources (Con Edison, New York State Public Service Commission, Cooperative Extension). Each communication contained a postage-paid return card that subjects could mail in to receive a booklet on ways to control an electric bill

Findings/implications: The source and appeal did not have a significant effect on the request rate, but the recommendation did. The "ventilate" recommendation had an 11.1% request rate, while the "easy ways" had a 7.8% rate. This may be because the information contained in the latter had appeared previously in Con Edison bill enclosures. None of the main effects were significant regarding the subjects' intention to conserve. The source by appeal interaction was significant, indicating that the effectiveness of a particular appeal depends on the source. In terms of actual consumption, the "ventilation" subjects used 18.3 kwh less during August than did "easy ways" subjects (marginally significant). No differences were attributable to either the source or the appeal. Results suggest that properly designed persuasive communications can alone effect conservation behaviour. Utilities should perhaps give more thought to the nature and substance of their bill enclosures.

Crossley, David J.

1979 The Role of Popularization Campaigns in Energy Conservation.
Energy Policy, 7, 1 (March), 57-68.

Abstract: Energy conservation popularization campaigns have been used to induce people to reduce their energy usage. Many such campaigns have been sponsored by governments, sometimes with negative reactions from consumers. Campaigns have usually been directed towards energy saving in the home. Industrial and transport sectors, where large amounts of energy are used, have not been the targets of campaigns to the same extent. There are three types of change strategies: (1) power strategies; (2) persuasion strategies; and (3) re-education strategies. Most campaigns are persuasive, appealing to logic -- energy savings mean financial savings. Campaigns use media influence channels (mass and specialized media) rather than personal influence channels to transmit the information. Response channels, including media responses, individual visits and actions are also less widespread. They tend to be labour and resource intensive, limiting their use. Studies need to be undertaken in conjunction with campaigns to evaluate their effectiveness. Government-sponsored campaigns should be part of a comprehensive energy conservation program which is itself part of a well-planned energy policy.

0950

Crow, R.

1977 Energy Conservation: Behavioral Considerations.
Electric Power Research Institute Journal, 2, 5 (May), 20-25.

Abstract: Technological and social means have been advanced to reach the objectives of energy conservation. An evaluation of the societal and economic impacts has been lacking, but now research is being carried out by Electric Power Research Institute Energy Demand and Conservation Program to investigate such behavioural factors. EPRI uses data about economic variables, technological change and performance, and market restrictions to assess this issue.

Note: Abstract obtained from:
Technical Information Center
Department of Energy
Washington, D.C.

Cunningham, William H., and Brondel Joseph

1978 Energy Conservation, Price Increases and Payback Periods.
In H. Keith Hunt (ed.), Advances in Consumer Research, Vol. V.
Proceedings of the Eighth Annual Conference of the Association
for Consumer Research, Ann Arbor, Michigan.

Objective: To examine: (1) consumers' responses to price increases in gasoline and electricity; and (2) consumers' willingness to accept various payback periods for investments in insulation and solar energy equipment

Method: 10,000 questionnaires were mailed to residents in five communities in the southwest United States. 2,403 usable responses were obtained.

Variables: Dependent: total annual family income (six groups)

Independent: reactions in terms of fuel use to nine price increases in gasoline and electricity varying from 5% to more than 150% (six categories from "no reduction" to "would no longer use"); maximum time acceptable to re-cover various levels of investments in insulation and solar energy equipment through savings in energy bills (six categories from "less than one year" to "more than eight years").

Findings/implications: Price increases up to 50% elicit markedly rising levels of reported conservation, but the conservation level after 50% remains fairly constant. The subjects may have viewed price increases above 50% as unrealistic. There is generally a lower price response by the low- and high-income groups, the former because they cannot alter behaviour and the latter because they choose not to. The group with a family income of less than \$5,000 per year was the least price responsive. High-income groups are not very price responsive at the lower price increases, and they do not approach the response rate of the middle-income groups until the 100% price increase. Responses to price increases in electricity were quite similar. The six income groups were significantly different in terms of their payback periods for insulation. Low-income groups have the shortest payback periods (1.5 years on a \$500 investment). It is, however, the fourth highest income group (15,000-\$19,000) which consistently has the longest payback period (4.5 years on \$500 investment). The relationship for all groups is linear. In terms of payback periods for solar energy, the relationship between investment and payback period is curvilinear. A similar pattern is evident with the two lower-income groups below the others, and with no significant differences among the other four groups. On the whole, consumers are not willing to wait long to recover their investment (five years for \$15,000) which means that public policy makers must consider the use of tax and income credits to encourage the adoption of energy-saving equipment.

0960

Cunningham, William H. and Sally C. Lopreato
1977 Energy Use and Conservation Incentives: A Study of the South-
western United States.
Praeger Publishers, New York.

Objective: To investigate consumer attitudes, beliefs and behaviour re-
garding the energy crisis

Method: Data were collected from residents of five southwestern
United States communities. Conclusions were based on 2,403
codable returns of 10,000 questionnaires mailed out in
1973. The sample exhibited a slight bias towards middle-
aged white males with higher than average education and in-
come.

Variables: Attitudes, beliefs, behaviour and behavioural intentions of
residential consumers relevant to the energy problem and
conservation

Findings/implications: There seems to be a great deal of homogeneity on
energy attitudes. The majority of subjects -- regardless of
income level, education or age -- believe that the country
has an energy problem of some lasting significance and that
not enough is being done by public or private sectors to
solve it.

Consumers are willing to make substantial efforts to conser-
ve energy as long as they are not forced to spend substan-
tial sums of money or experience a negative impact on their
lifestyle.

In general, those individuals who were classified as more
energy-conserving were lower-income, less educated and more
likely to be of a minority race or ethnic group.

0965

Cunningham, William H., and Sally Cook Lopreato

1975 Energy Consumption and Conservation: Attitudes and Beliefs in
through the Southwest.

1976 Austin: The University of Texas, Center for Energy Studies.

Objective: Statistical analysis of a fall 1975 random sample (N=10,000)
of five southwest cities.

Method: The survey was accomplished by mail questionnaire and an ex-
amination of billing records. A subsample (N=801) of all-
electric users in Austin, Texas was drawn in spring 1976.
The purpose of the study was to identify attitudes and be-
haviour across diverse groups of individuals and to relate
these findings to conservation practice incentives.

Variables: Energy attitudes and behaviour with respect to socioeconomic
variables

Findings/implications: Not yet reported

0970

Cunningham, William H., and Robert A. Peterson

1977 Market Segmentation by Gasoline Consumption Intentions.

In Barnett Greenberg and Danny Bellenger (ed.s), Contemporary Marketing Thought, 1977 Educator's Proceedings.

Objective: To provide a preliminary basis for understanding consumer attitudes and behaviour relating to gasoline

Method: A questionnaire was mailed to nearly 10,000 consumers living in the southwest states in October 1975. A response rate of 24% was obtained.

Variables: Dependent: last month's gasoline consumption

Independent: reactions to a number of increases in the price of gasoline ranging from 5% to 150% (six reactions from "no reduction" to "would no longer use gasoline"); energy attitudes; demographics

Findings/implications: Respondents were clustered into five distinct groups with regard to gasoline consumption intentions. For all groups, as the price of gasoline increased, the intended consumption decreased. For one group, the decrease was only slight. For the others, the intended consumption decrease levelled off after a 50% price increase. The two groups least responsive to price increases tended to be of higher income, higher social class and white. The most responsive group was more likely to believe that the energy crisis was contrived by the oil companies. They were also most likely to agree that the crisis had put a substantial strain on their budget. Government may have to implement policies which generate different conservation efforts in particular market segments.

0975

Curtin, Richard T.

1976 Consumer Adaptation to Energy Shortages.

Journal of Energy and Development, 2, 1 (Autumn), 38-59.

Objective: To examine how consumers coped with energy shortages, and how the energy crisis of the winter of 1973/74 affected them.

Method: A multiple classification analysis was undertaken of a random sample (N=1,400) interview survey of family heads or spouses drawn from the 48 contiguous states of the United States during the fall of 1974.

Variables: Dependent: energy conservation behaviour, expected difficulty

Independent: socioeconomic attributes (education, age, sex, race, income, household size, number of automobiles); residential area; energy costs and prices

Findings/implications: Two-thirds of the respondents reported that they would consume less energy in the coming years, but also indicated that this would be moderately to very difficult to attain. Price appeared to be the main motivating factor behind the conservation efforts. Only age and education affected the conservation efforts. The younger and more educated the respondent, the greater his involvement in conservation as well as his adaptation to the future situation. Also, those with larger homes, families and a greater number of cars reported more conservation. If the supply situation is perceived as stable and the government is perceived as doing a poor job of dealing with the energy situation, there is a greater tendency for respondents to conserve less. The major implications of the study are that conservation is working to a large degree, but that there is need of further viable programs to enhance the situation. Also, the government must produce a more positive perception of itself towards the consumer in order to increase conservation behaviour. Furthermore, factors concerning prices and supply must be emphasized as these tend to have a direct impact on behaviour.

