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I am submitting herewith a thesis written by Brian James Hurlbut entitled "An Investigation of City Administrators' Perceptions and Attitudes toward the Energy Situation and the Feasibility of Implementing Energy Policy." I recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science in Planning.

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We have read this thesis and recommend its acceptance:

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AN INVESTIGATION OF CITY ADMINISTRATORS' PERCEPTIONS AND ATTITUDES TOWARD THE ENERGY SITUATION AND THE FEASIBILITY OF IMPLEMENTING ENERGY POLICY

A Thesis

Presented for the

Master of Science in Planning

Degree

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ABSTRACT

This study investigates the feasibility of implementing national energy policy and programs at the local level. A survey of a nationally representative sample of city administrators regarding their perceptions and attitudes toward the energy situation was undertaken. Analysis of this survey included: (1) a tabulation and discussion of the aggregate attitudes and perceptions of city administrators, (2) a comparison of the opinion of city administrators as indicated in this survey with the opinion of the consuming public, as suggested in several hundred consumer surveys, (3) an examination of the variations in city administrator response according to the area of the country in which the city is located, and (4) an examination of the variation in city administrators responses according to the size of the city.

Analysis of the survey and an investigation of past efforts by the federal government toward comprehensive national energy planning provided the basis for a discussion of the adequacy of the data collected by federal officials to develop energy programs. It was concluded that the effort to bring city administrators into the energy planning process may not have been adequate. Further, the information, misinformation, and attitudes held by many

city administrators may not be conducive to implementation of federally developed energy policy and programs at the local level. A number of suggestions were made to promote the appropriate application of the planning process.

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CHAPTER I

HISTORICAL PERSPECTIVE

Introduction

This chapter will review the current situation of the United States relative to its energy supply. Also, a projection of probable future events based on historical trends is suggested. The appropriateness of applying Banfield's planning process to the energy situation is explored, and requirements necessary for that application are described.[1]

The Problem

The Facts

In 1977, the United States consumed 37.18 quadrillion (quads) British thermal units (Btu's) of petroleum, 19.32 quadrillion Btu's of natural gas, and 14.14 quadrillion Btu's of coal.[2] For the last thirty years the United States has increased its consumption of energy an average of 2.91 percent

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[1]Edward C. Banfield, "Ends and Means in Planning," *A Reader in Planning Theory*, ed. Andrias Faludi (New York: Pergamon Press, 1973).

[2]One Btu is the quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit at 39.2°F.

consumption of energy an average of 2.91 percent per year.[3] In 1977, the discovered recoverable reserves of petroleum and natural gas were 4.315×10^{17} Btu's, and 3.785×10^{17} Btu's respectively. The demonstrated reserves for coal were 1.131×10^{19} Btu's. From these facts it is possible to compute that in approximately sixty-two years the United States will have consumed 100 percent of the above known reserves. Indeed, in approximately only nine years (with a 2.91 percent annual increase in consumption) the nation will have exhausted its petroleum supply, and in approximately fourteen years (with a 2.91 percent annual increase in consumption) the natural gas reserves will be exhausted. From this point the nation would probably be mainly dependent on coal as the basic energy resource. Also, coal would necessarily become the primary source of hydrocarbon feed stock for medicines, plastics, and other manufactured products. One-hundred percent recovery of fossil resources is not currently technologically nor economically possible.[4] In the case of coal, 50 percent is generally accepted as an average yield, thus substantially reducing the time remaining to total depletion of known

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[3]U.S., Department of Energy, *1978 Annual Report to Congress*, Office of Policy and Evaluation (Washington, D.C.: Government Printing Office, 1979), p. 6.

[4]U.S., Department of the Interior, *Energy Perspectives 2*, (Washington, D.C.: Government Printing Office, June 1976), n.p.

domestic fossil fuel supplies.[5] Of course, the United States is not consuming only domestic reserves. Over 50 percent of annually consumed petroleum is imported. However, world reserves of petroleum, natural gas, and coal will be exhausted in forty-one years at the projected world consumption rate. At the historic consumption rate of 5.1 percent, world fossil fuel reserves would be 100 percent depleted in approximately thirty-two years.

The energy literature is replete with the disagreement of energy experts over basic energy data, including the actual amount of fossil fuels remaining, and the capability of current technology to meet future energy demand. Experts also disagree over the future significance of the current energy situation, especially the time remaining to practical fossil fuel resource exhaustion, and the impact that fuel conservation programs and the switch over to new energy sources will have on life styles, quality of life, and economic productivity.

Much of the following discussion is the result of research performed for this thesis and research conducted for Oak Ridge National Laboratory over the past two and a half years. During the course of data collection it was necessary that the author make judgments regarding the validity and reliability of available information and the

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[5]Ibid., p. 112.

implications of such information. In developing the following scenario of the future, the author deliberately chose the more pessimistic of observations by various energy experts and wove them into a course of events that, in the author's opinion, is a real possibility if current use, consumption, and production activities remain unchanged. The real events used as examples in the scenario may be unrelated or only remotely connected with the energy problem. It should be noted that the scenario suggested is a very pessimistic extrapolation of the current situation, and that the National Energy Plan will likely have a significant modifying effect on current energy related activities.

The Future

The depletion of traditional fossil fuel resources coupled with the absence of a dependable, readily accessible energy supply substitute will lead to conditions that will affect every individual and every nation on the earth. The more highly developed industrial nations will be especially affected. Long before the United States and world reserves of fossil fuel are used up, the economic burden of obtaining sufficient energy to run an industrial civilization will bankrupt many countries. Indeed, the rising cost of energy (whether based on the realization of fossil resource depletability or not) has fueled massive inflation in the United States, over 18 percent annually based on the monthly

Consumer Price Index for early 1980. Efforts by federal monetary agencies to control inflation using accepted economic philosophy and traditional deflation tools have lead to record high prime lending rates and an extremely tight money market. Many sectors of the economy, especially the construction/ housing and small business sectors have been significantly impacted by such actions, causing unemployment and bankruptcies, although the rising inflation rate has not been stopped. Without an acceptable energy resource substitute, fossil fuel resources will soon become insufficient to meet the demand for both energy and product feedstock (the raw material used to produce plastic and other synthetic materials). As demand goes up and fluctuations in availability increase (e.g. long lines at gasoline pumps in different areas of the country), the price will rise. At first choices will be made between spending income for luxury goods or abundant warmth and food. For those of low income, the choice will be between starvation or freezing (e.g. reported deaths as a result of consumers unable to pay their utility bill). As luxury items are rejected in favor of essentials, manufacturers of such items and their support industries will be forced to layoff workers.[6] As energy prices continue to rise and supplies dwindle, it

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[6]The closure of some General Motors and Chrysler plants producing large, inefficient autos and the near bankruptcy of Chrysler due, in part, to the unmarketability of its line of large, inefficient cars, may be harbingers of further closings.

may be that a portion of the fossil fuels produced will be reserved or stockpiled as the source of feedstock for essential products, or as an emergency energy supply in the event of embargo or other sudden cutoff in supply.[7,8] With priority removal of fossil fuels from the market, the increase in domestic energy prices and concurrent rise in overall inflation will be spurred higher, faster. Medium income families will further reduce their list of "necessary" manufactured items. With little inventory turnover, further layoffs and closings will occur. Support and service companies to the manufacturing sector will layoff workers. Commercial retailers will layoff local employees because of reduced business. The transportation sector, especially truckers, will have fewer loads to haul. To cover diesel fuel costs, weather periods when sufficient fuel is unavailable, and still make some profit, truckers will be forced to increase transportation prices. Economy crippling strikes by independents to obtain more fuel may occur, further increasing prices and supply fluctuations. These price increases will be passed along to the consumer. Gradually, to save as much money as possible, consumers, those that are still working, will depend on locally produced

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[7]The expansion of the Strategic Petroleum Reserve, a stockpile of petroleum, was suggested in President Carter's National Energy Plan. See *National Energy Plan II*, May 1979.

[8]The President's proposed National Energy Plan also called for a reallocation of natural gas to high priority use. See *National Energy Plan II*, May 1979.

goods. Lettuce from California, beef from Texas, and Cheerios from Battle Creek, Michigan, will become unaffordable luxuries, and then only memories. Transportation for the individual will become more difficult. The cost of gasoline will force the conservation of fuels for only the most important trips,[9] and the supply of gas will likely be strictly rationed.[10] In order to conserve income, the consumer-worker will seek employment as close to home as possible. With travel restricted and luxury services such as resorts, motels, amusement parks either out of business or too expensive, the consumer will be forced to recreate near his home. A return to the days when living and dying within fifty miles of the place of one's birth in a spartan society may again become a reality.

The Situation

Energy Planning Before the Department of Energy

If the facts tell us that we will soon run out of traditional energy resources, and our comfortable way of life will end, why is not somebody doing something? Why is not

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[9]The Department of Energy has reported a real reduction in gasoline consumption that may be a result of higher fuel prices, even though the national average price per gallon of gasoline is about half the average world price.

[10]Emergency ration coupons have already been printed by the federal government.

somebody planning for the future? Many governmental leaders are keenly aware of the facts, and are attempting to plan for the future.[11] Unfortunately, two factors have brought the effort toward national energy planning to an apparent state of confusion, confusion which allows movement without forward direction. First, there is disagreement over the proper goals or solution to resource depletion. Second, as a result of the lack of coordination between the myriad of new programs dealing with energy, the conflict between new energy policy and programs and previously existing laws, regulations, and methods of operation that impact energy use at all levels of government, the method of attaining a solution appears hamstrung before it is applied.

Prior to the 1973-1974 embargo of petroleum by members of the Organization of Petroleum Exporting Countries, a comprehensive policy, as such, did not exist in the United States. Federal energy policy prior to the embargo was usually formulated as a result of federal responsibility and activities which were concerned with other objectives of government.[12] At least sixty-four agencies of the federal government administered programs or exercised some control over matters that affected energy use. In 1973, as a

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[11]See the discussion of the National Energy Plan and related legislation in Chapter IV for current efforts toward national energy planning.

[12]Mason Willrich, *Energy Management* (Washington, D.C.: Commerce Clearing House, Inc., 1979), p. 2505.

consequence of the embargo, the President and Congress established the Energy Policy Office and the Office of Petroleum Allocation. These new federal agencies were the first organizations with the specific task of creating and implementing energy policy. In December of 1973, the Federal Energy Office was created and assumed the tasks of both the Energy Policy Office and the Office of Petroleum Allocation. In May 1974, less than one year later, the Federal Energy Administration came into existence by an Act of Congress to replace the Federal Energy Office. The Nuclear Regulatory Commission and the Energy Research and Development Administration, both independent of the Federal Energy Administration were also created in 1974. Although much authority over energy matters was centralized in the Federal Energy Administration, many of the energy related functions of other agencies operating before the embargo were still in effect. Thus, if any comprehensive, national energy plan were developed, program implementation would necessarily require the cooperation and coordination of many independent federal agencies.

Under the Federal Energy Administration (FEA), the first attempt to develop a national comprehensive energy policy was made. It was called Project Independence. In his 1974 energy message to Congress, President Nixon said, "If successful, Project Independence would by 1980 take us to a point where we are no longer dependent to any significant

extent upon potentially insecure foreign supplies of energy."[13] However, within the same administration, John C. Sawhill, Federal Energy Administration chief said, "Project Independence implies zero imports. I do not feel that this is either necessary or a desirable goal for U.S. energy policy."[14]

As illustrated by these quotations, the basic goal of Project Independence was not entirely clear. Indeed, in each of the published transcripts of ten regional hearings to gather public opinion regarding the energy situation, the FEA described Project Independence as "a wide-ranging program to evaluate this growing dependence on foreign sources of energy, and to develop positive programs to reduce our vulnerability to future oil cutoffs and price increases."[15] This was an even more ambiguous explanation of Project Independence as a comprehensive planning effort.

Beyond this confusion of intent, a larger problem beset this first national planning effort. The first concern of federal decision makers was to eliminate or greatly reduce U.S. dependence on foreign energy, rather than deal with the basic problem of relatively near term depletion of fossil

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[13]Mason Willrich, "Continuing Energy Crisis in America," *Congressional Quarterly, Inc.*, ed. John L. Moore (Washington, D.C.: n.p., January, 1975), p. 2.

[14]Ibid.

[15]Federal Energy Administration, *Project Independence: A Summary* (Washington, D.C.: Government Printing Office, November, 1974), title page over-leaf.

fuel reserves. Indeed, many energy experts apparently assumed a future unburdened by the consequences of dwindling domestic and world energy supplies. For example, the January 5 issue of "The Economist," an influential international journal, predicted an energy glut by the 1980's.[16] Also, of particular interest is the following quote from an energy analyst employed by the FEA:

> Future embargoes are likely to be accompanied by price increases for imported petroleum products, but these increases are not likely to persist much beyond the embargo period. The basis for this assessment is that while short-run demand and supply elasticities are very low, the long run elasticities are not. This implies that by pushing prices much higher than they are now in real terms for a long period, the Arab nations would effectively price themselves out of the market. This would deprive them of both the revenues and the political leverage that dependence on their imports brings.[17]

It seems, to this author, that this expert, working on Project Independence, was unable to extrapolate a future data of fossil fuel exhaustion based on then current consumption and estimated reserves. From this statement it also seems that he was not even aware that the U.S. peaked in domestic petroleum production in 1972, thereby firmly placing the United States on the dependent side of the demand/supply equation, negating his entire argument.

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[16]Willrich, "Continuing Energy Crisis in America," p. 6.

[17]Thomas H. Tietenberg, *Energy Planning and Policy, The Political Economy of Project Independence* (Lexington, Mass.: D. C. Heath & Co., 1976), pp. 29-30.

The final product of Project Independence was to include a comprehensive integrated model of national energy production and consumption. The Project Independence Evaluation System (PIES) was an econometric simulation of the United States that was supposed to allow the forecast of consequences as a result of changes in energy production, consumption, use, etc.[18] Unfortunately, the model has been criticized,

> according to informants within FEA, the parameters of the underlying model were manipulated to yield results consistent with predilections of FEA officials as well as with common sense. The report, in effect, assumed its own conclusions.[19]

Conclusions based on the model, conclusions that were to guide national energy decision makers in the development of a comprehensive energy plan, were subject to other criticism. The Commerce Technical Advisory Board (CTAB), an independent panel especially established to critique the Project Independence effort, found serious flaws in the base data used by Project Independence staff, methodology of analysis, and conclusions:

> Overview
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> • The cumulative discoveries (oil-in-place) during the 1974-1988 period needed to achieve the Federal Energy Administration (FEA) estimates of oil supply would amount to about 200 billion barrels of oil

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[18]The National Energy Plan discussed in Chapter IV was, in part, based on PIES and later updated.

[19]William A. Johnson, "Why U.S. Energy Policy Has Failed," *Energy Supply and Government Policy*, eds. Robert J. Kalter and William A. Vogely (Ithica: Cornell University Press, 1976), p. 295.

for the accelerated development case. This is about one-half of the volume of oil which National Petroleum Council studies indicate is remaining today.

• To reach a production rate of 16 million barrels of oil per day would require a 1985 discovery rate never achieved in the last 30 years.

• Two of the key physical parameters entering into computations of future gas production possibilities are drilling footage and finding-rate per foot drilled. The total footage drilled in 1985 was assumed to be twice that of 1974 and over three times that of 1971, a very difficult achievement.

• To achieve a gas production of rate of 24 Trillion Cubic Feet per year would require a new discovery rate accomplished only once in the last 25 years.

• The need for coal production was limited in the FEA analysis because demand projections were met by unrealistically abundant oil and natural gas supplies for each policy alternative considered. The Panel [Panel on Project Independence Blueprint] concludes that if more realistic estimates were used for oil and gas supply projections, the role of coal in meeting future demand would be shown to be much greater.

• Without immediate and positive action on utility financing even the business as usual case is unlikely to be attained and this is not adequately stressed in the Project Independence Report (PIR). The advantages of accelerated development of nuclear power go far beyond simple substitution for coal burning as implied in the PIR and strongly indicate the desirability of achieving the accelerated goal to 285 to 310 Gigawatt believed to be possible by the CTAB Panel.

Energy Demand

The FEA projections for energy demand in 1985 tend towards the low side of other existing projections. For example, FEA's accelerated conservation case at a world oil price of $11 per barrel assumes an energy demand in 1985 which is only one Quad more than the Zero Growth Case in the Ford Foundation Study.

These demand estimates are extremely hard to achieve, they imply a great deal of personal sacrifice and disruption, and they are based on very hard decisions that greatly affect the Nation's social and economic conditions.

Demand Management

The FEA Summary concludes that coal use will be demand-limited. The Panel concludes that this determination is due to FEA's unrealistically high forecasts of domestic oil and natural gas supplies, and low forecasts of total energy demand.

Further, it presents as an option that any new residential and commercial energy requirements be met with electricity to the exclusion of oil and gas. Consequently, the need for synthetic fuels from coal and oil shale is de-emphasized.

The Panel believes that maximum development of coal supply for all end uses is essential, and that the distribution of these end uses should be left to the market place.

Imports

An analysis procedure based on low demand needs and high supply estimates tends to minimize the import levels that may actually be necessary for every policy alternative examined by the FEA.

The reader then can be left with the feeling that the tasks of becoming less dependent upon foreign energy sources are less complex and less difficult than they are in actual fact.

Environmental Considerations

The FEA Summary, in its emphasis on technical approaches, fails to give adequate weight to political actions and public concerns for minimizing environmental disturbances in meeting critical energy needs. These include: air quality requirements, water resources management and allocation, siting requirements and related socioeconomic impact on community resources. In addition, the Summary treats these environmental issues in a piecemeal fashion, primarily as they relate to energy-associated facilities. The Report overlooks the cumulative effect of individual and ostensibly minor actions on a national, regional and state

> basis. In the development of a national energy program, the impact of environmental issues must be considered.[20]

Within the Project Independence program, Project Independence Blueprint was developed as a mechanism for gathering background data. Included under background information was:

1. An analysis of manpower, financial, material, transportation, and other cost constraints in achieving energy independence.
2. An historic perspective of the energy situation.
3. An evaluation of costs relative to environmental and other effects.
4. Administrative, economic, policy, and
b budgetary actions likely to promote achievement of Project goals and objectives.[21]

Background data was to be collected with the specific intent of bringing the public into the planning process.[22] Ten regional hearings were held around the nation to accomplish this end. However, although Project Independence Blueprint was to facilitate communication with the public, nowhere in the *FEA Project Independence Blueprint Summary* was consideration given to the feasibility of implementing energy policy at the local level. To quote the Commerce Technical Advisory Board, "the summary underestimates the impact of

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[20]U.S., Department of Commerce, Commercial Technical Advisory Board, *CTAB Recommendations for a National Energy Program* (Washington, D.C.: Government Printing Office, 1975), p. 51.

[21]FEA, *Project Independence.*

[22]FEA, *Project Independence.*

Federal, state, and local political constraints and environmental restrictions."[23] From a review of Project Independence documentation it appears that there was no indepth exploration of city administrator understanding of the extent and implications of the energy situation. This information is an important aspect of each of the above four areas intended for Project Independence Blueprint investigation. By not including this aspect of the planning environment, the feasibility of implementing national energy policy may be significantly reduced, since the cooperation of local officials can be a very important factor in energy programs that are applied at local levels.

Energy Planning and the Planning Process

In the United States, governments have generally assumed the responsibility of meeting many of the basic needs of its population. This responsibility has been spread between both elected and appointed officials. In order to attain or maintain their position such officials generally must also attempt to respond to the needs of their constituency as they perceive them. At times, the real need and the perceived need may not coincide. In attempting to meet these needs, administrators generally try to prepare for future

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[23]U.S., Department of Commerce, *CTAB Recommendations*, p. 6.

problems. In effect, they plan. According to Banfield, "a plan . . . is a decision with regard to a course of action."[24] Further,

> . . . a rational decision is made in the following manner:
> (a) the decision maker lists all of the opportunities for action open to him,
> (b) identifies all of the possible actions,
> (c) selects the action which would be followed by the preferred set of consequences.[25]

Of course, it would be humanly impossible to list all of the possible courses of action, and the consequences of any one selected alternative could expand beyond comprehension. However, in the case of energy planning, making no decision or deciding on a whim, could result in serious problems of energy supply and price instability. Banfield suggested that there be, at least, an attempt to approach rational decision making. To this end, he proposed a methodology for the systematic investigation of available base data and the selection of what would seem the most promising course of action:

> (a) analysis of the situation,
> (b) end reduction and elaboration,
> (c) the design of courses of action,
> (d) the comparative evaluation of consequences.[26]

It should be noted that planning and the development of a plan is a dynamic, cycling process. The administrator must

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[24]Banfield, p. 140. [25]Ibid., pp. 141-142.

[26]Ibid., p. 142.

continually plan for the future, and Banfield's process suggests a never ending cycle of reevaluation.

According to Banfield, in order to improve the chances of success (rational decision making) in formulating a plan, the situation in need of a planning effort should be thoroughly investigated. This environmental analysis normally would include examination of the feasibility of implementing a proposed plan, since, logically, a plan unimplemented has no chance for success. When implementation must be ahndled through the activities of the clients themselves, as will be the case in conservation and other energy programs, it would be logical to assume that the investigation would necessarily include a study of the perception of the need held by the client. The feasibility of implementation is highly dependent on the coincidence of the proposed plan and the desired or expected solution held by the client. For example, a consuming public that believed current fuel shortages are a result of insufficient development of essentially inexhaustable fossil fuel reserves would possibly be unlikely to substantially curtail their motoring habits to conserve energy. Rather, they may expect government to promote further development of fossil fuel reserves.

The federal government has undertaken the task of national energy planning. The successfulness of national energy planning remains dependent on the fulfillment of those conditions or steps as described in Banfield's planning

process. This is especially important in developing programs that will be implemented at local levels, or that will have substantial impact at the local level. The initial analysis of the situation or environment should include an assessment of the political acceptability at the local level, as a factor in the feasibility of implementing energy policy and programs.

Altshuler observed that, "in practice, unfortunately, even the most staunchly 'physical' planners have found no way to isolate the effects of their work from the murky crosscurrents of economic and social conflict."[27] This observation holds true, in a general way, for planners operating at the federal level. Their plans, which must finally be effected by, or with, the cooperation of local administrations, are subject to extensive change. Uncooperative or uninformed local or intermediate levels of government may significantly alter the method of implementation. The end product may be at considerable variance with the intended result. The local political restraints on achieving effective planning can be immense, especially when planning goals are developed at the federal level with a minimum of input from member cities and states.

Altshuler suggested that of the two ways to gain acceptance for new ideas, one has invariably been accepted

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[27]Alan A. Altshuler, *The City Planning Process: A Political Analysis* (New York: Cornell University Press, 1965), p. 2.

by American planners and is more likely to yield immediate results. That method is to ". . . adapt one's own arguments and objectives to the beliefs, attitudes, and political customs already prevalent."[28] A prerequisite for this methodology is the complete application of Banfield's planning process. In this process an analysis should be made of the local environment in which implementation will occur. Goals should be based on, or couched in terms of, real local needs and perceived needs, rather than solely on federally derived objectives composed without information regardint the local situation.

A review by this author of Project Independence, the first effort toward national energy planning, has shown that the planning process was not as effectively applied as it could have been. The investigation of the planning environment was insufficient, and the development of clear, concise Project goals was not in evidence. In the years following Project Independence, energy use increased and stability of supply decreased. By 1978, United States dependence on foreign sources of petroleum and natural gas was greater than ever, with total import of these fuels increasing.[29] The criticisms of the CTAB and others appear substantiated. Thus, as a tool for promoting comprehensive national energy

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[28]Ibid., p. 319.

[29]U.S., Department of Energy, *1978 Annual Report.*

planning, Project Independence and the Federal Energy Administration appears less than successful.

The Department of Energy

On October first, 1977, the Department of Energy (DOE) was created. The Department of Energy assumed many of the responsibilities of those agencies previously administering energy related matters, including the Federal Energy Administration, the Energy Research and Development Administration, the Federal Power Commission, and the Energy Resources Council. DOE was given much authority over price and distribution of oil supplies and energy research and development. The Department of Energy was deemed a necessary tool to carry out a National Energy Plan (NEP).[30] This "plan" would propose a unified, comprehensive policy to deal with the national energy problem, including dependence on foreign petroleum supply, and the ultimate depletion of domestic and world fossil fuel reserves. A "Department" of Energy would

> . . . carry out this policy through a unified organization that would coordinate and manage energy conservation, supply development, information collection and analysis, energy regulation, and research, development, and demonstration. Only through creation of a department that combines the skills and expertise now dispersed through numerous federal agencies will the government obtain the comprehensive overview of interrelated energy

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[30]The NEP is discussed in greater detail in Chapter IV, especially as it applies to local level feasibility of implementing national energy policy.

problems and the organizational coherence needed to implement the National Energy Plan.[31]

Also, within the Department of Energy, an Energy Information Administration was organized, consolidating more than one hundred existing important energy data collection programs, for the purpose of collecting and analyzing energy information for use by the government and the public.

While DOE has been given much authority over energy related activities, it does not control all activities influencing energy use. For example, it was given no authority over natural gas prices, wholesale electric rates, oil or gas leasing, or environmental-energy considerations. Because of this lack of comprehensive control, or because some DOE activities are in contradiction to established regulations or policies administered in these areas by other agencies, or because DOE has not been thorough in the implementation of its own mandated requirements, some energy experts have criticized the ability or effectiveness of DOE to implement the National Energy Plan and the National Energy Act.[32]

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[31]Mason Willrich, *Perspectives on the Energy Crisis*, Vol. 2, eds. Howard Gordon and Roy Meador (Ann Arbor, Mich.: Ann Arbor Science Publishers, Inc., 1977), p. 440.

[32]See: Arnold E. Safer, *International Oil Policy* (Lexington, Mass.: D. C. Heath & Co., 1979); A. B. Lovins and John Price, *Non-Nuclear Futures, The Case for an Ethical Energy Strategy* (Cambridge: Ballinger Publishing Co., 1975); Walter J. Mead, *Energy and the Environment: Conflict in Public Policy* (Washington, D.C.: American Enterprise Institute for Public Policy Research, 1978); Walter A. Rosenbaum, *Coal and Crisis — The Political Dilemmas of Energy Management* (New York: Praeger Publishers, 1978); Mason Willrich, *Perspectives on U.S. Energy Policy, A Critique of*

One of the most important functions of DOE, and especially the Energy Information Administration is the collection of energy data that will serve the implementation of the National Energy Plan (NEP), and allow the evaluation of programs and their subsequent modification for maximum effectiveness.

> A National Energy Plan can be built only on a foundation of partnership and understanding among the Federal Government, the States, local governments, and the Nation's Indian tribes, which regulate or own a substantial part of U.S. energy resources.
>
> Many of the programs proposed in the Plan cannot succeed without the active cooperation of state and local governments. The assistance of state and local governments will also be needed to harmonize the varying interests of the different regions of the country, all of which are affected by national energy policy.[33]

Efforts by the federal government to determine public attitude and comprehension of the energy situation under Project Independence were shown to include little data describing the perception and attitude of city administrators. In developing the National Energy Plan as the only attempt to include the public, selected individuals were asked to attend seminars for one week in Washington, D.C., and public hearings were held for one day in six large cities around the nation. Surveys of the general public have indicated

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Regulation, ed. Edward J. Mitchell (New York: Praeger Publishers, 1976); Mason Willrich, *The National Energy Problem*, eds. Robert H. Connery and Robert S. Gilmons (Lexington, Mass.: D. C. Heath & Co., 1974).

[33]Willrich, *Perspectives on the Energy Crisis*, p. 442.

that the education and understanding of the majority of the public toward the energy situation is not as comprehensive as it might be, and that the public attitude toward federal energy programs is not completely positive.[34] In that elected leaders (i.e. city administrators) may have been elected because they reflect the majority will, logically it is possible that local leaders also have an incomplete understanding and a not totally cooperative attitude toward federal energy policy. As pointed out, local government active cooperation is essential to the National Energy Plan. Also, as indicated earlier, the success of any plan is substantially affected by the feasibility of implementation, a factor influenced by the attitude and perception of the client, especially if the client figures prominently in the implementation process.

An investigation of city administrator perception and attitude toward the energy situation could provide evidence of the adequacy of the federal government's effort to bring the local city official into the planning process for National energy planning. The degree of adequacy may provide some information on the current feasibility of implementing federal energy policy at the local level.

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[34]See: Barbara C. Farhar et al., *Public Opinion About Energy: A Literature Review* (Golden, Col.: Solar Energy Research Institute, June, 1979); a discussion of the conclusions of this research are included in Chapter III.

Data Collection

This research effort was focused on gathering additional data describing city administrator perception and attitude toward the national energy situation. There is also a discussion of the relevancy of the data collected by federal officials to develop energy programs. Additional suggestions for further data collection activities and for application of what was learned in this investigation are explained.

The method employed to collect city administrator opinion was a mailed questionnaire. A nationally representative sample of cities was selected from all of the municipalities in the United States. The mayor or chief executive of that city was the addressee.

Analysis of the survey included: (a) a tabulation and discussion of the aggregate attitudes and perceptions of city administrators, (b) a comparison of the opinion of city administrators as indicated in this survey with the opinion of the consuming public, as suggested in several hundred consumer surveys which were collected over almost a decade, (c) an examination of the variation in city administrator response according to the area of the country in which the city is located, and (d) an examination of the variation in city administrations responses according to the size of the city.

CHAPTER II

METHODOLOGY

Introduction

This chapter describes the manner in which data relating to city administrators perceptions and opinions were gathered. Specifically, this chapter, (a) discusses the development of the survey employed, (b) discusses the approach used to select the sample from the universe of cities, and (c) explains the statistical techniques employed in analyzing the collected data. All data relavent to the statistical validity of the sample, and reliability of the analysis are included.

The Questionnaire

A questionnaire regarding city administrators perceptions and attitudes toward the local and national energy situation was administered in June and July of 1979. The questionnaires were mailed to the "Mayor or Chief Administrator" of each selected city. The questionnaire contained twenty-five questions, plus a space for the person completing the questionnaire to list their position and the office or department in which they worked. A number was also placed on each survey to indicate the city size, census region, and state to which it was sent.

The format of the questions included the selection of a "yes" or "no" response, a checkmark placed in a matrix, the selection of the most appropriate response from a range of responses, or the allocation of percentages to total 100 percent.[1] In most instances a forced choice technique was employed with the respondents making their selection from only those answers provided. However, in seven questions the respondent was allowed to fill-in a preferred answer.

Before the final questionnaire was sent to the city administrators, a number of preliminary questionnaires were created to test its utility and reliability. The first preliminary questionnaire was developed and circulated among university graduate students and professionals at the Oak Ridge National Laboratory. After completing the questionnaire, the respondents were asked whether they felt influenced to answer any question in a certain way. If more than three individuals reported such influence, the wording of the question was changed, a wider selection of answers was added, or the answer format was changed. This process was repeated until not more than two of those completing this preliminary questionnaire reported a feeling of bias. If a question was reported by at least two respondents as

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[1]See Appendix A for a copy of the final questionnaire.

having a biasing effect, a second question was added to the survey asking for the same basic information, but with different wording and/or answer format. It was felt that in the posttest data analysis stage a frequency comparison or correlation of answers from the two like questions would be an indicator of reliability. If two questions asking for the same information were answered differently, then they would be dropped from the analysis.

After the questionnaire was developed, a pretest was conducted using members of local planning agencies. Planning agencies were selected because it was expected that the chief executive of a city receiving the final questionnaire would probably pass the questionnaire on to an assistant or, more likely, some city agency or office that would most often deal with matters relating to energy and local planning.[2] Thus, the local planner used in the pretest would compare favorably with the respondent to the questionnaire. It is

A cover letter was included with the pretest questionnaire. It explained the purpose of the questionnaire, asked for the recipient to answer the questions, and also asked for any comments regarding questionnaire content, wording, or format. After a review of the pretest results, especially focused on those questions that may have had a biasing

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[2]Tables appearing on page 46 in Chapter III describe the percentage of respondents in various job categories.

effect, a final questionnaire was developed. With the final questionnaire, a cover letter was sent explaining the purpose of the survey.[3] A stamped, addressed return envelope was also included.

Sampling and Statistical Analysis

Sampling

The *1976 Municipal Yearbook* listed 3,868 cities with populations ranging from twenty-five hundred to over one million people.[4] Two sampling groups were formed from this universe of American cities. The first sampling group included those cities with populations ranging from twenty-five hundred to forty-nine thousand nine hundred ninety-nine people. The second sampling group consisted of the remainder of the cities; or, those cities with a population ranging from fifty thousand to over one million people. The first group, termed "small cities," totaled three thousand two hundred eleven cities. The second group, termed "large cities," totaled six hundred fifty-seven cities.

It was decided that a maximum sample of 5 percent from each population would be required for a statistically

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[3]See Appendix B for a copy of the cover letter.

[4]*The 1976 Municipal Yearbook* (Washington, D.C.: International City Management Association, 1977), Table 3.

representative analysis. It was also estimated that a return rate for the questionnaire would probably be between 20 and 30 percent.[5] Projection from the highest return rate indicated that questionnaires must be sent to five hundred thirty-five "small cities," and one hundred ten "large cities." Thus, two samples were created. Final analysis of the survey would include an investigation of differences in administrator attitudes and perceptions relative to city size.

The final analysis of the survey data was also to include an examination of the variation in responses by geographic location. Four geographic areas corresponding to the boundaries of the four national census regions were selected as the geographic units for analysis. A review of the location of cities indicated an unequal spatial distribution of cities across the nation. Ideally, the survey should have been designed such that enough questionnaires were sent out to insure a return rate sufficient to allow representative weighting of the returned questionnaires by geographic distribution. However, available funding and other practical considerations precluded this ideal framework. In lieu of this, a much simplified scheme was developed to

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[5]Based on information in: Don A Dillman, *Mail and Telephone Survey -- The Total Design Method* (New York: John Wiley and Sons, 1978); and Robert Plutchik, *Foundations of Experimental Research* (New York: Harper and Row, 1968).

gain representation by geographic region. The *Municipal Yearbook* lists cities by state as well as by population. This allowed the grouping of cities by census region: northeast, northcentral, west, and south. For each sample, the number of cities selected from each census region corresponded to the percentage of cities in the national population that were found in that region. For example, the western census region had a total of three hundred seventy-five cities that would fall in the population "small cities." This corresponds to 12 percent of the total number of small cities in the nation. Therefore, of the five hundred thirty-five cities included in the small cities sample, 12 percent, or sixty-four small cities were selected from the western census region. This process was applied to all census regions for both samples.

Random selection was employed to chose the actual cities from the *Municipal Yearbook* listings. The alphabetized cities were first separated into two groups corresponding to the size parameters of the initial groups. Within each group, subgroups were developed by separating cities by census region. The cities in each subgroup were then consecutively numbered. Using number from a random number chart, the appropriate number of cities from each population subgroup were chosen to meet the premailing regional weighting scheme. The cities chosen from each population subgroup thus

became the cities intended for receipt of mailed questionnaires.

Statistical Analysis

The responses on all questionnaires returned before September 1, 1979, were converted to a numerical format and key punched onto standard computer cards. The state, city size, and census region indicated on each returned questionnaire were also key punched. The numerical format allowed each question to be treated as a separate variable, with the possible answers to each question assigned consecutive numbers beginning with "one." In each question including a range of choices indicative of a time span, percentages, or degree of condition, answers were numbered, starting with the number "one," from minimum to maximum. This unidirectional hierarchy facilitated later comparison of data and analysis. After preliminary statistical manipulation, it was found that certain questions were more amenable to statistical analysis if formated as more than a single variable. This was true in questions originally in matrix form, or where individual answers were not ordinal or otherwise interdependant. In the case of questions having noninterdependant answers, each possible answer was reformated as a "yes-no" question. It should be noted that questions receiving this treatment were those in which the respondent was specifically not limited to selecting only one answer.

The respondent was, in fact, asked if the condition described by each possible answer applied in the local situation. Also, if the original question was not answered at all, that is, if none of the possible answers were selected by a respondent, it was eliminated from analysis. In the case of matrix type questions, new variable names were assigned to each category, and the same consecutive sequence of numerical answers (indicating degree of condition) was used for each new variable.

The first statistical analysis performed was a standard one-way frequency distribution for each variable. This tabulated the number of times each answer was selected for a given variable. This analysis allowed the removal from further consideration of these variables with inadequate response rate, or an indication of semantic problems within the question. Also, basic data regarding majority-minority polarity was indicated. At this point it was possible to compare the trend in responses with the opinions of the consuming public, as indicated in other national and area surveys.

The second statistical analysis was a two-way frequency distribution of each survey variable by census region, and, then, each survey variable by city size. The two-way frequency distributions provided the opportunity to search for patterns in administrator response related to city size

or geographic region. A chi-square test was also applied to determine the significance of the observed size or region dependent variation.