Davis, Donald L.

1978 Attitudes of Lansing Area Residents Toward Energy Use: Consumer Adaptations Since the Oil Embargo.
East Lansing, Michigan: School of Labor and Industrial Relations, Michigan State University.

Objective: To provide a perspective on the attitudes of Lansing area residents toward energy use, and to derive specific information on the energy usage and conservation behaviour of the residents since the oil embargo of March 1974

Method: Mail questionnaire distributed to 400 Lansing area residents; 133 were returned in usable form.

Variables: Dependent: energy usage

Independent: characteristics of user's residence: mode of transport to and from work; energy use adjustments made since March 1974; expectations regarding energy use for the next winter

Findings/implications: Users were divided into low/average/high use categories. No statistically significant differences were found between the three in terms of appliance ownership. High and low users had a high propensity towards planning changes in usage. High and average users feel they have been able to conserve; low users do not. Forty-nine % of respondents felt they had successfully reduced gas and electricity consumption since 1974. Over one-third have made significant adjustments to increase the energy efficiency of their residences, but few (less than 10%) have purchased more energy efficient appliances (including furnaces). Adjustments included adding insulation (33%), installing storm windows (40%) lowering thermostats (80%) and replacing light bulbs (35%). Slightly over half of the respondents planned to reduce energy consumption in their residence. Overall, Lansing residents appear to be fairly energy conscious. Tax incentives should be used to encourage the purchase of energy efficient durables.

1210

Defionzo, James, and Seymour Warkov

1979 Are Female-Headed Households Energy Efficient: A Test of Klausner's Hypothesis Among Anglo, Spanish-Speaking, and Black Texas Households. Human Ecology, 7,2 (June) 191-198.

Abstract: Recent studies have hypothesized that female-headed households are less efficient in their use of energy than male-headed households because they are less disciplined and ordered than male-headed households. Multivariate analysis of energy use in 4,638 anglophone, Spanish-speaking and black Texas households indicated that, when other variables known to affect energy use were accounted for, the sex of the household head had no statistically significant independent effect on electricity consumption in any ethnic or marital status group. The implications of these findings for social organization theories of household energy consumption are discussed.

Note: Abstract obtained from:
Technical Information Center
Department of Energy
Washington, D.C.

Delprato, Dennis J.

1977 Prompting Electrical Energy Conservation in Commercial Users.
Environment and Behavior, 9, 3 (September) 433-442.

Abstract: Ten men's restrooms in Eastern Michigan University were studied to determine if prompting -- the presentation of stimulus to increase the probability of a specific response -- could be used to modify energy conservation behaviour. The prompting technique used -- consisting of a poster urging that lights be shut off when the room was not in use -- proved effective in reducing unnecessary electrical consumption.

Note: Abstract obtained from:
Technical Information Center
Department of Energy
Washington, D.C.

Denham, F.R., N. Fairhead and P.L. Fontaine

1977 Major Domestic Appliances and Automobile Tires: Environmental and Economic Impacts of Product Durability.
Prepared for Energy, Mines and Resources Canada.

Objective: To identify the important factors determining the selection of various appliances

Method: The study reports on a consumer survey conducted in early 1977 of over 1,600 Canadian households. In-person interviews and questionnaires were utilized.

Variables: Information about the purchase and disposal of appliances, the type of appliance involved and various demographic variables

Findings/implications: The purchase decision for microwave ovens is most highly influenced by expected useful life. This relationship was most pronounced among French-speaking Quebecers, respondents from small towns or rural areas, households with five or more people, and households earning over \$20,000. The next most important characteristics were reliability and features.

For automatic dishwashers the most popular purchase criteria were, in order, reliability, expected useful life and ease and availability of service.

Reliability is the most frequently selected desired attribute of air conditioners, with little differentiation between community or household.

The prime reasons for selecting a range were ease and availability of repair, price and reliability.

For refrigerators, reliability, features and expected useful life were most important. Reliability was most often stated by households living in rural areas, or with four or more persons, while households earning less than \$10,000 chose it less often.

There were only two reasons considered "most important" in choosing a clothes washer -- reliability and expected useful life. Reliability was selected more often by respondents who were English-speaking Quebecers, in Ontario, or in households in medium-sized cities or with four or more persons. Useful life was more frequently cited by Frenchspeaking Quebecers and households in small towns, with high incomes or consisting of only one person.

By contrast, expected useful life was chosen most often as the most important reason for selecting clothes dryers. This was most noticeable in French-speaking Quebec, the Prairie Provinces and British Columbia.

Denney, W. Michael, and J. Stephen Hendricks

1979 Energy, Inflation, and Citizen Discontents: A Report on Public Reasoning About Electric Utility Policies and Nuclear Energy. Austin, Texas: Center for Energy Studies, University of Texas at Austin.

Objectives: (1) to aid in the development of improved theories of public opinion; and (2) to bring these theories to bear on understanding how the ordinary citizen reasons about contemporary social problems

Method: A telephone survey was conducted in Austin during March and April 1979. 825 subjects were interviewed. A follow-up survey interviewed 209 of the original subjects in May.

Variables: Dependent: levels of satisfaction/dissatisfaction regarding the local electric utility, levels of policy awareness, sources of policy awareness, sources of satisfaction/dissatisfaction, salience of nuclear issues, opinions about the desirability of nuclear power

Independent: demographics

Findings/implications: The vast majority of respondents (82%) rated the quality of their utility's service as good or excellent. More people in Austin thought that rates were much higher than they should be than did in the nation as a whole (40% versus 26%). A substantial gap in public awareness in some areas concerning the utility was revealed (31% did not know the utility was city-owned). Those most aware of the utility and its policies were older, more educated and had lived longer in Austin. There was some evidence that evaluation of the utility was influenced by reactions to more specific rate policies. Data gathered on the nuclear issues was influenced by the Three Mile Island incident, which occurred during the interviewing period. Attention paid nuclear power in general and the South Texas Nuclear Project (STNP) increased at the time of the Three Mile Island incident. The follow-up survey revealed that those without a strong underlying commitment to nuclear power had a slight tendency toward increased opposition. The incident did not either increase intense opposition or reduce overall support for nuclear power. Those whose views were intensified at the time of the incident later shifted back towards weaker versions of their positions. Anti-nuclear groups tend to have a higher proportion of highly educated, female, self-proclaimed liberal Democrats than the general populace.

DeHloff, John A.

1977 Public Opinion Constraints on Energy Policy-Making
Presented at Energy Use Management International Conference,
Tucson, October.

Abstract: Although the public overwhelmingly approves of energy conservation as a means of dealing with U.S. energy shortages, many of the methods being presented by policy-makers are met with outright disapproval. Any measure that seems to advocate major changes in lifestyle is disliked. Positive economic incentives meet with considerable public approval, while regulatory measures, such as rationing, or negative economic measures, such as additional gasoline taxes, are strongly resisted.

Note: Abstract obtained from:
Technical Information Center
Department of Energy
Washington, D.C.

Doctor, R.D., et al.

1972 California's Electricity Quandary: III. Slowing the Growth Rate.
Prepared for the California State Assembly by the Rand Corporation.

Objective: To examine the need for, usefulness of and effects of various policies designed to slow the growth rate in the demand for electricity in California

Method: Econometric models are used to estimate electricity and gas demands for the year 2000 and to evaluate the effects of the various demand-reducing policies.

Variables: Dependent: electricity and natural gas demand

Independent: the growth slowing policies, i.e., consumer education programs, an appliance labelling program, provision of financial incentives for use of energy-saving appliances and devices, changes in the price of electricity, taxes or tax credits on more or less energy efficient electrical equipment, proscriptive policies (including building code requirements, banning the sale of certain types of equipment, restrictions on the minimum efficiency of electrical equipment or appliances and explicit rationing programs)

Findings/implications: Under certain assumptions, electricity consumption in 2000 could represent only a 65% increase over 1970 demand. This is a 72% reduction from the Conventional Utility Projection and involves the following: (1) improving insulation in new residential construction to effect a 50% reduction in heat losses/gains; (2) achieving a 50% reduction in the amount of electricity used for residential lighting; (3) achieving 50% increase in air conditioner efficiencies; (4) substituting gas for electricity in all new installations of space heating, water heating, cooking and clothes drying units; (5) accelerating construction of low-energy residential structures; (6) using solar energy for 70% of the space heating, central air conditioning and water heating requirements in residences; and (7) substituting gas for electricity in central air conditioning and refrigeration. The first three account for most of the reduction in future demand. An immediate doubling of electricity prices relative to other prices could, in the long run (10 to 20 years), reduce demand by more than 40%. Public policy makers should also consider requiring electrical utilities to introduce interruptible load service and off-peak rates for industrial customers and approximate peak-load pricing (higher rates in summer) for all customers. If necessary, utilities could be required to institute true peak-load pricing. More vigorous actions could involve restricting sales of electrical heating units, water heaters, etc.