Unfortunately, in the case of a number of variables, the cell counts (i.e. the number of responses for a given answer corresponding to a given region or city size) within certain tables were insufficient and did not guarantee validity of the chi-square test. To provide substantiating statistical evidence that the observed variation in the pattern of response was significant, it was necessary to employ a second, different test for an indication of statistical significance. A regression analysis utilizing Cox's linear logistic model was selected for this test of significance.[6]

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[6] In the Cox linear logistic model, the dependence of the probability of success on the explanatory variables is assumed to be

$$\theta_i = \frac{e^{\alpha_i \beta}}{1 + e^{\alpha_i \beta}} \quad \text{and} \quad 1 - \theta_i = \frac{1}{1 + e^{\alpha_i \beta}}$$

where $\alpha_i = (\alpha_{i1}, \ldots, \alpha_{ip})$ and β is the column of unknown parameters $\beta' = (\beta_1, \ldots, \beta_p)$. These equations are equivalent to

$$\lambda = \log \frac{\theta_i}{1 - \theta_i} = \alpha_i \beta = \sum_{j=1}^{p} \alpha_{ij} \beta_j \qquad \text{(a)}$$

A computer program has been developed to employ Cox's linear logistic model.[7] The program, called LOGIST, fits up to sixteen explanatory variables at the same time, producing a chi-square equivalent as an indication of probability. In this case, each variable suspected of having regional or city size dependent variation in its answer was introduced singly to the program. Thus, the significance of each suspected variable could be determined and checked against results of the first standard chi-square test for those variables of questionable validity as a consequence of low cell counts.

After application of the above statistical procedures, it was possible to identify apparent trends and patterns in the answers provided by survey respondents. A comparison of administrators perceptions and attitudes with current federal energy planning efforts suggested areas where further data

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$$\lambda = \log \frac{\theta_i}{(1 - \theta_i)}$$

is the logistic transform of θ_i and thus equation (a) is a linear logistic model. For additional details, see: Eliza T. Lee, "A Computer Program for Linear Logistic Regression Analysis," *Computer Programs in Biomedicine*, 4 (October, 1974), 80.

[7]See Lee "A Computer Program for Linear Logistic Regression Analysis."

gathering activities may be useful. Also, with an indication of the general position of the majority of city administrators, it was possible to develop activities that would facilitate a later comprehensive planning effort.

Limitations

Originally it was intended to include an analysis of administrators perceptions and attitudes at the national level followed by an analysis at the regional level. Unfortunately, the attempt to weight the survey prior to mailing to achieve regional representation equivalent to the real world distribution of cities by census region was unsuccessful. Table 1 compares the actual regional distribution of cities to the regional distribution of returned questionnaires. As can be seen, the representation of cities by region does not match.

Geographic conditions are very important determinants of energy use. Such things as climate, topography, land use patterns, type and nearness to major fuel supplies, and prevalent mode of individual and commercial transportation are some of the factors that modify the basic demand for energy in a given region. Human population and major economic activities are also important descriptors of basic energy demand in a particular geographic region. These and other geographically related variables may combine to mold administrators perceptions and attitudes toward national

TABLE 1

DISTRIBUTION OF CITIES BY CENSUS REGION

Region	Survey		National[a]	
	Freq	Percent of Total	Freq	Percent of Total[b]
Northeast	42	23	1944	29.0
North Central	43	23.5	1934	28.9
South	63	34.4	1924	28.7
West	35	19.1	887	13.3

[a]National distribution of cities over 2500 population taken from 1979 Municipal Yearbook.

[b]May not total to 100 percent due to rounding.

and local energy conditions. Thus, it can be seen that if the northeastern region, for instance, with relatively high energy consumption, energy supply problems, and substantial population were underrepresented by the survey, and the southern region with much lower energy requirements and more dependable energy supplies, were overrepresented, the national analysis could be biased toward the southern administrator's outlook.

A number of factors prohibited the manipulation of returned surveys to weight or randomly select for regional representation. A simple random selection of questionnaires returned from a given region to correspond to the number of questionnaires that should have been received from that region would result in a sample that would be so few in number as to significantly reduce the survey representativeness. Also, this type of random selection or any weighting scheme would ignore the importance of nonreturned questionnaires. Nonreturned questionnaires may reflect some unknown factor. For example, if the rate of return from a particular region is very low, it is possible that the questionnaires returned may be only from those cities unusually affected by the energy situation, and whose administrators feel a high motivation to communicate their problems.

The actual number of observations (i.e. returned questionnaires) also limit certain statistical manipulation

of the data. The analysis presented in this chapter includes two-way tabular distributions of region by question and city size by question. A chi-square test was applied in each case to determine the probability in the observed regional or city size dependent variation in respondent answers. The limited number of observations in a specific table cell were seen to reduce the validity of the chi-square test. The number of limited observations would then obviously lead to considerably more problems with validity in three-way tables, city size by region by question. In fact, it was found that cell sizes were so small that the addition of one or two more observations to a cell could significantly affect the total percentage of administrators selecting that answer by 10, 20, or 30 percent in some cases. It may be that the greater pessimism toward the energy situation observed in administrators in large cities, and the greater pessimism held by administrators from the west and northeast census regions may be somehow related or even dependent on each other (i.e. pessimism is exhibited primarily by administrators in large, west or northeast census region cities). This relatedness could be an important factor and could change the conclusions of this study. However, since statistically significant evidence for this possibility is not available, the conclusions drawn must stand until further data on the subject is available.

It may be suggested that the data from this survey could undergo further statistical analysis (e.g. correlation of respondent's job or position with answers; geographic analysis by some grouping other than census regions using state indicator number on each survey); however, the limited number of returned questionnaires and the associated problems with validity and reliability preclude this in many cases. With appropriate resources it would be possible to design a survey that would allow weighting by region or some other geographically relevant grouping, or to collect information specific to almost any variable. In any event, this survey is only one of what should be a series of such surveys to establish a broad data base describing the local level political climate that will have significant impact on national energy policy implementation.

CHAPTER III

SURVEY RESULTS

Introduction

In this chapter, the survey data is described and analyzed. The subsection entitled "National Analysis" examines the entire data set without any disaggregation by region or city size. The perceptions and attitudes of administrators in a national cross sample are described for each question. Where patterns appear to exist or discrepancies develop, an attempt is made to identify the underlying reasons that administrators may have had in answering the survey questions.

The subsection entitled "Comparison of Administrator and Public Opinion" compares the national level results of this survey with the results from one hundred fifteen surveys taken between 1973 and 1978 concerning public opinion toward the energy situation. Differences in majority-minority beliefs, variation in strength of majority-minority opinion, the importance and degree of opinion polarity, and possible basis for discrepancy in attitude or perception are included in the analysis.

The Regional Analysis section of this chapter addresses one of the main research questions originally intended in

this study, the possible difference in city administrators opinions as an effect of the geographic location of the city. In this section the magnitude and direction of regionally dependent variation observed in question answers is described. The possible reasons underlying the variation are explored.

The City Size Analysis section addresses another of the original intents of this study, which is an examination of difference in city administrators outlook according to the size of the city. The differences in administrators perceptions and attitudes indicated by the statistical analysis is described and the possible reason for the observed variation is examined.

Representation of Survey Data

One hundred eighty-three survey questionnaires were returned. This represents 4.7 percent of the national universe of cities over twenty-five hundred population. One hundred thirty questionnaires were returned by small city respondents for a 4.0 percent representation of this population. Fifty-three questionnaires were received from large cities, representing 8.1 percent of this population. Table 2 describes the frequency of returned questionnaires by region, and the survey representation for both small cities and large cities. Thus, based on the total six hundred forty-five questionnaires mailed, the return rate

TABLE 2

REGION AND CITY SIZE REPRESENTATION

Region	Frequency	Cum Freq.	Percent	Cum Percent
Region				
Northwest	42	42	23	23
North Central	43	85	24	46
South	63	148	34	81
West	35	183	19	100
City Size				
Small City	130	130	71	71
Large City	53	183	29	100

was 28.4 percent. Return rate from the small city sample was 24.3 percent, and return rate from large city sample was 48.2 percent. Table 3 describes the state level representation. Table 4 describes distribution of administrators responding by job title or position. Table 5 describes the distribution of respondents by the city department in which they work.

National Analysis

Examination of the data appears to indicate that the majority of city administrators responding have not received the full benefit of a great deal of data that has been collected and analyzed regarding the energy situation. Majority beliefs are often contrary to known fact. Majority projection of current status to future events is contrary to the historical effects of reduced supply and continued high demand. Examples of this are the administrator expected small rise in energy prices, the current percentage of personal income consumers now pay for all energy needs, and the probable future mix of energy resource types. It is possible to establish a rational line of thought that may have been used by many administrators to arrive at their opinions. However, there is no proof that the reasoning suggested below was in fact used.

A basic and very important question that should be asked of administrators is whether a national energy problem

TABLE 3

REPRESENTATION OF STATES IN SURVEY

State	Frequency	Percent
Alabama	2	1.093
Arizona	1	0.546
Arkansas	1	0.546
California	14	7.650
Colorado	3	1.639
Connecticut	8	4.372
Florida	4	2.186
Georgia	7	3.825
Hawaii	1	0.546
Idaho	1	0.546
Illinois	9	4.918
Indiana	3	1.639
Iowa	2	1.093
Kansas	4	2.186
Kentucky	3	1.639
Louisiana	1	0.546
Maine	1	0.546
Massachusetts	8	4.372
Michigan	6	3.279
Minnesota	2	1.093
Mississippi	2	1.093
Missouri	1	0.546
Montana	1	0.546
Nebraska	2	1.093
Nevada	1	0.546
New Hampshire	1	0.546
New Jersey	9	4.918
New Mexico	3	1.639
New York	3	1.639
North Carolina	3	1.639
North Dakota	1	0.546
Ohio	6	3.279
Oklahoma	5	2.732
Oregon	5	2.732
Pennsylvania	8	4.372
Rhode Island	2	1.093
South Carolina	6	3.279
Tennessee	6	3.279
Texas	14	7.650
Vermont	2	1.093
Virginia	7	3.825
Washington	4	2.186
West Virginia	3	1.639
Wisconsin	6	3.279
Wyoming	1	0.546
TOTAL	183	100.000

TABLE 4

DISTRIBUTION OF RESPONDENTS BY JOB TITLE OR POSITION

Position	Frequency	Percent
Data Not Given	5	.
Mayor or Chief Executive	83	46.629
City Manager	36	20.225
Assistant to Chief Executive	31	17.416
Secretary or Clerk	14	7.865
Other	14	7.865
TOTAL	183	100.000

TABLE 5

DISTRIBUTION OF RESPONDENTS BY DEPARTMENT IN WHICH EMPLOYED

Department	Frequency	Percent
Data Not Given	4	.
Mayor or Chief Executive	141	78.771
City Manager	15	8.380
Energy or Technology	3	1.676
Planning	15	8.380
Other	5	2.793
TOTAL	183	100.000

exists. In answer to survey question twelve, 69 percent of all respondents selected the most pessimistic of answers, indicating "a serious problem" of rising prices and possible fuel shortages. A more exact indicator of the severity involved is available in the answer to question sixteen. In this question 56 percent of administrators responding believed the problem will become serious enough in the future to cause national "shortages of sufficient severity to cause substantial but not serious disruption of usual activities." An additional 33 percent believed "shortages sufficient to cause serious disruption of usual activities and lasting hardships" will occur. The origin of this belief may lie to some extent in historical experience. According to the answers given to question three, 46 percent of all administrators surveyed reported past shortages in gasoline supplies sufficient to cause "minor disruption" of usual activities. Another 14 percent experienced "periodic substantial disruption." Thirty-five percent reported minor disruption of activities due to shortages of fuel oil, plus another 18 percent in the same category listed electricity supply problems. Administrators have also noted that increasing numbers of consumers are installing a secondary means of heating. Seventy one percent reported an increase in such installations, with 53 percent stating that a renewable resource (wind, solar, wood) was selected. Note that while

administrators see the national situation as serious, they do not expect shortages to be crippling, but perhaps more of a nuisance, a serious nuisance.

Moving to local concerns, administrators demonstrated greater optimism. Whereas 69 percent of respondents thought a serious problem at the national level existed, only 49 percent believed a serious problem at their own local level existed or would soon exist. Another 40 percent believed "a problem, but not a serious one" does or will soon develop. The answer to question fifteen regarding local energy supplies found 60 percent of respondents believing that shortages will cause substantial but not serious disruption of usual activities. This apparent dwindling of a serious national energy problem to a less than serious local problem may reflect the opinion that the energy problem is not real. The administrator may feel the energy situation is a ploy by special interests to raise profits with no real depletion of energy reserves. This is not the case however, with 71 percent rejecting this hypothesis in question fourteen. Rather, a majority (62 percent) seem to believe that "inappropriate governmental regulation in the past and/or poor planning by industry" is the root cause of the national energy problem. Resolution of this disagreement in the seriousness of effect from the national to the local level could lie in the expected

duration of the problem and the particular fortitude of the administrator's locality. Indeed, 58 percent believed energy prices will level, increasing at a rate no higher than overall inflation, within ten years. Another 9 percent, for a total of 67 percent, expected a leveling within fifteen years. In response to the question concerning the cost of energy, 77 percent of responding administrators indicated that the average local consumer spends between zero and 20 percent of their income for energy. Eighty-four percent of the administrators surveyed thought this would increase slightly to as much as 30 percent. It is possible to understand why administrators view the local future energy situation somewhat more optimistically, if they believe the local price increase will be relatively low and past problems of supply will disappear.

Administrators maintained their belief in local fortitude to withstand energy related problems that may arise as a result of mandatory conservation. In answer to question nineteen, 49 percent of administrators returning questionnaires thought their locality would fair equally with the rest of the nation, and 24 percent believed they would fair better than the rest of the nation if "stringent mandatory energy conservation measures" were applied in the future.

In recognizing a serious national energy problem, responding city administrators correctly identified the

basic cause, depletion of natural resources. However, most administrators were unable to follow the consequence of this event very far into the future, as indicated by their expectation of price leveling and return to ample supplies of energy. In fact, 65 percent of administrators reported their expectation that national supplies of petroleum and natural gas would be exhausted in eleven to fifty years. Only 8 percent believed some would be left after fifty years. It may be speculated that these administrators expected some other energy resource, possibly coal, to fill-in the demand left by the depleted petroleum and natural gas supply. Possibly they believed that coal will gradually be introduced, thus smoothing out past sharp energy price fluctuations, and will ultimately be the primary energy resource for all types or forms of fuel. Or, perhaps they felt that coal would be used in conjunction with other energy sources like nuclear and solar energy. According to the answers selected for expected duration of domestic coal reserves, 77 percent of administrators believed national coal reserves will last at least fifty years and possibly over one hundred years (56 percent believed coal supplies will last over one hundred years). However, this line of thought, that of primary resource substitution, was not followed by the majority of administrators surveyed. City officials were asked their expectation of the fuel mix to be in use within

the next twenty-one years. Sixty-three percent of responding administrators believed petroleum would supply between 20 and 100 percent of national energy needs. Within this majority, 31 percent, thought 21 to 30 percent of national energy demand would be met by this source. Coal was thought by 57 percent to supply 11 to 40 percent of national needs. Within this group, 29 percent of administrators thought coal would supply only 11 to 20 percent of national energy needs. Thus, no slow change-over was indicated. Also, most administrators thought substantial percentages of national energy needs would still be met by petroleum and natural gas in the year 2050. Thirty-two percent of city officials believed 21 to 100 percent of national energy requirements will still be supplied by petroleum. Another 25 percent thought petroleum would supply 11 to 20 percent of national demand. Coal was expected by 69 percent to supply 11 to 40 percent of national need. Within this majority, 32 percent of administrators expected coal to supply only 11 to 20 percent.

It may be that administrators were expecting fossil fuel reserves in other countries to provide the United States with all or most of the petroleum and natural gas it requires for, at least, the next seventy years. Apparently the main problem, as seen by administrators, is establishing an acceptable world price (recall the previously noted

administrator expected rise in energy cost) and stable supply lines. Also, it may be that city administrators believed the nation will, in the near future, experience massive efforts at energy conservation, thus greatly reducing consumption and extending existing energy reserves. However, when asked if commercial and industrial consumers in their locality would voluntarily "initiate significant energy conservation measures that may adversely affect business," 78 percent answered negatively. Seventy-nine percent believed residential consumers would not voluntarily "initiate significant energy conservation measures that would cause moderate disruption of usual activities." In fact, only 44 percent of responding administrators were in favor of "stringent standby programs of energy conservation" should fuel shortages materialize or become serious. Sixty-four percent of those responding also rejected decontrolling fuel prices as a means to promote conservation. It would seem that city administrators do not place much faith in consumers to conserve energy, at least if adverse consequences to usual activities are involved. It appears that administrators may be either unwilling to weather political disfavor by mandating conservation, could be unconvinced of the utility of energy conservation, or may have little faith in government, at any level, to implement conservation.

When asked in an open-ended question how they would spend federal funds made available to local governments for

energy conservation, most city officials opted for either a "grant or loan program to adequately insulate residential and/or commercial buildings" (31 percent), or a "grant or loan program for installation of solar or other alternative energy supplies in residential and/or commercial buildings" (29 percent). Yet, when asked "what effect will the recently enacted National Energy Act have on the local energy situation," 46 percent expected either no effect (23 percent) or a worsening effect (24 percent). Thirty-eight percent acknowledged that they were unfamiliar with the act. In essence, 84 percent of administrators responding were unfamiliar, ambivalent, or inimical to an energy act that provides economic incentives for just those programs, building insulation and alternative energy systems, that the administrators preferred. Possible explanations are that the administrators found flaws in the legislation that makes it unworkable or unadequate in their case; or are, in fact, unknowledgable about the act but are unwilling to admit it; or simply believe conservation of any sort, even their own preferred method, will have no significant impact on energy consumption.

The foregoing discussion suggests the possibility that administrators lack sufficient, dependable, in-depth information to formulate a realistic appraisal of the energy situation. It may also suggest a reluctance by local administrators to rely on federal efforts to handle the energy situation. The intermix of politics, economics, law,

geography, land use patterns, consumer lifestyle and attitude, and a multitude of other variables create an energy problem that is probably beyond the ability of the singular city administration to handle. This is especially true in light of the fact that a local energy problem is closely tied to the national and international energy situation, in that many states have no petroleum of their own and must import across state boundaries, and that the nation imports over half of its petroleum. It would be reasonable, therefore, to expect that a practical solution would encompass the coordinated efforts of government at all levels. Local leaders would be able to draw on the accumulated data and technical expertise available at the federal level, and federal officials could use the intimate contact with local conditions afforded through city and state administrators.

Unfortunately, 72 percent of responding city administrators reported little or no communication with the federal government regarding "energy requirements, local energy problems, energy conservation plans, etc." Seventy-eight percent reported little to moderate communication with state government relative to energy matters.[1] In response to question twenty-three, a majority of city administrators,

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[1]A fifty state telephone survey of state energy offices also indicated less than extensive communication between vertical levels of government. See: J. Blue and J. Lietze, *An Investigation of State Energy Data Sources* (Oak Ridge, Tenn.: Oak Ridge National Laboratory, 1979).

66 percent, stated a preference for inclusion in the planning process for the development of mandatory conservation measures. Fifteen percent of city leaders would prefer to develop programs either alone or in conjunction with just the state government (8 percent), or just the federal government (2 percent). Seventy percent would choose to be responsible either solely (8 percent) or with other levels of government in the implementation and enforcement of conservation programs. City administrators evidently felt there was little progress in energy planning at all levels of government. This is indicated in the response to question twenty-five. Seventeen percent of city officials reported that no conservation plans have been implemented in their area. Seventy-five percent said that there had been no or minimal reduction in energy consumption as a result of federal, state, or local government energy conservation programs.

Summary of National Analysis

The majority of administrators responding to the survey indicated the following beliefs:

1. A serious national energy problem exists that will cause substantial but not serious disruption of usual activities. The government and industry is responsible for this situation as a result of poor planning and/or inappropriate regulation.

2. Although administrators believe in a serious national energy problem, significantly fewer believe as serious a problem will develop in their own locality. Administrators also believe that their own locality will fare at least as well as the rest of the nation under mandatory conservation measures.

3. Energy prices are expected to stabalize within ten to fifteen years at an expense, in terms of total income, not much higher than that currently paid. However, domestic petroleum and natural gas reserves are expected to be substantially depleted within this time frame, and coal is not expected to be the primary replacement resource.

4. Administrators do not expect residential, commercial, or industrial consumers to voluntarily conserve energy. Nor do administrators believe that government programs of energy conservation have been or, probably, will be successful. However, administrators are not in favor of mandatory energy conservation programs.

5. Administrators reported little or no communication with the federal government regarding energy matters. Communication with state government was only slightly better with little to moderate communication reported. However, administrators would prefer to be included in both the development and the implementation of energy plans.

Comparison of Administrator and Public Opinion

As pointed out in Chapter I, many city administrators have accepted the responsibility of meeting both the needs of their constituencies and community needs as perceived by the public. In the area of energy policy, these two responsibilities may conflict. American consumers have traditionally had access to seemingly inexhaustable supplies of apparently cheap energy.[2] Government and utilities promoted national electrification and the development of centralized systems. The massive and, at first, unregulated growth of the petroleum and natural gas industries, the national electrification program, the extensive industrialization of the nation, the spread of individual oriented transportation systems and many other factors all combined indirectly to promote inefficiency and general waste of energy. For administrators, leadership under the "old" habits of excess and waste will eventually result in the economic and potential social decline of their communities. Enlightened administrators acknowledge the overriding need to conserve energy and develop alternatives now for the time when traditionally used fossil fuels will essentially be

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[2]For an analysis of the real historic costs of energy, see: Battelle Pacific Northwest Laboratories, *An Analysis of Federal Incentives Used to Stimulate Energy Production*, unpublished working paper.

exhausted. Working with a public that is aware of the deteriorating energy situation to break old habits and accept minor inconveniences to prepare for the future would be a difficult undertaking. Administrators attempting to lead with the realization that the "old ways" are no longer tenable, but with the knowledge that their constituency is not yet aware of the reality of energy resource depletion, are in a very sensitive political situation. Unfortunately, enlightenment is a difficult state to attain, not only for the average citizen but also for the administrator. This is evident in the survey results and is well illustrated by the confusion of "learned" viewpoints quoted in Chapter I.

The comprehensive planning effort typically begins with "tooling-up" studies which are an examination of the planning environment. If the client is unaware of an area that requires a planning effort, the planner may perceive a need to educate the client. If, during the tooling-up studies, it is discovered that client or local leadership is under-educated then it is the planner's responsibility to correct that condition before the implementation process begins. In the interest of efficiency and ultimate successful implementation of a plan, the degree and manner of variation in perception and attitude between leadership and the general public should be known. Acceptance by the consumer of any energy program is also highly important to successful

implementation. If it is found that leadership is in relatively close agreement with the general public in both knowledge of an area requiring a planning effort and in viewpoint regarding goals, objectives, and possible requirements of the implementation process, then a single program of instruction may be undertaken. If widely disparate views are encountered and/or varied levels of education or misinformation exist, then an appropriate number of individualized programs to bring each party to the same level of understanding should be developed. A common understanding among all actors in a planning endeavor can be one of the most important ingredients for success.

The city administrator survey attempted to determine the degree of effect the energy situation has had at the local level, including how the administrator perceived the impact on the "average" local consumer. Comparison of this effect with the actual effect reported by consumers may provide more data describing the administrator's ability to judge the impact of energy shortages and increased cost on society and the individual. If historically accurate in his estimation, the administrator may have the opportunity to "fine tune" a generalized energy program to more closely fit the requirements of the local situation. If the administrator's and the consumer's perception of effect is substantially at odds, the administrator may perceive the

need to reappraise the situation and develop or change a program to effectively handle the problem. Finally, by comparing administrator opinion with opinion gained through surveys of various sectors of the public, it may be possible to determine whether local level leadership is responding primarily to a single social or economic strata or other factions of the general public.

Since 1973, there have been numerous surveys to determine public opinion regarding various aspects of the energy situation. Many surveys were national in scope, others attempted state, regional, or area coverage. The Solar Energy Research Institute (SERI) has recently published what appears to be the first compilation of a large number of these surveys.[3] Appendix C lists the surveys compiled and analyzed by SERI. The SERI study offers a convenient opportunity to compare general public opinion with the opinion of city administrators, as determined in this survey.

In its analysis of national public sentiment, SERI found that about 75 percent of the public believed the national energy situation to be serious.[4] This is in fairly

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[3]Barbara C. Farhar et al., *Public Opinion About Energy: A Literature Review* (Golden, Col.: Solar Energy Research Institute, June, 1979).

[4]Ibid., p. 57; "Serious" actually included the two categories "somewhat serious" and "very serious," which are used in a number of surveys. SERI believe the combined terms were roughly comparable to the singular category "serious," used in other surveys.

close agreement with the finding of the survey where 69 percent of administrators believed the situation to be serious. In those surveys where the option of selecting "very serious" was available, about 40 percent of the public chose this answer. However, only 33 percent of administrators selected the most serious of consequences in question sixteen (serious disruption of usual activities and lasting hardships). This may reflect the sentiments of that smaller portion of the public who view the situation as very serious. Interestingly, the SERI publication authors noted that while the majority of the public viewed the situation as serious, the public did not feel that an "energy crisis" exists.[5] This step back from accepting the ultimate suggestion of a much changed future may be paralleled in the city administrator belief in the brevity of the energy situation and eventual return to current life styles. It almost appears that majority leadership opinion follows majority public opinion, but with slightly less strength. It should be noted that the percentage of those in the general public holding the most pessimistic opinion has generally increased since 1973. This is illustrated in Figure 1. If the opinion of elected officials, or other administrators sensitive to political implication, does reflect that of their constituency, then

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[5]Farhar, p. 57.

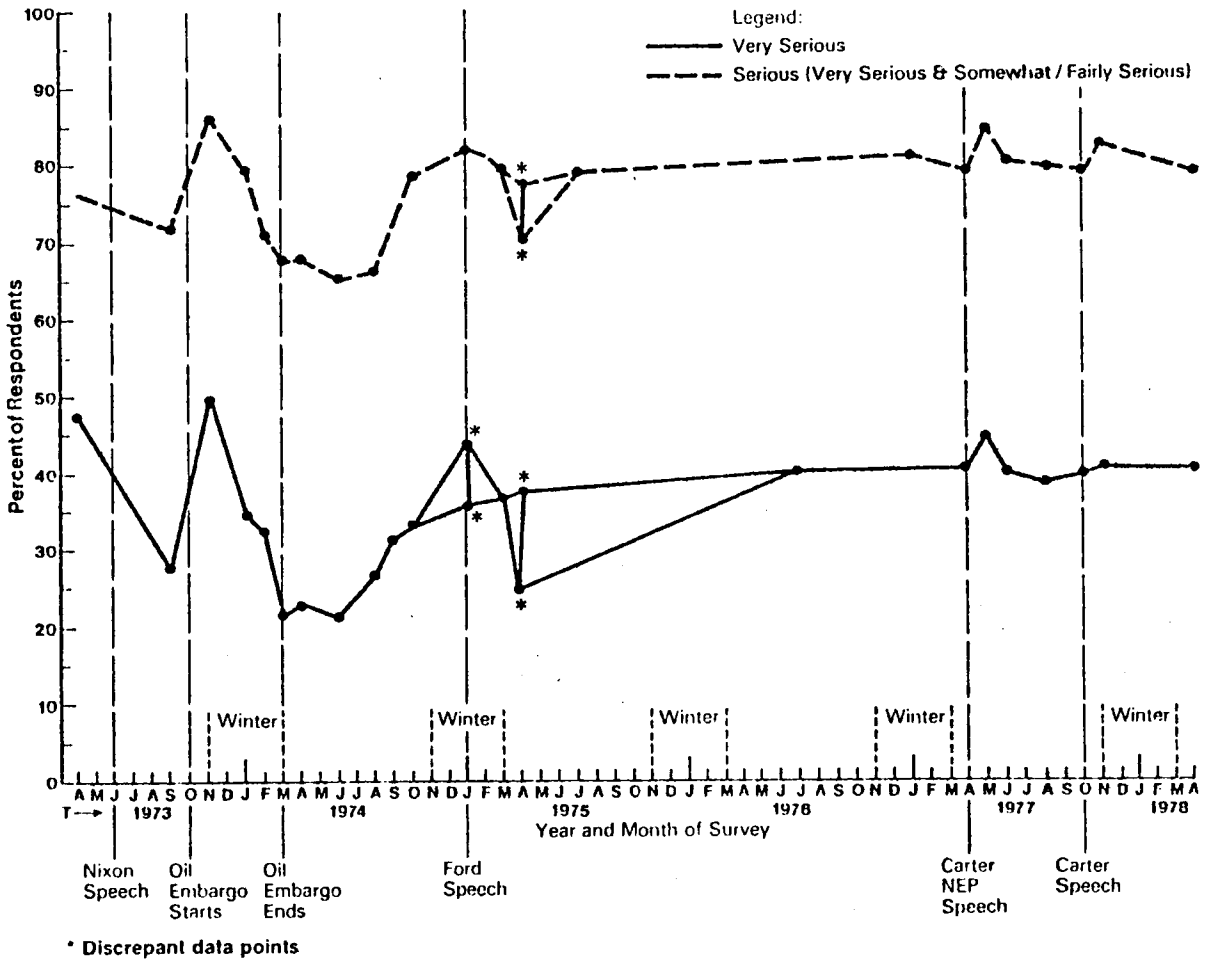

Figure 1. Perceived seriousness of the energy crisis.

Source: Farhar, Barbara C. et al. *Public Opinion about Energy: A Literature Review*. Golden, Col.: Solar Energy Research Institute, June, 1979.

a time lag necessary for the detection of public opinion would be necessary and perhaps operational in this instance. If it is accepted that administrators are not receiving a great deal of information from higher levels of government, as this survey indicates, then local leadership may in fact be following the public's lead rather than directing public awareness. If local leadership has been attempting to influence public opinion, then those seeking to convince the consumer of a real resource depeltion have not been overwhelmingly successful. In 1978, 45 percent of the public believed that the then current and future energy shortages were contrived.[6] This does not compare with the 29 percent of administrators who also believe shortages to be contrived. It is debatable whether the year or less time difference between collection of this survey data and the collection of data in those surveys used by SERI would account for the large difference, assuming administrator opinion did parallel public opinion. However, it should be noted that the number of those believing in a real energy problem has steadily risen since the 1973-1974 Arab oil

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[6]Farhar, p. 65, Table 3-3; CBS Evening News reported that a survey conducted in October-November of 1979 indicated approximately 30 percent of those polled believed the energy problem to be contrived. Attempts to gain documentation of this survey have not been successful.

embargo. Figure 2 illustrates this fact.[7] Conversely, the percentage of disbelievers is dropping.

The public survey data indicated that the oil industry and the federal government, including both the Congress and the President, are held responsible by the majority of the public for the energy situation.[8] Differences in the wording of various surveys make it difficult to ascertain the extent to which each of the parties are thought guilty. However, this fact is in general agreement with the finding of this survey where a majority of city administrators also hold the oil industry and government responsible. In addition, the public surveys show belief that American consumers are at least partially responsible through wasteful habits. There may be some connection between this last suggestion, and the indication by city administrators that the consumer would not voluntarily conserve. According to the SERI analysis of public attitude, there is more sentiment in favor of energy production increase rather than for demand decrease.[9] There was no question in the city administrator survey specifically asking for this preference. However, in answer to the question seeking to determine the city administrator's preferred option(s) to eliminate or greatly reduce the

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[7]Farhar, p. 65.

[8]Ibid., p. 2.

[9]Ibid., p. 111.

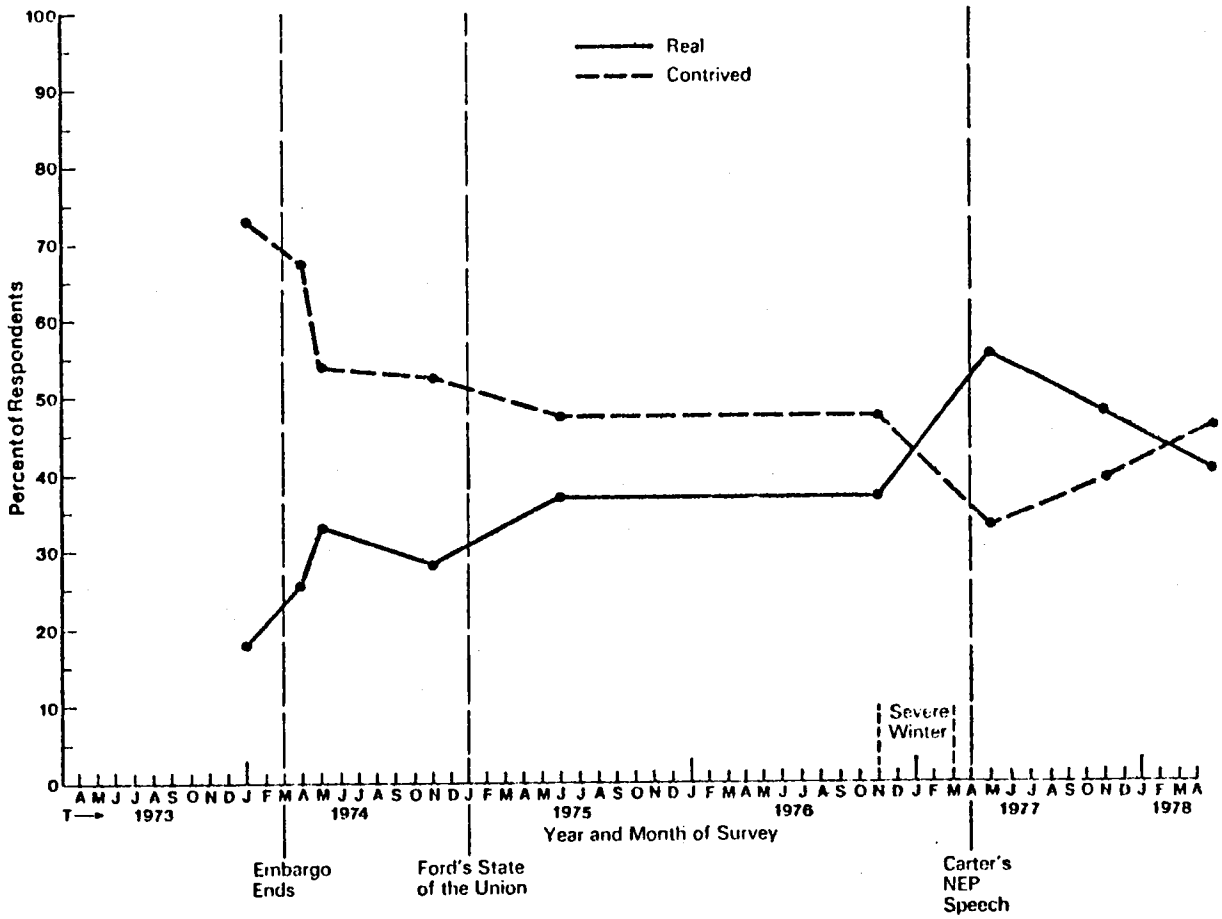

Figure 2. Proportion of general public believing the oil shortage is real vs. contrived.

Source: Farhar, Barbara C. et al. *Public Opinion about Energy: A Literature Review.* Golden, Col.: Solar Energy Research Institute, June, 1979.

threat of shortages, there was no majority preferred method. Thirty-six percent of responding officials believed decontrol of fuel prices and use of increased revenues to develop potential oil fields, or for exploration, would be a viable course of action. Thirty-three percent thought mandatory federal energy conservation programs would be effective. It should be noted that the same administrators could have chosen both of these answers.

Where the majority of city administrators rejected legislation and enforcement of energy conservation programs as a means of reducing energy consumption, public support for conservation has been growing. According to SERI, 48 percent of those surveyed in 1975 were in favor of conservation. This rose to 66 percent in 1977 surveys, with the majority agreeing that conservation is an important part of an energy program. Eighty-five to 95 percent of consumers questioned in a series of surveys stated that they had tried to conserve energy.[10] Surveys in 1974 and 1976 found that approximately 75 percent of consumers felt personal efforts toward conservation could have at least a "fair amount" of impact on energy consumption.[11] Seventy-five percent of surveyed administrators reported that those conservation programs attempted generally had no or

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[10]Farhar, p. 117.

[11]Ibid., p. 115.

insignificant effect. Although data regarding the public's perception of the actual impact of personal conservation efforts and the willingness of their neighbors to engage in conservation is limited, from scattered area surveys it appears that the public also agrees that past conservation programs have had minimal effect.

An explanation for these results may be that the majority of administrators who believed voluntary conservation would be unworkable were reflecting the truth of the situation, while the public was speaking to what should be done. In those public surveys where respondents were asked about the acceptability of specific conservation actions, the majority rejected any measure that would adversely affect their pocketbook or dampen their lifestyle. In a series of surveys, 73 percent of the public opposed peak load or time of day pricing.[12] In other surveys, 76 to 88 percent of respondents thought it wrong to control gasoline consumption by raising prices.[13] Note that almost 64 percent of city administrators also rejected this action. The public seems most responsive to actions that require minimal effort on their own part (e.g. turning off lights in unused rooms) or required conservation by others (e.g. legislation to improve gas mileage in new cars). Although many consumers report engaging in

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[12]Farhar, p. 137.