Doering, O.C., et al.

1974 Indiana's Views on the Energy Crisis.

West Lafayette, Indiana: Purdue University Cooperative Extension Service. CES Paper No. 6.

Objective: To investigate the effects of the energy crisis on the attitudes and behaviour of Indiana residents

Method: Marginal frequency analysis was undertaken of 670 randomly selected Indiana residents responding to a questionnaire concerning public attitudes towards the 1973-74 energy crisis.

Variables: Attitudinal perceptions and behavioural patterns

Findings/implications: Although the results indicate substantial adjustments in the home and some changes in personal transportation habits due to the energy shortages, only 36% of the respondents indicated that the crisis had any "real effects" on their lifestyles.

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Dole, Stephen H.

1975 Energy Use and Conservation in the Residential Sector: A Regional Analysis.
 Santa Monica, Ca.: The Rand Corporation.

Objective: To evaluate various residential energy conservation policies for their effectiveness in producing energy savings

Method: Energy consumption in the residential sector was analyzed for the nine census regions for the base year 1970. Econometric analysis then projected consumption to 2000. Policy actions are postulated, and their effects on consumption estimated by the model.

Variables: Energy conservation measures and policies: (1) truth in energy or appliance labelling; (2) incentives to improve existing buildings; (3) energy standards for new buildings; (4) energy standards for new appliances; (5) energy price regulation; and (6) energy use budgets (forced reductions)

Findings/implications: The residential sector accounted for 19.6% of total U.S. energy consumption in 1970. Principal trends in use in that sector over the next 25 years include decreases in the proportion used for space heating and lighting and increases in the proportion used for refrigerators and other major appliances. The greatest potential for reducing residential sector energy use is yielded by the policies which involve new energy standards for buildings and for new appliances. Savings are projected to be 24% of residential primary energy in 2000. Among appliances, fossil fuel heating plants and refrigerator-freezers offer the greatest potential for energy savings through upgrading efficiencies. Improving the efficiency of air conditioners offers potential savings only in the west-south-central region. Potential savings from the improvement of other appliances is small but worthwhile, when taken together.

Doner, W.B., Inc. and Market Opinion Research
1975 Consumer Study: Energy Crisis Attitudes and Awareness.
Detroit: W.B. Doner, Inc.

Objective: To study consumers' attitudes, beliefs and behaviour regarding the energy crisis

Method: A marginal frequency study of awareness, attitudes, behavioural changes and perceived future effects of the energy crisis based on a stratified area sample (N=525) of the state of Michigan. Data were collected between February 27, 1975 and March 10, 1975 by telephone interview.

Variables: Perceptions of and attitudes towards the energy crisis, behavioural changes due to shortages, socioeconomic impacts

Findings/implications: Half of the sample perceived that there was an energy crisis, up 9% since a similar survey one year earlier (50% in February 1975 versus 41% in February 1974). Media attention appeared to be the major reason for the increase. Three-fourths claimed to have changed their behaviour in response to the energy crisis, even though only half really believed it exists. Sixty-one % reported conservation, the principal behavioural changes being reduction in the use of gasoline, lowering home temperatures and using less electricity (mainly by reducing use of lights). One motive for conservation measures was clearly that conserving energy saves money.

Donnermeyer, Joseph F.

1977 Social Status and Attitudinal Predictors of Residential Energy Consumption.

Ph.D. dissertation, University of Kentucky.

Objectives: (1) to analyze social status, house-related factors, such as size of house, and attitudes towards the environment and energy consumption with respect to their ability to predict levels of residential energy consumption; and (2) to correlate attitude and behaviour

Method: Data were obtained from 104 respondents to the Kentucky Goals Study, a statewide survey of the opinions of Kentucky citizens on a variety of issues.

Variables: Dependent: actual consumption of natural gas

Independent: social status (years of schooling, occupation, income, property value); size of house; attitudes towards energy conservation

Findings/implications: Total family income was the best single predictor of consumption. The attitudinal items (on importance of energy conservation and priority of the energy problem) did not correlate significantly with consumption. Some of the behavioural intention items showed a moderately strong correlation with consumption.

Dueker, Kenneth J., and Irwin P. Levin

1976 Carpooling: Attitudes and Participation.

Iowa City, Iowa: The Institution of Urban and Regional Research,
The University of Iowa.

Objectives: (1) to review carpooling experience in Iowa; and (2) to describe an experimental study of attitudes toward carpooling, designed to detect important variables which explain carpool participation

Method: The experiment involved 19 female and 16 male students, who were asked to rate the relative desirability of a series of hypothetical carpools (34 in all). The approach used was an information integration approach -- its goal being to analyze how a variety of factors are combined or integrated to determine human judgements and decisions.

Variables: The hypothesized carpools varied in number and sex of riders and whether or not they were acquaintances.

Findings/implications: Earlier research indicated that attitudes towards carpooling may not reflect well the likelihood that an individual will join a carpool. There appears to be lack of sufficient incentive to overcome the difficulties of carpooling. A follow-up to an earlier study revealed that 3% of those willing to consider carpooling had actually formed a carpool, and less than one-third of those had continued carpool. The main reasons for not forming a carpool, as expressed in the earlier study, were: (1) work schedule too variable; (2) not really interested in carpooling; (3) too much waiting involved; (4) difficult to re-assemble the group after work; and (5) too much travel time. The experiment shows that the desirability of a group of riders was sensitive to the interaction between the sex of riders and acquaintance-non-acquaintance. In general, female riders were preferred to males (by both sexes), as were acquaintances to non-acquaintances. Results suggest that it is important for each rider to have at least one prior acquaintance in the carpool.

Dueker, K.J., B.D. Blair, and I.P. Levin

1977 Ride Sharing: Psychological Factors. Transport Engineering Journal, 103, TE6 (November), 685-692.

Abstract: The conventional automobile transportation system is plagued with increasing congestion, pollution, energy consumption and costs. These problems diminish the automobile's prime advantage of providing personalized, flexible transportation. Ride sharing -- through carpooling and vanpooling -- can deal directly and effectively with these problems at a minimum cost. However, ride sharing has not become widely accepted. A carpooling attitudinal survey indicates that the two most important deterrents to potential carpoolers are the extra time requirements and the loss of independence. Ongoing research involves the analysis of the commuter decision-making process with regard to their mode choice. Models of experimental psychology are being used to study the factors underlying individual preferences. These studies relate carpooling as a mode choice preference to interpersonal factors (i.e., composition of the carpool in terms of sex, prior acquaintanceship of potential riders) as important determinants of carpooling desirability.

Note: Abstract obtained from:
Technical Information Center
Department of Energy
Washington, D.C.

Dun, C.F., and A.E. Kidder

1976 Factors Influencing the Success of Company-Based Carpooling Programs. University Research. Greensboro, N.C.: North Carolina Agricultural and Technical State University.

Abstract: The results of two successive interviews with selected companies in Greensboro, North Carolina are reported which undertook to review workers' interest in carpooling before, during and after the energy crisis. Companies are compared for extent of carpool formation. Companies which actively encouraged participation in carpool matching programs ended up with higher rates of carpool formation than companies which maintained a passive stance on carpooling. Carpooling appears slightly more prevalent among older workers and white-collar workers. However, the sample of companies is biased in favour of white-collar companies; therefore the relationship between occupation and carpooling remains unsettled. Corporate executives in some of the larger manufacturing concerns in Greensboro were unwilling to promote carpool matching efforts by the firm because: (1) they do not want to invade workers' privacy; (2) they felt the majority did not want to carpool; and (3) they did not wish to interfere in the workers' mode choices. Of interest is the fact that in four out of the five companies studied, the percentage of workers carpooling rose after the end of the energy crisis. New patterns of commuting by ride sharing evolved during the days of the gasoline lines and continued thereafter, spreading to other workers over time.

Note: Abstract obtained from:
Technical Information Center
Department of Energy
Washington, D.C.

Duncan, Otis D

1976 Sociologists Should Reconsider Nuclear Energy.

Revised version of the first annual Amos H. Hawley lecture at the University of Michigan, Ann Arbor, November 5. Also reported in Social Forces, Vol. 57, #1 (September 1978), 1-22.