[13]Ibid., p. 117.

conservation, those activities preferred are those that are least effective.

A sizable minority of administrators, 44 percent, felt stringent stand-by programs of energy conservation would be effective in reducing the threat of energy shortages. Rationing of fuels may be considered a stringent conservation measure. Seventy percent of the public thought gasoline rationing would be an effective conservation device, although rationing was generally opposed.[14] Fifty-five percent of the public preferred rationing to gasoline price increases, and 71 percent (in one 1973 survey) favored a stand-by rationing plan.[15]

A number of surveys have suggested that the majority of the public is misinformed regarding the most effective ways to achieve energy conservation. For example, 54 percent believed it was better to leave a light on rather than turn it off if one were planning to return to the room.[16] The public also appeared confused or uninformed regarding general energy conditions, sources of supply, economics, and energy jargon. A prime example of this is the fact that a large minority, 33 percent, were not aware that the United States must import petroleum.[17] Also, a number of surveys described "deregulation of prices" as a way of increasing

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[14]Farhar, pp. 128-129

[15]Ibid.

[16]Ibid., p. 132.

[17]Ibid., p. 169.

energy supplies but did not mention that consumers must then pay higher prices. A "fairly large margin" favored deregulation, until a recent (1977) survey mentioned accompanying price increases.[18] A majority then opposed deregulation. Various surveys gave conflicting reports as to which source of information the public believed most reliable. In at least one study a majority of the public believed government officials were not giving clear directions to help consumers make decisions about energy use.[19] Interestingly, when asked to select the one program of energy conservation or energy resource development they would use federal funds for, only 13 percent of city administrators responding selected a campaign to inform consumers of energy saving techniques.[20] Thus, both the public and the local administrator have demonstrated a real lack of knowledge regarding the energy situation, since local administrators failed to indicate an awareness of the lack of knowledge regarding energy use on the part of the consumer. Indeed, the city administrator may not even be aware of the extent of his missing knowledge, or the need to educate his constituency to understand and accept necessary actions as required by the energy situation.

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[18]Farhar, p. 171.

[19]Ibid., p. 116.

[20]One hundred forty-nine administrators correctly followed instructions for this question and selected only one answer. Of the remaining thirty-four respondents who chose to answer this question by selecting two or more answers, 47 percent selected an information campaign.

The consuming public and city administrators do apparently diverge in opinion relative to some important aspects of the future energy situation. It has been seen that administrators do not perceive rising costs of energy to be a problem in a decade or two. City administrators also see a continued heavy reliance on petroleum past the year 2000, even though they believe domestic reserves will be essentially exhausted. The consuming public, however, with a majority of 79 percent, expects serious energy shortages at the end of ten years.[21] Sixty-nine percent expected shortages to continue through the year 2000.[22] The public seemed much more inclined to believe solar energy a reasonable option for the future. In one survey, about 40 percent of respondents said they would consider buying solar energy devices even if the monthly cost were greater than alternatives.[23] Twenty-nine percent of responding city administrators would give first priority in the use of federally furnished funds for grant or loan programs for the installation of solar or other alternative energy supplies in local buildings. However, 81 percent of city officials thought solar energy would provide only 1 to 10 percent of national energy needs in the year 2000. Eighty

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[21]Farhar, p. 90.

[22]Ibid.

[23]Ibid., p. 160.

percent thought from 1 to 20 percent would be supplied in 2050. Majorities of the public in a number of surveys expect nuclear energy to assume a "major role" in future electricity production, although increasing concern over environmental hazards may serve to lessen this majority in the future.[24] Seventy-seven percent of responding administrators expect nuclear power to provide up to 20 percent of national energy needs in the year 2000. Eighty percent believe nuclear energy will meet from 1 to 30 percent of national demand in 2050.

A Summary of the Comparison between the General Public Surveys and the City Administrator Survey

Analysis of the city administrator survey suggests that certain general perceptions and attitudes toward the energy situation are held in common by many administrators. The following observations reflect the majority outlook as indicated in the survey:

1. Most city administrators acknowledged that there is a problem with energy supply and price. This problem is a result of government and industry failure to adequately plan and regulate and, although serious, it is not insurmountable. Supplies will be tight for the next decade or more and prices will rise, however the general impact on the american lifestyle will not be harsh or longlasting.

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[24]Farhar, p. 196.

2. The perceptions of city administrators regarding the seriousness of the energy situation essentially paralled that of the general public, however the public believes the energy problem will last considerably longer. City administrators believed domestic petroleum and natural gas reserves will be exhausted relatively soon but that the nation will continue to use these traditional fuels past the time of depletion. The public expects nuclear energy and renewable resources to become important sources of energy. Also, a much larger portion of the public believes the energy situation is contrived rather than a result of real resource depletion.

3. Most city administrators did not believe voluntary conservation programs are likely to reduce energy consumption significantly. Most surveyed city officials did not support mandated conservation programs and were not convinced of their effectiveness. The consuming public believes conservation could be an effective measure in reducing energy consumption. However, most consumers appeared unwilling to conserve if such actions adversely affected their lifestyle.

4. Both administrators and the public appeared inadequately informed of many facts concerning the national energy situation. Some of the opinions shared by the majority of the public and city administrators were based on inaccurate information (e.g. remaining domestic and world reserves;

future energy prices; provisions of existing federal energy programs). Communication between levels of government and between government and the public regarding energy information and methods of dealing with the energy situation appeared deficient.

5. Both the public and city administrators viewed government attempts to deal with the energy situation to date as inadequate.

Regional Analysis

Introduction

The climatic conditions in many cities within each of the four census regions have many aspects in common. Climatic conditions are an important determinate of energy consumption. Other economic and demographic variables are also geographically linked, with similarities existing between many cities within a census region. These varibles describe the way energy is used and, ultimately, energy consumption.

In this section the survey was analyzed with the intent of determining variation in the responses of city administrators depending on the census region in which they lived.

Analysis of Data

Survey results were subjected to a chi-square test for an indication of statistically significant variation in answers by census region. The statistical tests indicated

a significant probability that there were differences in the answers based on the census region in which the respondent lived. Table 6 lists those answers varying from chance variation with a 95 percent or higher probability. Questions with probability of variation at the 90 percent level are included.

The regional variation seen in the answers to three questions, historic availability of gasoline supply, type of secondary heat system installed, and availability of electricity supply, suggest an immediate relationship to geographically dependent conditions. The northeast census region produces little petroleum and natural gas. It has a large population and harsh winters. The west census region includes high population areas, areas of extreme temperature variation (either requiring heat during cold winters or airconditioning during hot summers), and imperative reliance on the automobile for normal daily activities.[25] The demand for fuel in these areas is high and requires substantial imports from other states. Since the 1973-1974 oil embargo, these two census regions have had the greatest difficulties in obtaining enough fuel to meet area demand. This historic supply problem was reflected in survey answers with only 17 percent of city administrators in the west census region

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[25]Note that California has very high representation in the west census region of this survey.

TABLE 6

STATISTICALLY SIGNIFICANT VARIATION
IN ANSWERS BY REGION

Question		Probability
1.	Commercial consumer voluntary conservation	97.8
2.	Historic electricity supply	93.6
3.	Historic gasoline supply	99.9
4.	Selection of voluntary conservation program as a likely means to reduce energy shortages	94.0
5.	Selection of federally mandated energy conservation as a likely means to reduce energy shortages	91.0
6.	Selection of state or local mandated energy conservation measures as a likely means to reduce energy shortages	93.1
7.	Perception of the seriousness of the local energy situation	97.9
8.	Comparison of local area to nation if mandatory conservation measures are applied	96.8
9.	Degree of communication between local and state government	97.8
10.	Installation of auxiliary heat supply in local buildings	90.6

reporting always having ample supplies of gasoline and 35 percent reporting shortages with substantial disruption of usual activities. This compares to only 7 and 6 percent of administrators in the northcentral and south regions, respectively, reporting the same degree of consequences as a result of shortages. Six percent of city officials in the west census region reported shortages sufficient to cause lasting hardships and permanent changes in usual activities. No other region reported shortages sufficient to cause this most serious condition. A minority of only 31 percent of administrators in the northeast region reported always having ample supplies. Table 7 compares the response of city administrators by region regarding their perception of the past fuel supply situation for various fuel types. Thirty-nine percent of west census region administrators reported shortages in electric fuel supplies compared to only 14 to 19 percent in any of the other regions.

The regionally dependent seasonal temperature variation and availability of insolation may have been responsible for the regional difference in the administrators reported election to install a secondary means of heating, and in the type of secondary system selected.[26] The northeast

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[26]The total percentage of administrators indicating an increased rate of installation of auxillary systems in each region was about the same. Regional variation occurs in the type of secondary system selected.

TABLE 7

ADMINISTRATOR REPORTED HISTORIC AVAILABILITY OF FUELS

	Region*																			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
	(%) Electricity				(%) Fuel Oil				(%) Natural Gas				(%) Coal				(%) Gasoline			
Always an ample supply	86	81	82	61	60	64	61	66	59	57	62	69	85	86	87	100	31	52	48	18
Shortages with minor disruption of usual activities	14	12	16	33	38	33	38	31	35	28	37	22	11	6	11	0	55	40	45	41
Shortages with periodic substantial disruption of usual activities	0	7	2	6	3	2	2	3	5	12	7	9	0	6	0	00	14	7	6	35
Lasting hardships and/or permanent changes in usual activities	0	0	0	0	0	0	0	0	0	2	0	0	4	3	0	0	0	0	0	6

*Percentages may not total to one hundred due to independent rounding.

region of the nation receives the lowest average and total annual insolation. However, deciduous forest abound. Fifty-five percent of northeastern administrators reported that wood burning devices were the most often installed auxillary heating equipment. Forty-three percent of officials in the northcentral region, another area of many forests, also reported the use of wood. In the west census region, an area of high annual insolation, 33 percent of administrators reported the installation of solar equipment. This compares to only 7 to 10 percent in the other regions. In addition, state governments in California, New Mexico, and Arizona, have been leaders in legislation promoting the use of solar energy.[27] Fewer south census region administrators reported the installation of secondary heating equipment in all energy type categories. This may relate to the generally mild winters in much of the southern part of the nation. It could also be somewhat dependent on the perception of south census region leaders that the energy situation is not all that serious.

Statistically significant variation appeared in the answers to the question regarding the seriousness of the energy situation. Administrators perceived the seriousness

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[27]For a list of legislation in these and other states, see: J. Blue et al., *Buildings Energy Use Data Book*, Edition 2 (Oak Ridge, Tenn.: Oak Ridge National Laboratory, 1979).

of the energy situation differently, according to the region of the country in which they lived. A small minority, 2 to 10 percent, of all regional administrators believed no significant energy problem truly exists. This small percentage is generally in agreement with the percentage of administrators who answered questions three and fourteen indicating no supply problems, and belief in an energy industry ploy to increase energy prices for the sole purpose of increasing profits. The majority of city administrators selected the most pessimistic of outlooks regarding the seriousness of the energy situation. Regional variation occurred in the size of the majority selecting this answer, and the distribution of the remaining minority among other possible answers. Eighty-three percent of northeast region administrators, 74 percent of western leaders, 69 percent of northcentral officials, and 59 percent of southern administrators chose the most pessimistic answer. This same order by region in the strength of majority opinion appeared in answer to question thirteen regarding perception of the local energy situation. Seventy-one percent of northeast region officials, 53 percent of west region, 44 percent for the northcentral, and 34 percent for the south census region selected the worst possible outlook. It should be noted that a majority of southern region leaders opted for the next to the most pessimistic answer (54 percent). The

northcentral region was fairly evenly split between the most severe of circumstances and the more moderate case, about 39 percent for each response.

As described in the Methodology chapter (Chapter II), certain questions were designed for an indication of the consistancy in the way administrators answered questions. Question one, question two, and question ten included similar elements, each seeking to detect administrator attitude toward voluntary conservation. It should be pointed out that these questions are not strictly comparable in language or the specific information asked for, and can therefore only be used to suggest consistancy in attitude.[28] Within each question, however, a statistically valid difference in answers by region does exist. In question ten, the order seen above was again generally followed with the northeast and west regions grouped against the northcentral and south regions. The strongest negative belief in the possible success of voluntary conservation was seen in the west census region with 79 percent of administrators rejecting

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[28]Of 179 administrators electing to answer question ten by marking an answer, 117 or 65 percent did not select answer two as a method to reduce the threat of shortages. Explicit directions were given with this question to select more than one answer if necessary. One hundred seventeen administrators did mark two or more answers, indicating that they had correctly followed directions and that they had rejected this alternative as viable. The above percentages are based on the number of correctly responding administrators, or 117 observations.

answer two. This was closely followed by the northeast census region with 71 percent of administrators answering in the same way, then by the south and northcentral regions with 63 and 51 percent, respectively. The pattern was not followed in regional response to question two. The west, northcentral, and northeast census regions all had very high majorities (88, 83, and 81 percent, respectively) rejecting the likelihood that commercial and industrial consumers would voluntarily conserve energy. The south census region demonstrated a significantly lower percentage of administrators rejecting this possibility. Although, a majority of officials, 64 percent, still did not anticipate voluntary conservation.

Significant regional variation was again indicated in the selection of answers five and six to question ten. The majority of administrators did not believe that programs of energy conservation legislated and enforced by the federal government would be effective in reducing the threat of shortages. However, the largest minority of administrators (45 percent) believing that federal conservation programs would be effective were located in the northeast, and the west (41 percent) census regions. The south (29 percent), and the northcentral (22 percent) census region officials had less faith. Note that the administrators from the south and northcentral regions were previously seen to

have more faith in voluntary programs. The majority of administrators were also against state or local legislated and enforced conservation programs. The largest minority, 43 percent, in favor of state or local programs was found in the northeast region, followed by a 37 percent minority in the south census region. The west and northcentral regions trailed with 24 and 20 percent, respectively.

The regional variation seen in the answers to the last question (answer six) apparently does not contribute to the pattern that may have been developing in the previous questions. That is, the outlook of administrations in two census regions with the greatest problem obtaining sufficient fuel supplies historically, the west and northeast census regions, lining up against the opinion of officials from the northcentral and south regions. A possible explaination of this discrepancy, that of the larger percentage of northeast and southern administrators against the much lower percentages of the west and northcentral administrators, may lie in the degree of control that state or local legislation and enforcement may provide over federal mandate and control. If the south census region administrators do not believe the energy situation to be as serious as do northeast or west region officials, and there is greater faith in voluntary conservation, then local control may give administrators greater flexability to not dampen commerce or disrupt normal

activities that may occur under federal mandates. Northeast administrators may follow the same reasoning by believing local control would provide greater ability to alleviate especially distressing local problems that would not be dealt with under generalized federal programs.

Some support for this conjecture may be seen in the regional variation in the answers given to questions twenty and twenty-one. Statistically significant regional variation was indicated in the administrator response to question twenty. This question attempted to investigate the degree of communication between local and state governments. City administrators in the south census region reported the highest percentage of moderate and extensive communication, followed by the northeast, northcentral, and west regions. This is described in Table 8. All regions reported poorer communication with the federal government. Possibly those regions with better state-local communication expected more benefit from better vertically coordinated programs as a result of more local input.

The wish by administrators to have control over energy programs having local impact is demonstrated in the response to question twenty-two. In this question, administrators were asked who should be responsible for implementation and enforcement of conservation programs if mandatory conservation measures were required. Although no clear majority was

TABLE 8

EXTENT OF STATE-LOCAL GOVERNMENT COMMUNICATION

Region	No Answer •	No Communication %	Little Communication %	Moderate Communication %	Extensive Communication %	Row Total %
Northeast	0	4.76	47.62	33.33	14.29	23.86
North Central	3	22.50	42.50	25.00	10.00	22.73
South	3	6.67	30.00	48.33	15.00	34.09
West	0	2.94	55.88	29.41	11.76	19.32
Column Total %		9.09	42.05	35.80	13.07	100.00

indicated for a specific answer in any region, a majority of city administrators in each region favored inclusion of local government in the implementation and enforcement task (see Table 9).[29] The largest group of administrators in each region indicated a preference for coordinated program development by all levels of government, local, state, and federal (question twenty-three). As seen in Table 10, the largest number of administrators in the northeast and south census regions would also prefer all levels of government to be included in the development of mandatory conservation programs. Majorities in the northcentral and west census regions would include all levels of government in the planning process. It should be noted, however, that substantial minorities in each region would exclude local government from participation in the development of mandatory conservation programs. Thirty-six percent of northeast, 28 percent of the northcentral, 33 percent of the south, and 35 percent of west census administrators would prefer federal, state, or state-federal development of conservation programs.

Significant regional variation was also indicated in the answers to question nineteen. A majority of southern and northcentral region administrators, 55 and 53 percent

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[29]A majority is indicated in this case by adding together the categories: "local," "state and local," "federal-state-local," and "federal-local."

TABLE 9

RESPONDENTS DELEGATING THE RESPONSIBILITY OF IMPLEMENTING CONSERVATION PROGRAMS

	Federal Government %	State Government %	Local Government %	State and Local %	Federal, State, and Local %	Federal and Local %	State and Federal %	Other %	Row Total %
Northeast	16.67	2.38	9.52	19.05	28.57	0.00	21.43	2.38	23.73
North Central	5.00	5.00	5.00	25.00	47.50	10.00	2.50	0.00	22.60
South	8.20	9.84	9.84	13.11	44.26	1.64	11.48	1.64	34.46
West	8.82	11.76	5.88	11.76	44.12	5.88	11.76	0.00	19.21
Column Total %	9.60	7.34	7.91	16.95	41.24	3.95	11.86	1.13	100.00

TABLE 10

RESPONDENTS DELEGATING THE RESPONSIBILITY OF DEVELOPING CONSERVATION PROGRAMS

Region	Federal Government %	State Government %	Local Government %	State and Federal %	Local and State %	Local and Federal %	Local, State, and Federal %	Other %	Row Total %
Northeast	16.67	2.38	4.76	16.67	11.90	2.38	42.86	2.38	23.73
North Central	10.00	7.50	5.00	10.00	7.50	2.50	57.50	0.00	22.60
South	11.48	6.56	6.56	14.75	9.84	0.00	49.18	1.64	34.46
West	14.71	2.94	2.94	17.65	2.94	5.88	52.94	0.00	19.21
Column Total %	12.99	5.08	5.08	14.69	8.47	2.26	50.28	1.13	100.00

respectively, believed that their local area would fair about equally well with the rest of the nation, if mandatory stringent conservation measures were applied. In the south census region approximately twice as many of the remaining administrators (31 percent) believed conditions would be less disruptive as did those who thought mandatory measures would be more disruptive (15 percent). In the northcentral region, the remaining administrators were about evenly split between less disruptive (25 percent) and more disruptive (20 percent). There was no majority agreement among administrators in either the northeast or west census region. The largest group of administrators in the northeast region believed local consequences would be worse (43 percent). An almost equally large group believed that their local area would fare about equally well with the rest of the nation (40 percent). In the west census region the largest group of administrators believed resultant hardships would be equal to those experienced by the rest of the nation (44 percent), however, an almost equally large percentage of administrators thought local consequences would be worse (38 percent). The more optimistic attitude of south and northcentral region administrators may reflect their previously noted more optimistic attitude toward the expected duration and severity of the energy shortages. Or, their attitude could be a result of past experience,

that of having fewer supply problems than other sections of the nation. The largest group of administrators in the northeast and west census regions that expect opposite local consequences may seem more puzzeling since both regions report histories of fuel shortages. Administrators in both regions also seemed to have a more pessimistic attitude, in general, than city officials from other regions. The possibility exists that west and northeast census region administrators believed that they are already experiencing the effects of de facto conservation, or have undergone changes as a result of past shortages and that a national program of conservation would add no more burden. In that the other regions would be experiencing the effects of conservation for the first time, the resultant consequences would be comparatively less. However, the results to question twenty-five suggest that such past conservation program impact may not have been an explanatory variable in all cases. Although the larger percentage of northeast and west census region administrators reported "some small, but not significant" reduction in energy consumption, this grouping does not continue if the percentage of administrators in each region reporting any reduction of consumption are totaled (see Table 11). It can be seen from the table that the west census region has the highest percentage of officials reporting some effect. The northeast census

TABLE 11

THE EFFECT OF PAST ENERGY CONSERVATION PROGRAMS IN REDUCING LOCAL ENERGY CONSUMPTION

	No Answer	No Programs Implemented	No Reduction	Small Reduction	Substantial Reduction	Small Plus Substantial Reduction
Northwest	0	21.43	4.76	71.43	2.38	73.81
North Central	2	12.20	14.63	63.41	9.76	73.17
South	2	22.95	13.11	55.74	8.20	63.94
West	0	5.88	5.88	79.41	8.82	88.23

region totals about the same as the northcentral region. Note that the west census region also stands alone with the lowest number of administrators reporting that no conservation programs were attempted. If either of the two effects suggested above were operative, the results of question twenty-five would lend support to the conjecture that past energy supply dependability was the stronger influencing factor.

A Summary of Regionally Dependent Perception and Attitude

The examination of regionally dependent variability has suggested that administrators in certain regions of the country are more likely to hold the same general perceptions and attitudes toward the energy situation. The perceptions and attitudes held seems to have been modified by local historical experience and an assessment, by the administrator, of particular local conditions. The particular local conditions may relate to physical variables such as weather, topography, juxtiposition to fossil fuel supplies, transportation features, land use patterns, economic base, population, and so forth. However, the following observations can be made:

1. The west and northeast census region administrators perceive their localities to have experienced fuel shortages that have been worse and have had a more disruptive impact

on the activities of local consumers than has been experienced in other areas of the nation.

2. More city administrators in the northeast and west census regions perceive the energy situation as serious and believe voluntary conservation is not likely to significantly alleviate energy shortages.

3. All administrators have little faith in the effectiveness of mandated conservation programs from any level of government. However, those regions with the most to loose from federal mandates were most opposed to federal programs, and those regions reporting the greatest communication between state and local governments were least against state-local conservation programs.

4. Administrators favored most those options to alleviate energy shortages that would be most effective in their area (i.e. conservation and alternative energy sources that would be more available or enhanced by local physical conditions).

5. Administrators seem to believe that future conservation programs or fuel shortages will impact consumer activities in their area depending on past local fuel availability and regionally geographic dependent conditions.

6. Administrators in all regions lack complete information regarding many facets of the energy situation, however, most administrators would prefer to have input into conservation planning efforts.

City Size Comparison

Introduction

The difference in energy consumption between large cities and small cities is much more than a matter of degree. Total energy consumption is a composite figure highly dependent on the type of energy used, the use to which energy is put, and the efficiency of use. Related factors that impact total consumption are efforts to conserve energy and the introduction of alternative energy supplies. Thus, the operational differences between large and small cities (e.g. land use, land use patterns, number and type of economic activities, tax base for supporting conservation and other energy programs, modes of transportation) are at least as important as the inherent physical differences of population, etc.

In this section, the survey is analyzed with the intent of determining variation in responses according to the size of the city in which administrators reside.

Analysis of Data

Returned survey questionnaires were subjected to chi-square tests for an indication of variation in answers by city size. It should be remembered that the universe of United States cities was divided into two populations: that of "small cities" containing those municipalities from two

thousand five hundred to forty-nine thousand nine hundred ninety-nine in population, and that of "large cities" with populations of fifty thousand and over. From these two populations two samples were drawn, that of "small cities," and that of "large cities," the names corresponding to the names of their parent populations.

One or both of the chi-square tests performed indicated a significant probability that the answers to certain questions did vary according to whether the administrator responding officiated in a large city or a small city. Table 12 shows the answers to those questions varying with a 95 percent or higher probability. Also included are those questions that show likely city size dependent variation at the 90 percent probability level.

The statistical analysis indicates that administrators of large cities view the energy situation more pessimistically than small city administrators. In answer to question thirteen, 64 percent of large city administrators perceived a serious local problem of rising energy prices and fuel shortages. A minority of small city officials, 43 percent, agreed with this summation. A slightly higher percentage of small city administrators, 46 percent, viewed the local energy situation as a problem but not a serious one. This compares to only 27 percent of large city administrators in the same category. Large city and small city officials

TABLE 12

QUESTIONS WITH SIGNIFICANT CITY SIZE VARIATION IN ANSWERS

Question		Probability
1.	Residential voluntary conservation of energy	96
2.	Historic availability of Fuel Oil	93
3.	Historic availability of Natural Gas	96
4.	Historic availability of gasoline	96
5.	Expected period of continued inflation in fuel prices	93*
6.	Expected effect of the National Energy Net	98
7.	Seriousness of the local energy situation	92*
8.	The future Local supply of energy	97
9.	The future national supply of energy	99
10.	The probable contribution of solar energy by 2000	99
11.	Degree of communication with state government	92
12.	Degree of communication with Federal government	92
13.	Responsibility for implementing mandatory conservation measures	92*
14.	Effectiveness of energy conservation programs in reducing local energy consumption	99

*A significant probability was indicated by one one of the chi-square tests.

were more in agreement in their perception of the national energy scene. In responding to question twelve, 77 percent of large city, and 67 percent of small city leaders described the energy situation as serious.

The two groups of administrators again disagreed in their expectations regarding future local energy supplies. The majority of officials in both groups, 58 percent of small city administrators and 65 percent of large city leaders, thought future fuel shortages would be sufficient to cause substantial but not serious disruption of usual consumer activities. However, significance lies in the largest groups in each case expecting either more serious or less serious consequences. Twenty-four percent of small city administrators compared to only 6 percent of large city administrators anticipate less severe problems. Twenty-six percent of large city administrators expect more disruptive shortages, compared to 17 percent of small city officials believing the same. This split was also evident with regard to future energy supplies at the national level. A majority of small city officials, 60 percent, thought national energy shortages would cause substantial but not serious disruption of usual activities. This compares to a minority of only 45 percent of large city administrators in the same category. An almost equally large number of large city administrators, 43 percent, expected the most serious of consequences. Twenty-nine

percent of small city officials agree that shortages would cause serious disruptions.

In addition to being less optimistic about fuel supplies, large city administrators believed the cost of energy would continue to increase at a rate higher than overall inflation for a longer period of time than small city administrators. In referring to Table 13, it can be seen that a higher percentage of small city administrators, a total of 64 percent, are concentrated in the first, second and third categories. This indicates their belief that fuel prices will level out and rise at a rate no higher than overall inflation within ten years. Only 40 percent of responding large city administrators are found in these same categories. This is an interesting phenomenon since both large and small city officials are in close agreement over the percent of income the consumer currently pays for energy, that percent of income the consumer will ultimately pay for energy when prices level out, and the general time frame for the total exhaustion of domestic fossil fuel reserves. Thus, large city administrators may believe fuel price increases will be more gradual, but the effect of the increases will be worse.

A majority of both groups agreed on the reason behind rising fuel prices and threatened fuel shortages (question fourteen). Sixty-two percent of small city administrators, and 63 percent of large city administrators thought

TABLE 13

ADMINISTRATOR ESTIMATE OF FUTURE PERIOD OF CONTINUED INCREASE IN ENERGY PRICES

City Size	No Answer	Currently Rising No Faster	Less Than 5 Years	6 to 10 Years	11 to 15 Years	16 to 25 Years	26 to 50 Years	51 to over Years	Always Rise Faster
Small City	8	13.93	23.77	26.23	9.84	5.74	4.10	0.00	16.39
Large City	2	6.00	18.00	18.00	8.00	16.00	10.00	2.00	22.00

inappropriate government regulation in the past and/or poor planning by industry to be the root cause of the current situation. A significant difference did appear, however, among the minority of officials who thought the decline in the United States' fossil fuel reserves was unavoidable. Twenty-six percent of small city officials as opposed to 39 percent of large city leaders believed this to be the case. This may suggest that large city administrators thought that remedies could have been found and implemented by government and/or industry to circumvent the current energy situation.

Administrators of large and small cities also disagreed over the actions or programs that might be expected to alleviate the current energy situation, and the actors that should be involved. Many administrators, 41 percent in the case of small cities, and 31 percent for large cities, professed little knowledge of the National Energy Act (NEA). Of those administrators who did feel knowledgable of NEA, 27 percent of large city administrators felt the Act would serve to lessen local energy problems. Only 10 percent of small city administrators felt this way. About equal percentages felt NEA would worsen the local situation (small city administrators, 24 percent; large city administrators, 23 percent), and about equal percentages (18 percent and 17 percent, respectively) felt no affect would be felt.

The difference between the percentage of large city officials and small city officials expecting NEA to lessen local energy problems, and the large combined percentage of administrators believing NEA will have no effect or a worsening effect may be significant.

About equal percentages of both groups indicated in answer to questions ten and eleven, that they believed certain activities may promote energy conservation. These actions include: decontrol of fuel prices, stringent standby programs of conservation, grant or loan programs for adequate insulation of buildings, grant or loan programs for installation of solar or other alternative energy supplies to buildings. Tables 14 and 15 list the percentage of administrators in each group that opted for such conservation activities.

Alternative energy supply, building insulation, and natural gas price decontrol were programs included or connected with the National Energy Act passed by Congress. Congress has also given stand-by fuel rationing authority and other stringent stand-by conservation powers to the President in related legislation. Thus, it is possible city administrators have little faith in the implementability of NEA, and/or they are not as familiar with federal energy legislation as they believe themselves to be. This may be especially true for small city administrators, in recognition

TABLE 14

RESPONDENT'S SELECTION OF ACTIONS THAT MAY REDUCE THE THREAT OF ENERGY SHORTAGES*
(QUESTION TEN)

City Size	No Answer	No** Action Necessary	Voluntary** Conservation	Decontrol** Fuel Prices	Stand-by** Programs	Mandated* Federal Programs	Mandated** State or Local Program	Develop** Alternative Energy Sources	Other**
	2	11	42	45	57	41	35	14	12
Small	•	6.15	23.46	25.14	31.84	22.91	19.555	7.82	6.70
Cities	•	78.57	67.74	70.31	72.15	68.33	61.40	73.68	60.00
	11	3	20	19	22	19	22	5	8
Large	•	1.68	11.17	10.61	12.29	10.61	12.29	2.79	4.47
Cities	•	21.43	32.26	29.69	27.85	31.67	38.60	26.32	40.00

*Note that for this question, respondents were asked to select more than one answer if necessary.

**Data in each cell is arranged in the following manner:
First horizontal row, number of respondents selecting this answer in this city size.
Second horizontal row, percent of respondents of this city size selecting this answer among all respondents.
Third horizontal row, percent of respondents of this city size selecting this answer among all those selecting this answer.

TABLE 15

RESPONDENT PREFERRED USE OF FEDERAL FUNDS FOR LOCAL ENERGY PROGRAMS*
(QUESTION ELEVEN)

City Size	No or Many Answers	Education** via Media	Building** Insulation Program	Increase** Area Energy Generation	Alternative** Energy for Buildings	Stockpile** Fossil Fuel	Insure** Low Income Fuel Supply	Legislation to** Promote Alt. Energy	Other**	Row Total
Small Cities	39	12	28	11	25	4	6	3	2	
	•	9.02	21.05	8.27	18.80	3.01	4.51	2.26	1.50	91
	•	13.19	30.77	27.47	27.47	4.40	6.59	3.30	2.20	68.42
Large Cities	10	6	14	2	13	1	1	3	2	
	•	4.51	10.53	1.50	9.77	0.75	0.75	2.26	1.50	42
	•	14.29	33.33	4.76	30.95	2.38	2.38	7.14	4.76	31.58
Column Total	49	18	42	13	38	5	7	6	2	133
	•	13.53	31.58	9.77	28.57	3.76	5.26	4.51	1.50	100.00

*Note that this question asked the respondent to select only one answer. Those respondents selecting two or more answers were removed from analysis.

**Note in each cell is arranged in the following manner:
First horizontal row, number of respondents selecting this answer in this city size.
Second horizontal row, percent of respondents of this city size selecting this answer among all respondents.
Third horizontal row, percent of this city size selecting this answer among all respondents in this city size.

of the variation seen in the percentage of each group believing in the effectiveness of NEA. Indeed, answers to question nine show 41 percent of small city administrators compared to 31 percent of large city officials professing unfamiliarity with NEA.

A majority of both groups of administrators did not believe that any program of energy conservation legislated and implemented by the federal government would be effective in reducing the threat of shortages. Fifty-eight percent of small city administrators and 53 percent of large city administrators believed this. This tends to support the conjecture that city administrators doubt the ability of the federal government to successfully implement energy plans. The amount of communication between the federal government and city governments may have influence on the perception of city administrators regarding the utility of federally developed plans. In answer to question twenty-one, a large percentage of city officials in both groups, 50 percent of small city administrators and 51 percent of large city officials, reported little communication with the federal government concerning energy problems or plans. A larger percentage of small city officials than large city officials, 27 percent as opposed to 12 percent, reported no communication. More large city administrators reported moderate communication than small city administrators, 33 percent to 19 percent.

Communication between city and state governments appeared more extensive, as seen in Table 16. However, a significant difference between groups was indicated. While most large city administrators reported only little communication, more administrators in this group indicated extensive communication, and the total percentage of large city officials communicating in some degree was larger (totaling all categories except that of "no communication"). It is possible that the more extensive communication between state and large local governments contributed to the belief by large city administrators that conservation programs could be successful. There was a significant difference indicated in the percent of large city officials reporting that conservation programs legislated and enforced by state or local government would be successful in eliminating or reducing the threat of fuel shortages, than was reported by small city officials. Forty-three percent of large city leaders compared to 27 percent of small city administrators believed this.

The answers to questions twenty-two and twenty-three showed that the majority of administrators in both groups preferred communication between local government and higher levels of government in the development, implementation and enforcement of energy conservation programs. Variation in answers according to city size did occur relative to those levels of government that should be included in the planning

TABLE 16

LOCAL AND STATE COMMUNICATION BY CITY SIZE

City Size	No Answer	No Communication	Little Communication	Moderate Communication	Extensive Communication	Row Total
Small City	5	11.20	39.20	39.20	10.40	71.02
Large City	1	3.92	49.02	27.45	19.61	28.98
Column Total	6	9.09	42.05	35.80	13.07	100.00

and implementation process (as seen in Tables 17 and 18). Generally, a higher percentage of large city administrators thought local, state, and federal governments should coordinate efforts in developing conservation plans. Larger percentages of small city administrators would leave the development of plans up to other levels of government. A higher percentage of small city officials also indicated their preference for other levels of government to assume the responsibility for implementation and enforcement. It might be speculated that administrators in small cities are hesitant in accepting development and enforcement responsibilities that could place a significant drain on the city treasury. Larger cities, with a wider tax base, may see costs as less significant and benefits from conservation and local control of conservation programs as a more worthwhile investment. In fact, the significant variation in the answers to question twenty-five indicate that large city administrators perceived greater benefits from energy conservation programs. Although the majority of administrators in both groups reported only some small reduction in local energy consumption as a result of energy conservation programs, a much larger percentage of large city officials, 20 percent, observed substantial reductions than small city leaders, 2 percent. Also, a higher percentage of large city administrators, 90 percent compared to 80 percent of

TABLE 17

DISTRIBUTION OF IMPLEMENTATION RESPONSIBILITY BY CITY SIZE

City Size	No Answer	Federal Government	State Government	Local Government	State and Local	Federal, State, Local	Federal and Local	State and Federal	Other	Row Total
Small Cities	4	12.70	7.94	7.94	15.69	50.98	3.17	13.49	0.00	71.19
Large Cities	1	1.96	5.88	7.84	17.46	37.30	5.88	7.84	3.92	28.81
Column Total	5	9.60	7.34	7.91	16.95	41.24	3.95	11.86	1.13	100.00

TABLE 18

DISTRIBUTION OF CONSERVATION PROGRAM DEVELOPMENT RESPONSIBILITY BY CITY SIZE

City Size	No Answer	Federal Government	State Government	Local Government	State and Federal	Local and State	Local and Federal	Local, State, Federal	Other	Row Total
Small Cities	4	15.87	5.56	4.76	16.67	8.73	2.38	46.03	0.00	71.19
Large Cities	1	5.88	3.92	5.88	9.80	7.84	1.96	60.78	3.92	28.81
Column Total	5	12.99	5.08	5.08	14.69	8.47	2.26	50.28	1.13	100.00

of small city administrators, reported attempts to instigate energy conservation programs.

A Summary of City Size Dependent Perceptions and Attitudes

The examination of city size dependent variability in question answers has suggested that administrators serving in a municipality of a certain population are more likely to hold the same general perceptions and attitudes toward particular aspects of the energy situation. The attitudes or perceptions held seems to be related to historical experience with the local energy situation. The following observations were drawn from the survey analysis:

1. Large city administrators are generally more pessimistic about the energy situation than small city administrators. Large city officials seem to believe the effects of fuel shortages will be more severe, and that future energy supplies will be less dependable.

2. Administrators of both large and small cities are not entirely knowledgable of all aspects of the energy situation. However, large city administrators may be slightly better informed regarding available energy programs as a result of somewhat better communication with other levels of government.