Objective: To review the past history of sociologists and nuclear energy, with reference to historical developments, in order to provide a historical perspective for sociologists to take an active role in the nuclear debate

Method: The report consists of review of work by sociologists on nuclear energy, followed by an evaluation of selective historical developments.

Variables: The performance of sociologists in research on the social aspects of nuclear power

Findings/implications: Sociologists' forecasts have generally been naive and off target. They have performed badly in matching forecasts with outcomes and in diagnosing discrepancies. An illustrative analysis of one facet of public opinion on nuclear issues -- public acceptability -- reveals a four-way interaction: (1) response to the item; (2) how controversial the item is; (3) how much confidence one has in one protagonist; and (4) how much confidence one has in the other protagonists, all in connection with an intensely argued public controversy. The author concludes that, although improved social forecasts are desirable, a higher priority should be given to reliable findings and cogent analyses of the social costs and benefits of alternative energy futures, couched in sociological theory and modern research practice.

Dunlop, David L.

1979 An Energy-Environment Simulator.

Journal of Environmental Education, 10, 4 (Summer), 43-48.

Objective: To examine the effects of an energy-environment simulator on the energy-related attitudes of its users

Method: Subjects were administered an energy opinion survey before and after using the simulator, a computer-like simulation of the energy environment. Subjects (n=129) were elementary teachers, secondary science teachers, elementary education students, and arts and sciences students.

Variables: Dependent: change in energy attitude, energy attitudes

Independent: group

Findings/implications: Virtually all (96%) agreed that an energy problem does exist. Fifty % agreed that new technology would provide solutions to the problem. Attitude change pre- and post-test was greatest for elementary teachers and weakest for the science teachers.

Durand, Richard M.

1979 A Study of Alabama Consumer Attitudes Toward the Energy Crisis.
Prepared for the Energy Impact Program, The University of Alabama

Objectives: (1) to provide a comprehensive empirical understanding of how Alabamians perceive the energy crisis and what they think should be done about it; and (2) to show them sources of information useful to them.

Method: 3,800 surveys were mailed to Alabama residents in December 1978 and January 1979; 692 were returned in usable form. A follow-up study of 73 was conducted to ascertain possible non-response bias (not significant).

Variables: Dependent: consumer behaviours: energy use (gasoline, natural gas, electricity); sensitivity to changes in energy prices; complaint behaviour; sources of information regarding energy used

Independent: demographics; perceptions of and attitudes towards the energy crisis; social psychological correlates: environmental concern, consumer alienation (powerlessness, meaninglessness, normlessness, cultural estrangement), political discontentment (dissatisfaction, disillusionment); attitudes towards utilities

Attitudes towards the energy crisis were factor analyzed against the socioeconomic, social-psychological correlates and utility belief dimensions. Dimensions of energy use were factor analyzed against the demographics, the social-psychological correlates and energy crisis perceptions. Conservation behaviours and information sources used were similarly analyzed.

Findings/implications: Attitudes towards the energy crisis Most people said that the government and industry have not done all they can to counter the crisis; 68% believed it was not contrived but real; 60% favoured burning coal (sacrificing pollution) and also believed that nuclear power was not a menace to society; 42% believed that their conserving energy would not impact total energy conservation; and 50% believed that energy companies' advertisements regarding the crisis are strictly public relations. Little of the variation in perceptions is explained by demographic variables. Somewhat more is explained by the social-psychological correlates.

Attitudes towards the utility companies 68% felt that their electric company should be forced to lower its rates; 66% believed that it was making excess profits; and 44% said that it was not facing a serious energy problem. Analysis of the correlation between utility beliefs and energy perceptions revealed that those who feel that attempts have been made to solve the energy crisis and that consumers

Durand, Richard M. (cont'd)

cannot effectively impact conservation generally have the most negative view of the utilities.

In terms of energy use, the heavy users tend to be the more affluent (higher incomes, larger homes), white and more educated. The social-psychological variables do not provide any generalizable insight into variances in usage. Likewise, perceptions of the energy crisis provide no clues. The majority of respondents (over 85%) oppose any increases in supplies; many are in favour of actions which do not affect themselves personally to any degree (84% are in favour of new building standards). As to their own actions, methods that are least expensive were preferred. Respondents seem to be relatively insensitive to any increases in energy prices; the most sensitive are the less affluent. Nearly half (45%) would not pay more taxes for energy research and pollution control. Less than 20% of the respondents have ever complained to government, the oil companies or newspapers about energy issues. Less affluent people tend to complain more directly to the utility companies. Less affluent people rely more on interpersonal sources and television for their energy-related information; more affluent people use magazines most. No relation was found between sources of information used and energy usage. In general, people feel that not enough has been done by government to solve the crisis, yet they do not want government to implement policies which affect them personally. The one variable which is significant in understanding the energy consumer is income.

It is recommended that: (1) citizens be provided with more consistent and credible information on an ongoing basis; (2) consumers be told what they can do to reduce energy usage; (3) government implement more stringent building standards and tax incentives for retrofitting; (4) an inverted rate structure and peak-load pricing be investigated; and (5) in communicating information to consumers, television, magazines and newspapers be used.

Durand, Richard, David Klemmack, and Lucinda Lee Roff.

1979 An Examination of Cohort Differences in Perceptions of the Energy Crisis.

University, Alabama: University of Alabama.

Objective: To examine the effects of age cohort on: (1) perceptions of the severity of the energy crisis; (2) beliefs regarding the adequacy of the institutional response to the energy crisis; (3) extent of personal conservation efforts; and (4) support for alternative solutions to the energy crisis

Method: 3,800 questionnaires were mailed to Alabama residents in December 1978 and January 1979; 18% were returned in usable form. A follow-up study of 73 was conducted to ascertain possible non-response bias (not significant).

Variables: Dependent: age

Independent: perceptions of the severity of the energy crisis, and the adequacy of institutional response, personal conservation efforts, attitudes towards general energy strategies and alternative solutions to the energy crisis

Findings/implications: No difference was found by age in the perception that the energy crisis was both real and severe. No statistically significant differences were found in perceptions regarding the adequacy of institutional responses, though those under 45 were less likely to perceive that corporate response had been adequate. Those over 65 indicated that they would have more difficulty in reducing consumption and believed their efforts would have little impact on total energy consumption. All indicated a willingness to try different conservation methods, though methods were all cost-free. Older people were more likely to believe that science and technology would solve the energy crisis, while the young favoured energy development over conservation as a policy solution. Older groups favoured abandoning pollution control until the energy crisis is solved.

1605

Early, John F.

1974 Effect of the Energy Crisis on Employment.
 Monthly Labor Review, 97, 8 (August), 8-16.

Objective: To determine the effects of the energy crisis on employment in the United States

Method: Marginal frequency analysis of the impact on employment of the energy shortage during November 1973 to March 1974, using data from the payroll survey of the Current Employment Statistic program, an analysis of its monthly employment estimates and labour turnover data for manufacturing, and unemployment estimates from the current population survey of households.

Variables: There are four types of effects that relate, respectively, to the inability of establishments to obtain the power needed for operation, to the reduction of goods and services output, to increased demand for alternative fuel sources and equipment needed for extraction, and to reductions in aggregate demand due to layoffs.

Findings/implications: The most obvious direct effect was gasoline service station closings and reduced hours. Other direct effects were well scattered but involved an estimated 150,000 to 225,000 jobs lost from November 1973 to March 1974. For the same period, indirect effects entailed a total employment decline of 310,000, more than half of this in the manufacture of automobile parts. Increased unemployment was heaviest among adult men, especially the 20-24 age group. The employment decline was smaller than those in major employment slowdowns and was also more concentrated in a few industries.

Eastman, Clyde, et al.

1974-75 A Socioeconomic Analysis of Environmental Concern: Case of the Four Corners Electric Power Complex.

Las Cruces: New Mexico State University Agricultural Experiment Station, Bulletin 626. Also reported in "How Much to Abate Pollution," Public Opinion Quarterly, 38 (Winter), 574-584.

Objectives: To measure the concern of affected citizens over the aesthetic environmental damage produced by the local electrical complex in terms of an economic demand of the concerned citizens for the abatement of these damages. In short, the study examines the willingness of environmental users to pay for abatement.

Method: Data were collected during the summer of 1972 and January 1973 from the Four Corners region through interviews of a sample of 760 respondents consisting of reservation residents, non-reservation residents and out-of-region recreationists. Results were based on bidding games in relation to three pictures which depicted various levels of environmental damage.

Variables: Dependent: willingness to pay abatement

Independent: bidding games (sales tax, users fee, and monthly electric bills), responsibility, socioeconomic, demographic attributes

Findings/implications: A clear majority was willing to pay for abatement except for reservation residents (52%) not willing to have the payment included in their monthly bill. However, only 18% opposed payment if it was based on a daily users' fee. In the case of non-reservation residents, 27% opposed payment through their monthly bills and 18% opposed the sales tax method. In all cases of those willing to pay for abatement, the majority favoured the under-two-dollars payment. Most also reported that they preferred the companies to pay for the abatement costs. Few consistent relationships were found between concern for environment and socioeconomic characteristics, such as age, occupation, income, ethnicity and organizational participation. Although monetary methods are generally acceptable, there is need for further research on the topics of alternative measures and non-monetary rank/order environmental concern scales.

1615

Eichenberger, Mary Ann

1975 A Comparison of Ownership of Selected Household Appliances and Residential Energy Use by Employed and Nonemployed Homemakers in the Lansing, Michigan Area.

Unpublished M.A. thesis, Michigan State University.

Objective: To assess differences in energy and appliance use by persons of different employment status.

Method: 1974 self-administered questionnaire and interview survey was conducted of families in the Lansing S.M.S.A. to assess residential energy use. Data were drawn from a random sample (N=187), and analysis of covariance was the mode of analysis.

Variables: The effects of employment status and income on direct residential energy consumption and on appliance use by function and quantity

Findings/implications: No significant differences were found among full-time, part-time and non-employed homemakers for total quantity of appliances and for major appliances owned by households. The test of a hypothesis concerning total direct residential energy revealed no significant difference among these three groups of homemakers. A non-significant finding, but one considered interesting, was that households with a fully employed homemaker used 8% less residential energy, and part-time 6% less, than households with non-employed homemakers.

Eiser, J. Richard, and Joop Van Der Pligt

1979 Beliefs and Values in the Nuclear Debate.

Journal of Applied Social Psychology, 9, 6, 524-536.

Objective: To investigate the relationship between people's attitudes towards the use of nuclear power, their specific beliefs and more general values.

Method: Questionnaires were distributed to 65 participants in a nuclear-related workshop at the University of Birmingham in May 1978. Forty-seven usable responses were obtained.

Variables: Dependent: attitudes towards a proposed nuclear development at Windscale, England; perceived consequences of nuclear industrial expansion

Independent: demographics (age)

Findings/implications: The pro group consisted of 25 respondents, the anti group 20, and two were undecided. The average age of the pros was 49, and of the antis it was 32. The two groups perceived different consequences of the development, except for its impact on unemployment. The pros saw more potential benefits and fewer adverse effects. The groups viewed different aspects of the debate as being most important and differed in their perceptions of the factors which contribute to an improvement in the "quality of life." The antis, for example, were more concerned with the environment, social welfare, public participation in decision-making and less concerned with advances in technology, higher material standards of living and industrial modernization.

Electric Power Research Institute

1977 Attitude Study Produces Mixed Blessings.
 Electrical World, 187, 1 (January) 44-47.

Abstract: The Electric Power Research Institute's electric utility rate design study of customer attitudes has found major differences of opinion on whether electricity production costs are related to time, whether customers are conserving electricity, and whether rates should be based on production costs or quantity consumed. Customers preferred voluntary reductions as a way of addressing peak demand growth and viewed controls, in general, as undesirable. Customer opinion, by customer class, regarding electricity use is profiled.

Note: Abstract obtained from:
 Technical Information Center
 Department of Energy
 Washington, D.C.

Energy Research and Development Administration

1976 Report of the Proceedings of the Energy Research and Development Administration Workshop on Consumer Motivation and Behavior Regarding Energy Conservation: Identification of R & D Opportunities. Washington, D.C.

Abstract: The workshop was comprised of three discussion groups. The purchase group discussed programs to motivate consumers to purchase more energy-efficient technologies and products. The practice group talked about ways to motivate consumers to adopt energy-efficient behaviors. The institutional group considered the institutional factors influencing an individual's purchasing decisions and energy consumption behaviours. The purchase group recommended research into consumer attitudes and behaviour by means of a large scale segmentation analysis. This would make more efficient targeting of appeals possible. It also recommended research into consumer-oriented feedback information systems and energy efficiency labels. The practice group concluded that rewards and punishments (notably personal financial incentives) were of prime importance. Information needs of the consumer were also critical, so a project providing specific information to consumers regarding the power requirements of appliances, etc. was recommended. The institutional group felt that institutions could play a two-fold role in energy conservation by devising ways to overcome existing barriers to conservation and to utilize existing opportunities to conserve energy.

Guidelines for 27 specific research projects were devised.

Energy Research and Development Administration

1976 Feasibility of an Energy Outreach Program: Final Report.
Washington, D.C.

Abstract: A conceptual approach to developing a feasible energy outreach program was adopted that involved first identifying and characterizing target markets for energy conservation information and assistance and then defining products or services to meet those markets' needs.

Ericson, Carl W.

1978 Application of Expectancy Theory of Motivation to the Energy Conservation Activities of Private Citizens.
Ph.D. dissertation, University of Tennessee.

Objective: To investigate the motivation of private citizens to conserve energy through the use of the expectancy theory of motivation

Method: 190 in-home interviews were conducted.

Variables: **Dependent:** behaviour

Independent: attitudes

Findings/implications: Results indicated that motivation alone could not account for performance differences but, when combined with both an effort measure and the respondents' perception of their control over their own activities, performance was significantly predicted. The public needs to be informed of the types of rewards (outcomes) of conservation behaviour. In order to induce such behaviour, the types of rewards of value to the public need to be identified. People must be aware of their ability to contribute to solving the energy crisis.

Erlbaum, Nathan, Gerald Cohen, and David Hartgen

1977 Automotive Energy Forecasts: Impact of Carpooling, Trip Chain-
 ing, and Auto Ownership.

Albany, New York: State Department of Transportation.

Abstract: This report has two objectives: (1) to calculate possible savings of gasoline consumption through a forecasting model; and (2) to recommend government policies to achieve these savings. Using data from a 1970 state-wide survey, a model of automotive fuel consumption is devised as a function of trip purposes, trip rates, number of households, trip length, auto occupancy, average vehicle efficiency and number of autos owned. Baseline fuel consumption is calculated for 1975 and 1980, and the variables are then altered to calculate possible savings. Specific policies formulated for analysis are: (1) limiting cars to less than 4000 pounds would reduce consumption by 8% from the 1975 baseline, and by 5% from the 1980 baseline; (2) a 25% increase in average auto occupancy (i.e., carpooling) would save 3.9% from the 1980 baseline; (3) introducing a community based chauffeur service would save 1.4%; and (4) and combining trips could save 10% from 1980 baseline, mainly by making shopping trips part of weekday travel and by travelling to larger shopping centres for multiple purposes. Government could encourage carpooling by paying more attention to the personal and social aspects of carpooling. Government could perform a "Transportation Audit" for households, analyzing their travelling habits and suggesting ways of reducing their gasoline consumption. Companies could use a "carpool coordinator" to match ride sharers.

1650

Executive Office of the President/Energy Policy and Planning
1978 The National Energy Plan: Summary of Public Policy.
Washington, D.C.: Executive Office of the President/Energy Policy and Planning.

Objective: To study and seek the comments and recommendations of the public towards a comprehensive national energy plan

Method: A federal register and direct mailing request for written comment from the national population in March drew 28,000 responses.

Variables: The responses to questions concerning conservation, oil imports, supply development, environment, federal regulations, intergovernmental relations, citizen participation, and hardships

Findings/implications: Generally, the majority of the respondents favoured the conservation programs that were in place and strongly supported voluntary efforts and/or tax incentives for energy conservation. Over 90% of the respondents favoured a stockpiling of energy reserves and efforts to increase domestic production while decreasing consumption. Coal was given the highest priority in resource development with solar and nuclear energy following closely behind. It was felt that the major sources of financing for these developments should come from either the government or industry. Over half of the respondents reported that environmental quality should be sacrificed for energy development. The majority favoured more federal involvement, regulation and citizen participation. The study provides a wide variety of responses indicating a number of viable options for the federal government to pursue in coping and dealing with the national energy problem.

2005

Farhar, Barbara, Patricia Weir, Charles Unseld and Barbara Burns
1979 Public Opinion About Energy: A Literature Review.
Golden, Colorado: Solar Energy Research Institute.

Objective: To draw together a fragmented body of knowledge and to interpret it so that it will become more useful and meaningful.

Method: The study reviewed and analyzed 115 surveys of the general population, of which 82 were national samples and 33 were local or regional samples. The data were collected between 1973 and 1975 and reflected a preliminary theoretical approach to public preferences and actions concerning energy.