3. The majority of responding administrators in both groups reject both voluntary and government mandated

conservation programs as effective mechanisms to reduce energy consumption. However, if such programs were put into effect, small city officials would prefer higher levels of government to be responsible for such programs, and large city leaders would prefer more local control.

Summary of City Administrator Survey

Analysis of the city administrator survey, including special attention to regional and city size variation and correspondence to public opinion regarding the energy situation, suggests the following conclusions:

1. City administrators agree with the public that a serious energy situation exists or will soon exist. More administrators of large cities and in the northeast and west census regions believed the energy situation to be serious and that consequences of fuel shortages and rising prices will be greater. Administrators of large cities agreed with the general public that shortages and rising prices will last longer than the time frame believed in by other administrators.

2. The majority of administrators and the general public lack comprehensive knowledge regarding the energy situation. Large city administrators may be slightly better informed about energy programs and conservation options. A majority of both the public and administrators hold government and the energy industry responsible for the current

energy situation. However, no group was in favor of mandatory conservation measures. Administrators, unlike the general public, believed both voluntary conservation and mandated energy programs to be generally ineffective. Those administrators engaged in energy related dialogue with higher levels of government may be less opposed and more optimistic toward energy programs, and those regions where administrators perceive more to lose from mandated programs are more opposed and pessimistic.

3. If energy programs are developed and implemented, the majority of administrators preferred to be included in both the planning process and the implementation of programs, although small city administrators indicated more of a preference for higher levels of government to be in control. This may be related to the slightly better communication reported between large city administrators and higher levels of government, and the inherent advantages of capability (e.g. larger tax base, facilities) held by large city administrators.

4. City administrators appear to be more confused than the general public about the mix of fuels supplying future national energy needs, and less able to perceive the contradictions this creates in their beliefs regarding energy supply. At the national level, most administrators believed that the national energy situation will be more

severe than the local level situation, and that their own locality will fair at least as well as the rest of the nation under mandatory conservation measures. Analysis at the regional level, however, suggests that many administrators expect activities of local consumers to be impacted by fuel shortages and conservation measures in some relation to past local fuel availability and on regionally dependent conditions.

CHAPTER IV

CONCLUSIONS

Introduction

In Chapter I, it was shown that the planning process properly includes implementation. A prerequisite for successful implementation would indicate an investigation of the environment in which implementation is to occur. In the case of national energy planning, it is essential that information describing the attitudes and perceptions of the city administrators be included in the base data upon which the planning effort is founded. The actions of local administrators may have great impact on the successfulness of implementation. Indeed, city administrators themselves should be included in the planning effort since they may have particular insight into local energy problems and thus may be the key to developing implementation plans.

The survey of city administrators conducted as part of this research effort is the first attempt known by the author to sample the perception and attitude of city administrators regarding energy on a national scale.[1]

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[1]Studies, for example, U.S., Department of Energy, *Local Government Energy Activities: Volume 1: Summary Analysis of Twelve Cities and Counties*. (Washington, D.C.: Government Printing Office, July, 1979), oriented toward gathering local level political data have been undertaken. However, they are not generally representative of the national universe of cities, nor do they deal specifically with those areas of perception and attitude investigated in this survey.

This chapter will attempt to apply that which was learned from the city administrators survey to national energy planning. It will also suggest actions to promote comprehensive national energy planning and suggest appropriate efforts for planning in this activity. In this chapter new information specific to local energy planning activities is introduced. Generally, a Conclusion chapter deals only with data presented earlier. However, in this instance, for ease of referral and for continuity, it was deemed by the author that current local planning legislation and the author's suggestions for promoting local planning efforts would be best presented in the same concluding chapter.

The National Energy Plan

Pursuant to Section 801 of the Department of Energy Organization Act passed by Congress (Public Law 95-91), the President developed the National Energy Plan (1977). The National Energy Plan and the resultant National Energy Act (1978) was the first effort to comprehensively deal with the mounting energy problem. The following succintly states the problem facing the United States:

> The diagnosis of the U.S. energy crisis is quite simple: demand for energy is increasing, while supplies of oil and natural gas are diminishing. Unless the U.S. makes a timely adjustment before world oil becomes very scarce and very expensive in the 1980's, the nation's economic security and the American way of life will be gravely endangered. The steps the U.S. must take now are small compared

> to the drastic measures that will be needed if the U.S. does nothing until it is too late.[2]

The National Energy Plan II, presented to the Congress in 1979 as required in Title VIII of the Department of Energy Organization Act, repeated and enhanced the goals and objectives of national energy policy as described in the 1977 Energy Plan. The general goals are temporally dependent, that is, they define objectives for the near, mid, and long term. They are:

> The Near Term (1979-85)
>
> As an immediate objective, which will become even more important in the future, the Nation must reduce its dependence on foreign oil and its vulnerability to supply interruptions.
>
> The Mid-Term (1985-2000)
>
> In the mid-term, the Nation must seek to (1) keep imports sufficiently low to protect U.S. security and to extend the period before world oil demand reaches the limits of production capacity and (2) develop the capability to use new higher-priced ("Backstop") technologies as world oil prices rise.
>
> The Long Term (2000 and beyond)
>
> The nation's long-term objective is to have renewable and essentially inexhaustive sources of energy to sustain a healthy economy.[3]

Functional objectives of the National Energy Plan, some of which have already been addressed in the National Energy Act and other legislation, are:

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[2]The Center for Compliance Information, *The Energy Source Book*, ed. Alexander McRae (Germantown, Md.: Aspen Systems Corp., 1977), p. 3.

[3]U.S., Department of Energy, *National Energy Plan II* (Washington, D.C.: Government Printing Office, May, 1979), pp. 5-7.

1. Conservation and fuel use efficiency.
2. Substitution of more abundant energy resources (e.g. coal) for those already or soon to be in short supply.
3. Pricing incentives and elimination of institutional barriers to increase domestic fossil fuel production and reduce consumption.
4. Promotion of development and marketing of nonconventional energy sources.
5. Seek a streamlining of the process for bringing nuclear facilities and other power generating plants on-line.

First appearances suggest that the National Energy Plan and subsequent implementing legislation are appropriate in eventually solving the problem of our current dependence on nonrenewable energy resources. However, the ultimate success of a national energy strategy may be questioned based on the demanding, convoluted requirements of implementation. Indeed, authors of the *National Energy Plan II* seem to recognize this problem:

> To date, interminable conflict over the future of energy policy has been one of the most paralyzing uncertainties in the country's energy future. . . . The energy policy debate has been one of the most divisive in recent years. Energy policy touches every economic interest, every group in American society. It leads into a complex tangle of sometimes competing national goals-market efficiency and greater production, equity among income classes and regions, environmental protection, national security, economic growth, and inflationary

> restraint. It will be difficult, and sometimes impossible, to reconsile all these goals.[4]

The focus of this research effort is on the interaction of federal energy policy and the function of city administration. Specifically, the possible effect city administrators perceptions and attitudes toward the national energy situation could have on national energy policy implementation. In developing the *National Energy Plan II*, Department of Energy officials attempted to communicate with, and bring all sectors of American society into the planning process:

> If a workable energy policy ever is to be achieved in the United States, both the policy and its development must be founded on a common understanding of the nature of the energy problem and on an agreement on the appropriate solutions. An important step in developing such understanding and agreement is to involve all sectors of society both in making decisions about what the policy should be, and in executing it.[5]

To bring the public and local officials and agencies into the planning process, the Department of Energy conducted two sets of public meetings. First, for one week, six seminars were held in Washington, D.C., for policy discussion between Department of Energy staff and invited guests. The invited guests were to be representative of "energy producers, consumers, state and local government agencies and instrumentalities, business (including small business) and large industrial users, environmental groups, and labor."[6]

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[4]U.S., Department of Energy, *National Energy Plan II*, p. 5.

[5]Ibid., p. 151.

[6]Ibid.

These seminars were followed by a series of six public hearings on the *National Energy Plan II* in the following cities: San Francisco, Dallas, Denver, Omaha, Boston, and Washington, D.C. The public was allowed to address questions to a panel composed of various energy interest groups from the region. The panel discussion, held in the afternoon, followed a morning presentation regarding *National Energy Plan II* goals.

The majority of respondents to the city administrators survey indicated that they have little faith in federal efforts to plan for and implement energy policy. Indeed, most administrators believed that poor planning by the government in the past is, in part, the root cause of the current energy situation. City administrators, especially small city officials, generally reported little communication with federal officials regarding energy matters.[7] These

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[7]Small cities are often rural, agriculturally oriented communities. In the future, the political climate surrounding local energy planning efforts can be particularly important in both the local and national sense. Currently, as indicated by the city administrator survey, small city officials are less worried over future energy problems, and believed historical energy problems to have been less serious. However, for the following reasons, as described in the *National Energy Plan II*, rural municipalities will be especially affected by deteriorating energy conditions. First, rural residents have lower average incomes than urban dwellers. Second, rural residents have longer distances to drive and fewer alternatives to auto travel. Third, agriculture, of immense importance to the entire nation, has become highly energy intensive. Also, markets for farm products

sentiments seem to be echoed by the public, as described in the Solar Energy Research Institute collection and analysis of public surveys. A suspicion exists that the Department of Energy's attempt to include "all sectors" in the planning process may have been inadequate. And, temporal modification of opinion as a result of changing energy and economic conditions is a real and significant factor in any investigation of the political climate impacting implementation.

Given the great number of geographic and locally dependent variables (e.g. land use patterns, modes of transportation, condition of housing stock, economic base) that determine energy use, it might be questioned how federal energy planners expect to regionalize energy programs if one of the potentially best sources of area specific information has not been tapped or is disinclined to participate. Even more basic, if city administrators have little faith in federal energy planners and existing programs, and feel excluded from the planning process, then it may be that federal officials will have problems in implementation.

Thus, with regard to the "planning process," federal energy planners have failed to provide for implementation at the local level. A "comprehensive" plan, by definition,

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are often at a great distance. Transportation of goods to these markets, equating to the livelihood of the farmer, is totally dependent on the availability and cost of diesel fuel or gasoline.

would include this highly important component. Logically, an unimplemented plan is an unsuccessful plan. Step one of Banfield's planning process would seem to have been inadequately applied, immediately relative to the local (and perhaps state) level political climate impacting implementation. If it is true as was found in the survey that under-education and miseducation regarding energy facts exists, there should probably have been, (1) a massive public and local leadership energy education program, and (2) the development of an extensive vertical communication program.

The federal government has developed programs specifically oriented toward the state and local levels. However, these programs may suffer from the same malady apparently plaguing the larger National Energy Plan. That is, inadequate planning process and, as a result, inadequate goals and objectives. This results in programs that may be insufficient, mismatched, conflicting, or extremely difficult to implement.

Federally Developed State and Local Energy Programs

The Congress has enacted four major laws which direct the federal government to develop and implement energy conservation programs. These laws and the resultant programs are designed for implementation at the state and local levels. The laws and authorized programs are listed below:

(1) Energy Policy and Conservation Act of 1975 (EPCA), 42 U.S.C. 6201 et seq., as amended.

- State Energy Conservation Program (SECP), 42 U.S.C., 6321 et seq. The SECP provides funding and technical assistance to States to develop, modify, and implement State energy conservation plans and supplemental plans. These plans describe the energy conservation activities which States will undertake in order to achieve scheduled progress toward State energy conservation goals.

(2) Energy Conservation and Production Act of 1976 (ECPA), 42 U.S.C. 6801 et seq.

- Weatherization Assistance Program (WAP), 42 U.S.C. 6861 et seq. The WAP provides grants to States and certain native American tribal organizations for the purchase of materials to be used to weatherize the dwelling units occuped by low-income families, especially the low-income elderly and handicapped.

(3) Energy Research and Development Administration Authorization Act of 1977, 42 U.S.C. 7001 et seq.

- Energy Extension Service (EES). The EES Program encourages individuals and small businesses to reduce energy consumption and convert to renewable energy resources. Federal funding is provided to establish State EES offices which offer a variety of energy conservation services, including energy audits, specialized training, technical information, workshops, and hotline services.

(4) National Energy Conservation Policy Act of 1978 (NECPA), 92 Stat. 3206 et seq.

- Schools, Hospitals, and Local Government and Public Care Institutions Program (S/H), 92 Stat. 3238 et seq. The S/H Program is responsible for identifying and supporting adoption of energy conservation measures

in schools, hospitals, and local government and public care institutions. During Phase I of the S/H program, grants are provided to States to conduct and/or administer energy audits in eligible buildings. During Phase II, grants are provided to States for technical assistance audit programs and energy conservation measures.

- Residential Conservation Service (RCS), 92 Stat. 3209 et seq. The RCS Program encourages the installation of energy conservation and renewable resource measures in residential buildings. In general, the RCS requires gas and electric utilities to provide their residential customers with energy conservation information, energy audits, and arrangements for the purchase, installation, and financing of energy conservation and renewable resource measures.[8]

In addition to the five programs above mandated for implementation at the state and local levels, the Department of Energy administers three other programs which involve state and local governments. They are:

(1) Urban Waste Program (UW), Title IV, 42 U.S.C. 5920 et seq., of the Department of Energy Act of 1978 – Civilian Applications

- The UW Program fosters the widespread use of urban waste as a source of energy and materials. It is directed at developing and improving technologies that reprocess waste into fuels, metals, glass, paper, ammonia, glucose, fertilizers, and other energy intensive products.

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[8]U.S., Department of Energy, *Report to the Congress on the Coordination of Federal Energy Conservation Programs Involving State and Local Governments* (Washington, D.C.: Government Printing Office, July, 1979), p. i-ii.

(2) Appropriate Technology Small Grants Program (AT), Section 112, 42 U.S.C. 5907a, of the Energy Research and Development Appropriation Authorization of 1977.

- The AT Program provides grants to individuals, small businesses, local nonprofit groups, State and local agencies, and Indian tribes for the development of small-scale, energy-related technologies that could be produced by local skills in response to local needs.

(3) Community Systems Program (CSP), Section 6(b)(3)(A)(iv), 42 U.S.C. 5905, of the Federal Nonnuclear Energy Reserach and Development Act of 1974.

- The CSP, through grants to communities and contracts with key community actors, assists them to develop and put into practice effective community wide energy conservation programs and projects.[9]

Beyond the programs enumerated above, there are approximately fifty more programs dealing with energy conservation that are implemented or have impact at local and state levels.[10] In one Department of Energy publication prepared by the DOE office charged with the responsibility of administering the above eight programs and implementing energy conservation policy, it was found that "coordination is being carried out successfully."[11] However, another

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[9]U.S., Department of Energy, *Report to the Congress*, pp. ii-iii.

[10]For a list and description of these programs see: Ibid.

[11]Ibid., p. iv.

Department of Energy publication (prepared by the efforts of three offices within the Department) dealing specifically with the role of the states in implementing federally mandated programs found potentially serious problems beyond federal level coordination of programs.[12] This study covered forty-four energy programs and policies affecting states. The specific findings follow:

> The structure, form and level of Federally-mandated policies and programs pose serious problems to States:
> - States lack resources to implement innovative energy programs and to develop alternative energy resources.
> - States' efforts to coordinate their own energy programs are hampered by the difficulty of the Federal government in developing a comprehensive and coordinated approach to energy grant programs.
> - States generally lack adequate data systems, and are thereby hindered in their ability to plan and manage energy programs.
> - States are burdened with excessive paperwork and red tape associated with Federal energy programs.
> - States require technical assistance in many different areas, including accounting, rate-setting, economics, and data design.[13]

The results of the city administrator survey suggest that city administrators may provide an additional level of implementation problems. The above problematical findings also exist at the local level, together with other stumbling blocks.

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[12]U.S., Department of Energy, *The Role of the States in Energy* (Washington, D.C.: Government Printing Office, September, 1978), p. ii.

[13]Ibid., p. ii.

Before federal programs can be utilized, city administrators must have knowledge of the existance of those programs. Indeed, even before this, knowledge and accurate distinction of the problem to be solved must be clear to the administrator. This is especially true when the administrator will be the primary actor in implementing programs, as is the case with energy conservation and related programs. According to the city administrator survey, most administrators are not only unaware of the energy programs offered through the National Energy Act, they also expect problems of rising prices and fuel shortages to be relatively short lived. The federal government stated that ". . . the U.S. and other consuming nations face a new period of long-term [energy] price rises, faster inflation, and periodic [fuel] supply interruptions."[14] It is not a certainty that federal energy planners are aware of the tremendous gap between their analysis of the energy situation and the perception of the situation held by those local officials essential to plan implementation.

Educating local officials to the reality and extent of the energy problem will probably not be nearly as difficult as convincing them, and the public, to actively and whole heartedly pursue energy conservation and other demand

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[14]U.S., Department of Energy, *The National Energy Plan II*, pp. 31-32.

reduction activities. The city administrator survey indicated that most city administrators do not think that voluntary energy conservation would work in the residential, commercial, or industrial sectors. City administrators have also indicated their disfavor of legislated, mandatory conservation measures.

Also, energy programs that impact specific regions may experience fierce regional opposition, special interest opposition, possibly secondary opposition through charges of unequal distribution of the burden, and interstate and interregional bickering. For example, potential problems stemming from regionally dependent differences may include the important interim use of tar sands and oil bearing shale. These resources are located primarily in the states of Colorado, Utah, and Wyoming. Mining tar sands and oil shale requires extensive mining and retorting. Consequences of the production processes include disruption and/or contamination of water tables (in already water short states), and the production of toxic pollutants in the form of air emissions and large amounts of solid waste. The use of coal also requires extensive over-burden removal (with concurrent toxic runoff and biosphere degradation); and planned liquification of coal would also pose potential exposure to carcinogens and toxic compounds in the production process. Thus, it can be seen that these states, and expecially the

communities immediately affected, may mount strong opposition to the possible serious degradation of their immediate environment for the purpose of satiating the energy appetite of other states. The possible consequences of such opposition may be a serious delay or disruption of the time table developed to meet national energy needs with unconventional resources before petroleum and natural gas supplies run out. The years long delays in completing the Tellico Dam project in Eastern Tennessee is a prime example of local strength in opposition to an energy project, based on destruction of the local environment. Already some cities and states have passed legislation or developed ordinances forbidding the transport of radioactive materials through their jurisdiction. In some areas of the country this had effectively prevented the proliferation of nuclear facilities, at least for the near term.