Variables: Dependent: attitudes towards the energy crisis, energy conservation, solar energy, conventional sources, nuclear energy, environment, awareness of the energy crisis

Independent: age, sex, education, income, occupation, ethnicity, urban/rural

Findings/implications: Most people do not believe in the energy crisis, but 40% do perceive it as a serious national problem. Such matters as inflation, unemployment and crime were perceived as more serious problems. Future energy problems were perceived in terms of shortages and rising prices. The major source of blame was wasteful and unnecessary consumption. However, the oil companies and the government ranked high as causes of the problem. Belief in the energy crisis did not necessarily lead to energy conservation. The only demographic effects were that the higher the level of income and education the greater the belief in the seriousness of the energy crisis.

In the case of public perceptions towards fossil fuels, a sizeable majority did not realize that the United States imports oil. Also, a majority was opposed any sort of tax incentive or price increase as the oil companies were perceived as excessive profit takers. Rather, profit taxes and controls were favoured as a means of dealing with the oil companies.

2010

Federal Energy Administration

1976 Consumers' Attitudes, Knowledge, and Behavior Regarding Energy Conservation.

Washington, D.C.: Office of Energy Conservation and Environment.

Abstract: The study summarizes information obtained from interviews conducted by telephone from WATS facility in Princeton, New Jersey. The information on the extent to which American consumers are conserving energy and their awareness of the attitudes towards conserving energy in their daily lives will aid the Federal Energy Administration to plan and evaluate its energy conservation policies and programs. Survey questions dealt with subjects in seven chapters:

Note: Abstract obtained from:
Technical Information Center
Department of Energy
Washington, D.C.

Private Individuals' Willingness to Make Energy-Saving Efforts and their Perception of the Likelihood of Others Doing the Same;
Public Knowledge, Attitudes, and Behavior; Relating to Natural Gas Issues;
Driving and Energy Conservation;
Energy Saving Behavior Around the Home;
Parents' Perceptions of their Children's Sources of Energy Information and Energy-Related Activities;
Understanding of the Energy Situation; and
Evaluations of Alternative Actions.

Flory, John, Shibu Dhar, and Ron Knecht

1979 What Level of Electricity Service Do Californians Want?
In R.A. Fazzolare and C.B. Smith (ed.s), Changing Energy Use
Futures, New York: Pergamon Press (Vol. 3, 1109-1118).

Objectives: (1) to determine the costs and benefits of various levels of service for different customers in order to ascertain the appropriate level of services; and (2) to determine customers' preferences for various levels of service

Method: 1030 interviews were conducted statewide in June and July 1978 as part of a California Energy Commission survey on the attitudes, behaviour, knowledge and preferences of Californians on energy usage. The data for this paper is drawn from the load management section of that survey.

Variables: Dependent: respondents rank ordered six load management alternatives: load sharing; time of use pricing; emergency curtailment (air conditioner/water heater only); emergency curtailment (all electricity); mass media appeal; and building of more power plants. The alternatives were then rated for dollar cost, comfort, convenience, utility intervention, pollution and goodness.

Independent: demographics

Findings/implications: The mean ranking of the alternatives in order of preference was: (1) load sharing, 2.52; (2) time of use pricing, 2.61; (3) emergency curtailment (air conditioner/water heater only), 3.19; (4) emergency curtailment (all electricity, 4.53); (5) mass media appeal, 3.34; (6) building of more power plants, 4.85; and Customers who had taken part in a load management program (37 in Fresno) rated the alternatives virtually the same as the others not on load management. Few customer groups could be identified by demographic characteristics, although older people were somewhat more in favour of building more power plants and those with children under the age of five tended to prefer load sharing. Those preferring power plants appeared to be particularly adverse to the curtailment alternatives and favoured mass media appeal as a second alternative. Those opposed to power plants appeared willing to accept a reduced level of service. The mass media appeal was generally ranked as the least effective alternative.

2020

Ford, Richard H.

1977 Vanpools for Urban Transportation: Their Legislative Basis, Promotion and Potential.

Springfield, Virginia: National Technical Information Service

Abstract: This research report reflects the view that vanpooling has emerged as a viable and new form of commuter transportation that can help meet public goals of reduced fuel consumption, air pollution and congestion while affording benefits to individuals and employers. The report is meant to serve as a general assessment of current legislative interest and state promotional development in vanpooling. The information it presents should be useful to federal and state regulatory and legislative bodies; federal, state and local transportation-related agencies; university research groups; and employer organizations with or without ridesharing programs for employees.

The primary objectives of the report are as follows: to draw attention to state vanpool development and legislative action; to catalogue how the 50 states approach their regulation of vanpool operations; to present a compendium of state legislative interest, promotion and development in vanpooling in a scenario format for use by other states; to present a case study documentation of Minnesota's response to promoting and developing vanpooling as a viable commuter mode of transportation; and to offer a package list of employer, legislative and regulatory actions which should be taken to promote and encourage the development of shared-ride services like vanpooling.

Foxx, R.M., and D.F. Hake

1977 Gasoline Conservation: A Procedure for Measuring and Reducing the Driving of College Students.
Journal of Applied Behavior Analysis, 10, 1 (Spring), 61-74.

Objective: To investigate the effects of various inducements on college students' driving behaviour

Method: This attempt to motivate college students to reduce driving, and thus save gasoline, utilized students from two psychology classes at a commuter college. The students were divided into an experimental and a control group. The experimental group was offered prizes, a tour of a mental-health facility, car servicing and a university parking sticker as inducements to reduce driving. The values of prizes were scaled to match appropriate reductions in driving. Data were gathered by reading odometers and special precautions were used to detect alterations.

Variables: Prizes, driving behaviour

Findings/implications: The experimental subjects reduced their average daily mileage by 20% over the initial baseline. No change was observed in the control group. The authors conclude that some drivers can be motivated by reinforcement contingencies to reduce their driving.

Frazier, J.W. and M.E. Harvey

1977 Impact of a Continuing Energy Crisis: Changing Attitudes and Behaviors Regarding Thermostat Setback.
Presented at UMR-ONR conference on energy, Röllä, Missouri, October.

Abstract: A sample of Akron, Ohio SMSA households are utilized to examine thermostat setback as an energy-conservation strategy. Socioeconomic differences between adopting households are evaluated using discriminant analysis. The results constitute the bases on which recommendations for future increased use of the thermostat-setback strategy are made.

Note: Abstract obtained from:
Technical Information Center
Department of Energy
Washington, D.C.

Freudenberg, William R.

1976 The Social Impact of Energy Boom Development of Rural Communities: A Review of Literature and Some Predictions.
Paper presented at the Annual Meeting of the American Sociological Association, New York, August.

Objective: To summarize the literature concerning the social impact of energy boom-town development

Method: Summary of the largely fugitive literature on the social impacts of energy boom-town development. Several hypotheses are proposed for future research on the nature and severity and impacts.

Variables: Size of host community, suddenness of development rate, proportion of jobs going to "locals," skill requirements of new jobs, number of new (unemployed) persons entering a region, the unemployment rate outside the region and notoriety of social disruption caused by energy development of rural communities

Findings/implications: No concrete findings are reported, but the following hypotheses guide the author's ongoing study of energy boom-town development. (1) If the size of host community is held constant, social disruption will be related directly to both the size and the suddenness of development. (2) Given a particular development, the lower the population density of the host region, the greater the disruption. (2a) The impact will be inversely proportional to the local unemployment rate. (3) The higher the proportion of jobs going to persons already living within the area, the lower the disruption. (3a) The higher the skill requirements, the greater the disruption. (4) The impact will be directly proportional to the number of new (unemployed) persons entering a region and will vary directly with (4a), the unemployment rate outside the region, and (4b), the general notoriety of the project outside the region.

The author is conducting a questionnaire study (N=800) of energy growth/potential growth towns of Colorado, with plans to employ a panel design (re-interview) at a later time. This questionnaire is the primary methodological device to be used to test the hypotheses given above.

Fulda, Michael, and Robert Bauer

1979 Energy Attitudes of West Virginia High School Students.

In R.A. Fazzolare and C.B. Smith (eds.), Changing Energy Use Futures, New York: Pergamon Press (Vol. 3, 1184-1190).

Objective: To investigate what effect experience with the Energy Environment Simulator, a computer-like device that imitates the real world, has on changing energy-related attitudes among high school students

Method: The simulator is somewhat like a time machine. Participants make decisions by controlling energy supplies and demands. The objective of the game is to maintain a supply of fossil fuels for as long as possible and to keep the environment as clean as possible. A ten-question survey was completed by approximately 1500 high school participants before and after the game.

Variables: Attitudes, perceptions, and intentions regarding the energy crisis; grade; course of study; sex

Findings/implications: Differences in the responses before and after were significant except for the second question, regarding whether the energy crisis would best be solved by energy conservation and switching to solar energy. In general, when confronted with the choice between energy shortage and environmental quality, respondents chose to sacrifice environmental quality. Students were generally ignorant of the effects of the energy crisis on their job prospects. In terms of sharing energy with the rest of the world, students were not generally willing to make large personal sacrifices. The Simulator may be able to change attitudes if they are based on faulty information, but not if they are rooted in ethics.

Fusso, Thomas E.

1978 The Polls: The Energy Crisis in Perspective.
 Public Opinion Quarterly, 42, 1 (Spring), 127-136.

Objective: To present a summary of trends in public opinion regarding energy, from 1973 to 1977

Method: The results of polls conducted by the California Poll, the Gallup Poll, Louis Harris, the Minnesota Poll and the Texas Poll were examined.

Variables: Perceived seriousness of the crisis; effects of the crisis on driving habits; preferences for policies regarding gasoline use; response to Carter's energy plan

Findings/implications: About 80% of Americans thought that the crisis was very/fairly serious during 1977, compared to only about 67% during 1975. Most people agreed with the 55 mph speed limit (76% in early 1977). More people said they would find it difficult to cut their mileage by 25% in 1977 than in 1975 (65% vs. 54%). Approximately 60% of Americans are opposed to any form of gasoline rationing. They also are not in favour of increasing prices in order to lessen reliance on foreign oil supplies. Given the choice between rationing and increased gasoline taxes, neither policy emerges as a clear choice (favoured by 42% and 44% respectively). Americans generally agree that something has to be done about the crisis, but oppose specific plans which will affect them personally. Eighty-five % favour a long-range plan which sets goals for conservation, but only 15% are in favour of raising gas prices to \$1/gallon (in 1977), 43% support a tax on gas-guzzling cars and 43% prefer an oil tax which would provide funds for exploration and development.

2405

Gallup Organization, Inc.

1976 Group Discussions Regarding Consumer Energy Conservation. Washington, D.C., Federal Energy Administration.

Objective: To investigate consumers' attitudes regarding the energy situation

Method: Discussion moderators conducted eight group discussions with residents of New Jersey and Colorado. Each group consisted of from eight to ten people.

Variables: Various demographic variables, the history of energy conservation, several energy attitude and energy behaviour measures

Findings/implications: Most groups proved skeptical and cynical with respect to the energy crisis and especially with respect to the individual taking an active role in reducing energy consumption. They generally believed that alternative energy sources would be developed. Most thought that the best way to promote energy conservation was through monetary incentives. Young, middle-class adults support energy conservation in general but do not see the private sector as able or willing to make a conservation effort.

2410

Gallup Organization, Inc.

1977 Public's Behavior and Attitudes During the February 1977 Energy Crisis.

Princeton, New Jersey.

Abstract: This survey was based on interviews with a national sample (1013) of the adult population on February 4,5 and 6, 1977. The country was divided into the following areas: emergency action states (New York, New Jersey, Pennsylvania, Indiana, Ohio, Michigan, Minnesota, Virginia, West Virginia, North and South Carolina and Alabama); natural-gas-problem states (Delaware, Kentucky, Georgia, Tennessee, Mississippi, Iowa, Missouri, Wisconsin and Illinois); north; south; and west. Questions were asked about the temperature of the home, measures taken to weatherize the home, fuel use and its economic impact. The public was asked about attitudes towards government policies dealing with energy shortages; the use of coal by industries; whether fuel shortages would continue; willingness to pay more for fuels; and the comfort of the home, etc. A copy of the questionnaire is published in the report. Principal overall results are summarized first, after which responses to the individual questions are presented in tabular form.

Note: Abstract obtained from:
Technical Information Center
Department of Energy
Washington, D.C.

Gallup Organization, Inc.

1977 The February 1977 Energy Crisis. Survey II
Princeton, New Jersey.

Abstract: This volume provides marginal and regional results of the second of two surveys conducted by the Gallup Organization to provide information about the general public's behaviour and attitudes at the time of the energy emergency in early 1977. The second survey, conducted on March 12, 13 and 14 by telephoning 1041 adults, was designed to obtain information about actions taken by the public to save energy -- including such things as the temperature in their home, home insulation and what had been done to save gasoline. Reactions to various possible governmental policies designed to save energy were also measured. The results are repeated for the north, south, and west sections of the United States. A copy of the questionnaire is published in the report.

Note: Abstract obtained from:
Technical Information Center
Department of Energy
Washington, D.C.

Gallup Organization, Inc.

1977 The February 1977 Energy Crisis. Survey II Appendix: Significant Cross-Tabulations.
Princeton, New Jersey.

Abstract: This volume provides the significant cross-tabulation results of a survey conducted by the Gallup Organization for the Federal Energy Administration on March 12, 13, and 14 by telephoning a national sample of 1041 adults, 18 years of age and older. An 84-by-84 matrix is given that summarizes the results of the cross-tabulations. Interpretations of the results tabulated are explained. A copy of the questionnaire is published at the end of the report. The public was asked about attitudes toward government policies dealing with energy shortages; the use of coal by industries; whether fuel shortages would continue; willingness to pay more for fuels; and the comfort of the homes, etc.

Note: Abstract obtained from:
Technical Information Center
Department of Energy
Washington, D.C.

Gilmore, John S.

1976 Boom Towns May Hinder Energy Resource Development.
Science, Vol. 191 (February 13), 535-540.

Objective: To study the effects and impacts of sudden industrialization and growth on energy resource development

Method: The report is based on a qualitative appraisal, based on the author's socioeconomic impact study of coal and oil shale boom towns and of the effects of rapid growth associated with energy resource development. A typology of the boom town is used to assess its functions and problems.

Variables: The socioeconomic effects of the rapid growth accompanying energy resource development

Findings/implications: The boom town is a major source of social tension in an area or a region. Both litigation and legislation result, with confrontation between state and federal governments a likely outcome. When communities are unable to furnish the services and facilities to accommodate rapid growth or to maintain the amenities of life, productivity declines, projects run overtime, and cost schedules and operating outputs fall behind.

The major implication associated with boom towns is that initial rapid growth eventually leads to deterioration unless there is careful planning. Rapid growth for these boom towns should be slowed or forestalled until the necessary facilities and processes are adapted to deal with the growth effectively. As such, growth should be carefully planned to reduce, if not remove, the negative attributes of boom towns.

2430

Goen, Richard L, and Ronald K. White

1976 Comparison of Energy Consumption Between West Germany and the United States.

Springfield, Virginia: National Technical Information Service, June. Conservation paper no. 33A, prepared for the Federal Energy Administration by the Stanford Research Institute.

Objective: To analyze the differences in per capita energy consumption between the United States and West Germany

Method: The sectors covered are transportation, industry, utilities, residential, commercial, exports and imports, and the total of all sectors. Most comparisons are for 1972, the latest year for which sufficient data were generally available. Data are presented in the form of tables.

Variables: The per capita use of energy by the United States and West Germany in the above-mentioned sectors

Findings/implications: West Germany uses only half as much energy per capita as the United States, only one-fourth as much for transportation, one-half as much for residential space heating (climate corrected) one-fourth as much for other residential uses, and 58% as much for industrial uses. The United States uses at least 40% more energy for industry in relation to output than West Germany. Total energy use in the United States in relation to national income is about 50% greater than in West Germany. The authors conclude that continued economic growth and improvement in the United States standard of living should be possible without a proportionate increase in energy consumption.

Gollin, Albert E., et al.

1976 Energy Consumers' Awareness and Preferences in New Hampshire: A Comparative Assessment.

Washington, D.C.: Bureau of Social Science Research, Inc.

Objective: To determine energy consumers' awareness and preferences in order to establish the degree of comparability to the relationship between residents and energy consumption in neighbouring states

Method: A marginal frequency analysis was undertaken of a random sample of New Hampshire households (N=256) surveyed by telephone between April 30 and May 2, 1976.

Variables: Population, housing, climate conditions, appliance saturation, consumer concern and awareness, household routines and time-of-day pricing, and acceptance of time-of-day pricing.

Findings/implications: Respondents were concerned about energy, especially for home heating and electrical appliance use. They were usually aware of the main aspects of the pricing system now in use in the state, and a substantial number seemed prepared to consider significant changes in their household routines in order to take advantage of a favourable alternative pricing scheme.

Gottlieb, David

1974 Sociological Dimensions of the Energy Crisis.

Austin, Texas: The State of Texas Governor's Advisory Council.
Project E/S-5.

Objectives: To examine the attitudes and behaviour of consumers in response to the Arab oil embargo, and to assess the relationship between those attitudes and behaviour, energy knowledge and socioeconomic status

Method: Statistical analysis (frequencies, crosstabs, χ^2) was carried out of a random sample of housing units from urban (Houston, Amarillo) and rural (Colorado County, Deaf Smith County) areas of Texas to discern perceptions, attitudes, behaviour and expectations in response to the energy crisis. The pre-embargo (April-May 1974) sample is of South Texas and the post-embargo (June-July 1974) sample is of North Texas. The urban sample is based on year-round housing units from census block data tapes. The rural sample was derived from names and addresses on county tax rolls. Data were gathered from heads of household by hand-delivered questionnaires.

Variables: The effects of the energy crisis on the communities sampled with respect to three categories of socioeconomic status, an energy knowledge scale and a measure of energy consumption

Findings/implications: The only major difference found between the two regional samples was a greater concern about anticipated escalating costs of energy expressed by the post-embargo (North Texas) sample. Both samples failed to see the energy crisis as being of long-term consequence, showed distrust of energy producers and distributors and government officials connected with energy policies and programs, felt that citizens waste energy and did not blame environmentalists. Lack of knowledge about energy sources and appliance energy consumption characteristics was found to be correlated with lack of belief in the crisis. Poorer people seem to be affected most because they have the fewest alternatives. Consensus about waste was not accompanied by voluntary conservation sentiments. Respondents believed that the more real the perception of the crisis or emergency, the more responsible the populace would become, and that the shortage was more of a political contrivance than the result of the world running out of fuel.

Gottlieb, David, and Marc Matre

1975 Conceptions of Energy Shortages and Energy Conserving Behavior. Paper presented at the Annual Meeting of the American Sociological Association, San Francisco (August). Also reported in Social Science Quarterly Vol. 57, #2 (September 1976), 421-429.

Objectives: (1) to examine the attitudes and behaviour of Texas citizens in response to the circumstances existing during and shortly after the Arab oil embargo of spring 1974; and (2) to elucidate upon the relationships between the attitudes people hold about the energy situation and their efforts to conserve energy

Method: 782 randomly selected households in four geographic areas of Texas were surveyed via questionnaires administered during and shortly after the Arab oil embargo in the spring of 1974.

Variables: Dependent: belief, causes, sources of information, conservation behaviour

Independent: belief for both causes and conservation, sociodemographics

Findings/implications: A large percentage of the respondents (43%) expressed skepticism regarding the reality of the energy crisis. Only 28% strongly believed it existed. Respondents were also highly distrustful of oil and utility companies as well as the government. This was associated with the level of belief in the energy crisis. The lower the level of belief, the greater the blame of companies and the government. However, citizens perceived themselves as one of the major causes of the problem through wasteful consumption. Those of the lower socioeconomic status reported conservation efforts more often, especially in response to rising utility costs. Also, those who believed in the energy crisis reported higher levels of conservation efforts than those who did not believe in the crisis. The implications of the study are that the government and oil companies must improve their status and that the energy crisis must be further emphasized in terms of credibility. Both positive inducements will lead to increased conservation efforts by the public.

2450

Gottlieb, David, and Marc Matre

1976 Sociological Dimensions of the Energy Crisis--A Follow-Up Study.
Houston, Texas: University of Houston Energy Institute.

Objective: To assess the extent of changes in energy conservation behaviour, attitudes and values from a year earlier

Method: Statistical analysis was conducted of a follow-up questionnaire administered from April to June 1975 on the sample described above (see Abstract number 2440).

Variables: The effects of the energy crisis on the communities sampled with respect to three categories of socioeconomic status, an energy knowledge scale and a measure of energy consumption

Findings/implications: The majority of respondents came to accept the proposition that the world is running out of fuel and that Americans are wasteful, but there was only a slight increase in belief in a serious, long-term energy crisis. No positive relationship was found between belief and energy consuming behaviour. The main motivation of those who conserved was cost. Thus, while persons of higher socioeconomic status were more likely to believe in the energy crisis, those of lower and middle socioeconomic status were more likely to reduce energy usage. As in 1974, the majority of people were not knowledgeable about energy and conservation, were only willing to endure policies which would cause the least disturbance in lifestyle and largely blamed big oil companies for the crisis.

2455

Gottlieb, David

1977 Texans' Responses to President Carter's Energy Proposals.

Paper presented at Social and Behavioral Impacts of the Energy Crisis: A Symposium, Woodlands, Texas, June.

Objective: To assess Texans' reactions to President Carter's energy policy proposals

Method: Marginal frequency analysis was undertaken of a statewide random sample of Texas adults (N=493) drawn during the weekend of April 24- 25, 1977 following President Carter's national energy address. Appropriate comparative data are presented from two earlier surveys conducted by the Energy Institute at the University of Houston.

Variables: Respondents' opinions with regard to President Carter's energy proposals

Findings/implications: A majority (62%) heard at least one of the President's energy-related talks during the week of April 18 to 23, 1977. College graduates, older respondents and those with annual incomes in the \$10,000 to \$15,000 range more often reported hearing one of these talks.

A majority (64%) had become convinced that the nation is confronted by a long-term energy crisis (compared to 28% in the 1974 survey and 37% in the 1975 survey).

Urbanites, the more affluent, males and college graduates were more likely to endorse the notion of a long-term energy crisis in all three surveys. When asked about the cause of the crisis, 90% agreed that "the American people waste too much energy in needless consumption." A majority also believed that the world is running out of fuel supplies, that the United States has exported too much fuel overseas and that the crisis is caused by the scheming of oil companies. Only a minority perceived environmentalists as playing a major contributory role. Respondents' reactions to specific proposals by the President are detailed, including assessments of their fairness.

The proposals were regarded as unfair to Texans and the poor, and of greatest benefit to industry and the more affluent, with an even balance as to equity for consumers.

Grandjean, Burke D., and Patricia A. Taylor

1976 Public Policy and Renters' Electric Bills.

Social Science Quarterly, 57, 2 (September), 437-444.

Abstract: The objective of this study is to summarize several policy alternatives affecting "master billing." "Master billing" refers to the practice of including the cost of electrical consumption in rent, rather than having each tenant pay an individual bill. A study by the Midwest Research Institute concluded that households in master-billed dwellings use about 35% more electricity than those in comparable individually billed residences. Prohibiting new master metering would save 85 million barrels of oil (1976-1990). Converting 75% of existing master metering would cost \$900 million and would save 205 million barrels (1976-1990). It is estimated that tenants of master metered buildings currently save \$225 per year because their buildings can benefit from lower commercial utility rates. Individual billing would eliminate these "subsidies." An analysis of those currently benefiting from the subsidies indicates that the effects of eliminating master metering would be distributed more or less equally across the renter population. Governments may have to provide assistance both for those who can least afford to lose the subsidy and to cover the costs of the changeover from master to individual billing.

Grier, Eunice S.

1976 Changing Patterns of Energy Consumption and Costs in U.S. Households.

Paper presented at Allied Social Science Association Meeting, Atlantic City, September.

Objective: To examine the responses of U.S. households to increasing energy costs

Method: This study reports on the findings of two consecutive national surveys conducted by the Washington Center for Metropolitan Studies. Each was a random sample cross-section survey, the first (N=600) done in the spring of 1973 and the second (N=3200) during the spring of 1975.

Variables: The effect of increased energy costs on householders' behaviour and perceptions in conjunction with energy-related practices

Findings/implications: An energy conservation ethic is beginning to take hold among U.S. households, but efforts to conserve are as yet meagre. Although residential energy costs have risen rapidly, they remain a relatively small portion of the average U.S. household's budget. However, for certain categories of households (e.g. the poor and elderly) this rising cost is a serious and growing burden.

2470

Grome, Mary Lynn

1979 California Residential Load Cycling Attitude Survey.

In R.A. Fazzolare and C.B. Smith (ed.s) Changing Energy Use Futures, New York: Pergamon Press (Vol. 2, 874-883).

Objective: To study customer attitudes towards residential load cycling of appliances in California, especially air conditioning

Method: Pre-test and post-test surveys were taken of attitudes and demographics of the programs of four utility service areas. The survey included only single family homes with air conditioners and was based on three types of equipment and four cycling strategies.

Variables: Dependent: participation pre-test, participation post-test, satisfaction of air conditioning, financial incentives, future participation

Independent: sex, education, income, age of home, electric utility

Findings/implications: Sample participation reflected a background of females, a home age of 7 to 12 years, an average income of \$19,000 to \$29,000 and a college education. During the pre-test stage, the main reasons for participation were intrinsic or interest satisfaction. During the post-test stage, over 90% found the program satisfactory as well as comfortable. The program of load cycling also generally helped in reducing the expenditures per household. The majority of the respondents expressed an interest in participating in future programs and slightly over half felt that all should be made to participate if that was necessary to make the program work. Financial incentives were not the main motivating factor for past or future participation; rather, it was the intrinsic satisfaction as well as rate reductions which were most appealing. The study does reveal that loadcycling is an acceptable program, but there is need for further research of the motivating factors for participation.

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Anderson, Charles Dennis
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