Survey Indicated Modifications

Education and Incentives for Local Involvement

The city administrator survey indicated that although city officials expect future energy supply shortages and fuel price increases, they assume that prices will not really rise that much nor will shortages last that long. While certain activities might have to be somewhat modified, there will not be any serious or lasting changes in their

lives. Possibly as a consequence of these beliefs, city administrators did not appear anxious to force energy conservation and other measures on their constituency, nor make extensive efforts to become knowledgable of and utilize existing energy programs. It might be speculated that if administrators expected long lasting shortages, radical price increases, and, ultimately, if proper pervasive actions are not taken now, a drastic lasting change in American lifestyles, their attitude toward necessary mandated conservation measures may be somewhat different. However, it is unlikely that sending a fact sheet to city administrators consisting of energy reserve totals, consumption rates, expected fuel exhaustion date and other primary data would orient the administrator to necessary actions. In fact, such data is available through the Department of Energy's Energy Information Administration and other federal agencies. State energy offices have made some use of federally collected data. The promulgation of programs, however, that might be expected as a reaction to the implication of such data are not in wide evidence. City administrators, as indicated in the administrator survey, reported little to moderate communication of energy data from state government and less from federal sources. This perhaps contributed to the report of little effect from conservation programs. Existing evidence suggests that simply offering data describing the

energy situation is not conducive to state or local planning, nor successful planning when it does occur. It might even be speculated that simply offering information describing the plight of the nation does not promote the education of administrators to the need to plan, or, in this case, that immediate, vertically coordinated comprehensive planning is paramount.

The federal government possesses considerable basic data regarding energy resources, past consumption, and new technology. However, it lacks information concerning local level policy implementation capability (i.e. administrative capabilities and the political climate), adequate knowledge of regional energy end use factors (e.g. characteristics of residential, commercial, and industrial building stock), and possibly the organizational capability to implement energy policy on a local scale. Local governments through their close association with their constituency and their immediate proximity to local physical features may provide the framework for acquiring the capabilities the federal government now lacks to comprehensively develop and implement a national energy plan. At least two proposed Bills have been presented to Congress to bring state and local governments into the planning effort, and make use of the unique capabilities of local governments. The first Bill, the Energy Management Partnership Act, was first presented to

Congress in 1978. Following is a concise description of the intent of the Act:

> The Energy Management Partnership Act (EMPA) will help the States develop their energy planning and management capabilities. EMPA will consolidate existing Federal grant programs, and will give States more resources to carry out energy activities within the framework of an overall State energy management plan. The bill would authorize $110 million annually over five years.
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> EMPA would eliminate a number of existing mandatory State responsibilities while imposing new requirements in the area of energy planning, emergency preparedness and use of renewable resources. States could emphasize individual projects and program actions to encourage State-level conservation and renewable resource development, and seek to remove barriers and address other site-specific problems that hinder conservation and renewable resource development within the State. States also would set measurable goals for conservation and production and evaluate their progress toward those goals.
>
> Through EMPA, the Federal government also would recognize the expanding energy role of local governments. Local governments have many energy and energy-related responsibilities. Some of these include traffic, local transportation, zoning and facility siting, building codes, and in some cases, lighting standards, emergency planning functions and outreach activities.
>
> EMPA would require States to "pass through" financial assistance to local governments to match their responsibilities in the State energy plan. The States also must involve the local governments actively in developing these plans in the first instance. Furthermore, the new legislation would authorize $5 million annually over five years for special energy projects to be undertaken by local governments and Indian tribes. These special projects could serve as demonstrations or models for creative new approaches to local energy problems.
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> Finally, EMPA will permit States to consolidate applications for assistance programs administered by the Department of Energy, which gives States greater flexibility in using program administration funds.[15]

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[15]U.S., Department of Energy, *The National Energy Plan II*, p. 149.

The second Bill, the Local Energy Management Act, sponsored by Senator Charles Percy, was presented to Congress in 1979. Its provisions are:

(1) Nonrenewable grants to localities for the development of measures to conserve energy and develop renewable energy resources. Grants may be fore one or two year duration.
(2) Renewable, one year grants to localities to enable such localities to document and distribute practical information on programs which they have undertaken, or propose to undertake, to promote energy conservation or the development of renewable energy resources.
(3) Establishment of a local energy reference center, to serve as a data bank and information resource for localities throughout the Nation. The local energy reference center would be established through a contractual arrangement with an organization experienced in information dissemination to localities, such as a national organization representing elected local officials, or a consortium of such organizations.[16]

The city administrators survey indicated that most local officials would generally prefer to be included in the development and implementation of energy conservation programs. However, the majority of respondents were not inclined to believe that legislated conservation would be effective. Unfortunately, neither of the above Bills directly addresses the immediate problem of city administrators apparent unawareness of the need to plan, or possibly,

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[16]Sen. Charles Percy et al., "Local Energy Management Act of 1979," Bill before the Senate, July 18 (June 21), 1979, pp. 8, 11, 15.

unwillingness to actively pursue energy planning. In fact, included in each Bill are provisions that may serve to put off city administrators because of burdensome red tape and program requirements. For example, the Local Energy Management Act requires an estimate of the overall energy consumption of the locality by sector to be included in the application for funding. Most small cities and many large cities have no idea of total local energy consumption, by sector. Appropriate surveys to determine consumption could be quite expensive. Based on the results of the city administrators survey, it might be suggested that the funds allocated for these programs would be better spent in a massive effort to: (1) educate the local administrator and the public to the facts and import of the energy situation, and (2) develop an effectively functioning, ongoing mechanism to bring the educated local administrator into the planning effort. All of the above programs and other attempts that might be made to utilize the capabilities of the local government would then be assured a much better chance of success. There are many methodologies that may be used to promote the education of the local administrator. Based on his experience in the energy field, the author has developed one such methodology. Education of the local leader may be facilitated through the use of the following program and instruments:

1. Development of an extensive survey designed to collect information regarding the local environment impacting the implementation of energy policy.
2. Train at least fifty teams to apply the above survey through personal interview of the chief administrative executives in all cities over an arbitrary population.
3. Apply the survey.
4. Based on the results of the survey, design a number of psychologically high impact informational programs. An individual program would be created to address the regionally and other dependent perceptions, attitudes, problems, and capabilities of a local government. The intent of the program would be to educate local leaders to the extent of the energy problem, the consequences of inaction, the possible result of coordinated local-state-federal comprehensive effort, the existing energy programs, the incentives to participate, and the necessity of working to develop effective communication for coordinated comprehensive and specific program planning and implementation.
5. Return the teams to the field to present the information programs in the same cities they surveyed.

6. After an appropriate period of time, resurvey the same city officials with the questionnaire used in step one, but with modifications necessary to reflect major events or circumstances that may have occurred since the first survey. Also provide for reaction or impact to the presentation in step four.
7. Where necessary, modify the educational program and re-present in those cities that may benefit from a second modified presentation.
8. Resurvey with a newly modified survey.
9. Assess the total information program effort and act accordingly.

Planners, Local Government, and Energy

The Planner's Responsibility

As discussed in the first chapter, many local administrators have accepted the responsibility of meeting the needs of their constituency and have attempted to plan for the future. From the city administrators survey, there are strong indications that most local administrators are not in a position to effectively plan for the future. That is, based on inadequate data, they have developed a conception of the future that is most likely substantially different from that which will actually occur. Current decisions in

anticipation of a future assumed to be only a little less munificient in energy could result in a deterioration of the local government's capability to provide services. For example, police, fire, road maintenance, and garbage collection departments all require substantial quantities of energy to operate. Unplanned for massive increases in the cost of fuels could result in a severe cut back of the services these departments provide. Planned extension of infrastraucture may of necessity be canceled due to unavailable fuel to operate construction equipment or unavailable materials that are highly energy-intensive to produce. The community financial resources may be strained in meeting higher energy costs, possibly causing increases in bonded indebtedness or a lowering of bond rating. Labor cutbacks may be required. But, city executives have often come to rely upon the expertise and advice of those individuals within their administration specifically trained for anticipating and preparing for the future. These individuals are "Planners." Thus, it would behoove the responsible planner to broaden his purview and become capable in "energy planning." That is, able to determine the energy requirements, current and future, of the community, and to develop programs to reduce consumption or develop sufficient energy sources to meet the requirements of area consumers. Further, the planner must be capable of blending the "energy plan" into a more comprehensive community plan.

For the city or county planner, energy planning would be a pervasive component in the comprehensive plan. The cost of energy and the availability of fuel affects every aspect of the community: employment, housing, economy, transportation, provision of social and physical services, environment, etc.

The city administrators survey indicated that many city administrators, and perhaps their planners, are not fully aware of federal energy programs. A comprehensive plan and in-place relevent legislation based on a correct estimation of the impact of intended energy related events can be critical. For example, hundreds of new energy projects, from central tower solar energy plants to coal mines, offshore oil wells, and nuclear power plants, are planned for areas all over the nation. One city, Rock Springs, Sweetwater County, Wyoming, did not adequately plan.

In 1971, the Pacific Light and Power Company and the Idaho Power Company began construction of the Jim Bridger Power Plant in Sweetwater County. The Sweetwater County Comprehensive Plan of 1972 estimated an influx of eight hundred construction workers. By 1974, the actual number of workers was over three thousand, and by 1975 the Comprehensive Plan population estimate for 1995 had already been exceeded.[17] Failure to adequately plan for this

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[17]U.S., Department of Housing and Urban Development, *Rapid Growth from Energy Projects — Ideas for State and Local Action, A Program Guide,* in cooperation with the Federal Energy Administration (Washington, D.C.: Government Printing Office, 1976), p. 9.

energy project resulted in a serious degradation of the quality of life in the area; including, a 1,000 percent increase in alcoholism and mental health cases, sky rocketing housing prices leading to over 30 percent of the county population living in mobile homes, and a failure of the health services system with 40 percent of county residents seeking treatment elsewhere.[18]

The Community Energy Planner

To become a competent "energy planner" for his community, the planner must, above all, remember that community energy planning is most effective when tailored to the special requirements of a locality. The author suggests that the planner, to become an "energy planner," must include at least the following subject areas in his education:

1. A vocabulary that includes an understanding of basic energy jargon (e.g. Btu, heating degree day, HVAC system, trombe wall, K value).
2. A general conceptual and limited technical understanding of most traditional and alternative energy production/distribution technologies.
3. The current state of development of traditional and alternative energy technologies and means for

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[18]U.S., Department of Housing and Urban Development, *Rapid Growth*, p. 50.

determining the cost/benefit of local application of an individual technology methodology.

4. Methodologies for auditing and analyzing local residential, commercial, and industrial energy use and consumption.
5. All current and proposed legislation or programs related to energy use in the planner's locality, including the organization of all local, state, and federal agencies with immediate impact on local energy matters.

Beyond these strictly energy related capabilities, the energy planner must also be keenly aware of, or at least able to determine, the local political environment in which the development and implementation of energy plans will occur. Also, during the process of education in the above areas, the planner should have developed an overview of the extent of energy factual knowledge, data collection capabilities, and implementability of energy policy in the nation as a whole. Through awareness of the problems associated with collecting data on production and consumption of energy, and monitoring and describing energy use in universally defined terms, the planner will come to appreciate his role (or possible role) in the national to local comprehensive energy planning process.

There is much planning literature devoted to the discussion of advocacy planning and the political position

of the planner. From a pragmatic standpoint, the individual planner will conduct the affairs of his position as his individual sense of ethics, responsibility, and propriety dictates. More idealogically however, and in keeping with the author's viewpoint, the current state of national affairs places the local community planner in a possibly unique position that requires active political intervention. The community planner, as the instrument for integrating local, state, and federal energy planning, could be the fulcrum of the nation's future. The city administrator survey has suggested that local administrators, in concert with the public, have insufficient enertia to effectively deal with the energy problem. Federal leadership, while apparently trying hard, may not have the capability of saving the nation from its own energy appetite until it is too late. The local planner, competent in energy planning, may be able to unite all sectors, and efficiently direct the capabilities possessed by each.

The city administrator survey has indicated that local administrators may be sensitive to both the factors that limit their access to certain forms of energy in their locality, and to the special environmental factors that may may allow them to use a particular type of alternative energy source. By drawing on federal funding to educate the public in energy conservation, the energy and

politically wise local planner might begin by using the opportunity and available means to heighten the interest and motivate the local administration to the rewards of pursuing an appropriate locally oriented energy planning program, and the costs of not developing such a program. At the same time, the local planner, backed by an awakening interest on the part of local leaders, could actively work to establish a solid line of communication to higher energy agencies, promising more active local participation in federal and state programs. And, thus, work to modify federal and state administration of programs to more closely suit local needs. By working in both directions, acting as an interpretive/ explanatory/advocatory communication link, the planner may pull both federal and local administrators into a real dialogue and comprehensive planning effort.

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APPENDICES

APPENDIX A

Questionnaire

Title or position of person completing Questionnaire _____

Office or department in which you work _____

1. At the present time would the average local residential consumer initiate significant energy conservation measures that would cause moderate disruption of usual activities if so asked by government, but without economic, regulatory or other pressure?

_____ No
_____ Yes

2. At the present time would local commercial and industrial consumers initiate significant energy conservation measures that may adversely affect business if so asked by government, but without economic, regulatory or other pressure?

_____ No
_____ Yes

3. Between 1974 and 1978, to what extent has the periodic or continued unavailability of the following types of energy affected local residential consumers (disregarding shortages due to strikes)?

	electricity	fuel oil	nat. gas	coal	gasoline
Always an ample supply					
Shortages with minor disruption of usual activities					
Shortages with periodic substantial disruption of usual activities					
Lasting hardships and/or permanent changes in usual activities					

4. At what point in the future is it likely that energy prices will rise at a rate no higher than that of overall inflation?

_____ Energy prices are currently raising no faster than overall inflation

_____ Within 5 years
_____ 6 to 10 years
_____ 11 to 15 years
_____ 16 to 25 years
_____ 26 to 50 years
_____ 51 to 100 years
_____ over 100 years
_____ always rise faster

5. When energy prices stop rising faster than the rate of overall inflation, the local consumer will be spending what percentage of his budget for energy?

_____ Energy prices are currently rising no faster than overall inflation

_____ 0-5% _____ 11-20% _____ 31-40% _____ 51-60% _____ over 70%

_____ 6-10% _____ 21-30% _____ 41-50% _____ 61-70%

6. The average local consumer now pays what percentage of his income for all energy needs?

_____ 0-5% _____ 11-20% _____ 31-40% _____ 51-60% _____ over 70%

_____ 6-10% _____ 21-30% _____ 41-50% _____ 61-70%

7. Assume the nation continues to use natural gas and petroleum as a major source of energy, what is the future outlook with regard to the domestic supply of these fuels?

_____ Nation will never run out

_____ Will run out within 5 years

_____ Will run out in 6 to 10 years

_____ Will run out in 11 to 25 years

_____ Will run out in 26 to 50 years

_____ Will run out in 51 to 100 years

_____ Will run out in over 100 years

8. Assume the nation converts to coal as the main source of energy, what is the future outlook with regard to the domestic supply of this fuel?

_____ Nation will never run out

_____ Will run out within 5 years

_____ Will run out in 6 to 10 years

_____ Will run out in 11 to 25 years

_____ Will run out in 26 to 50 years

_____ Will run out in 51 to 100 years

_____ Will run out in over 100 years

9. What effect will the recently enacted National Energy Act have on the local energy situation?

_____ No affect

_____ Will worsen local problems

_____ Will lessen local problems

_____ Will solve local problems

_____ Not familiar with National Energy Act and cannot answer question

10. The federal government has warned of declining petroleum and natural gas reserves and the possible unavailability of adequate fuel supplies in the near future. Which of the following options would likely eliminate or greatly reduce the threat of shortages (check all that apply)?

_____ No governmental action need be taken, resolution of any problem, if it exists, will occur by itself

_____ Voluntary conservation methods should be suggested to residential, commercial, and industrial consumers

_____ Fuel prices should be decontrolled and the additional revenues used to develop potential petroleum fields, or for exploration

_____ Stringent stand-by programs of energy conservation should be implemented and enforced if fuel shortages do materialize or become serious

_____ Programs of energy conservation should be legislated and enforced by the federal government to significantly reduce consumption of petroleum and natural gas

_____ Programs of energy conservation should be legislated and enforced by state or local government to significantly reduce consumption of petroleum and natural gas

_____ Other _____

_____

11. Assume substantial federal funds will be made available to city governments for local programs of energy conservation or energy resource development. Which one of the following should have the highest priority in your area?

_____ T.V. and other media campaign to inform consumers of energy saving techniques

_____ Grant or loan program to adequately insulate residential and/or commercial buildings

11. (Cont'd)

_____ Increase energy generation capacity of area utilities, or otherwise modify or update equipment

_____ Grant or loan program for installation of solar or other alternative energy supplies to residential and/or commercial buildings

_____ Stock pile supplies of petroleum, natural gas, or coal for protection against possible future shortages

_____ Set up a program for grants or loans to low income households to insure their energy supply when necessary

_____ Other (specify) _____

_____

12. What is your understanding of the local administration's perception of the national energy situation?

_____ No consideration has been given to the national energy situation

_____ No significant energy problems truly exists

_____ A problem, but not a serious one, of rising prices and possible shortages of fuel does exist

_____ A serious problem of rising prices and possible shortages of fuel does exist

13. What is your understanding of the local administration's perception of the local energy situation?

_____ No consideration has been given to the local energy situation

_____ No significant energy problems truly exist or will soon exist

_____ A problem, but not a serious one, of rising prices and possible shortages of fuel does exist or will soon exist

_____ A serious problem of rising prices and possible shortages does exist or will soon exist

14. What is the reason behind rising fuel prices and threatened fuel shortages (check any that may apply)?

_____ A ploy, unrelated to a real depletion of domestic petroleum reserves, by special interest groups soley to make larger profits

_____ An unforeseen or possibly unavoidable decline in domestic reserves necessitating reliance on more expensive and fluctuating foreign supplies

14. (Cont'd)

_____ Inappropriate government regulation in the past and/or poor planning by industry resulting in currently low domestic reserves and forced reliance on expensive, fluctuating foreign supplies

_____ Higher prices are necessary to provide the energy industry with enough money to develop new reserves for suficient current and future energy supplies

_____ Other _____

_____

15. What is likely to occur in the future with regard to local supplies of energy?

_____ There will always be an adequate supply of energy to meet all energy needs

_____ Spot and/or sporadic shortages of no serious consequence will occur with eventual return to fully adequate supplies

_____ Shortages of sufficient severity to cause substantial but not serious disruption of usual activities

_____ Shortages of sufficient severity to cause serious disruption of usual activities and lasting hardships

16. What is likely to occur in the future with regard to national supplies of energy?

_____ There will always be an adequate supply of energy to meet all energy needs

_____ Spot and/or sporadic shortages of no serious consequence will occur with eventual return to fully adequate supplies

_____ Shortages of sufficient severity to cause substantial but not serious disruption of usual activities

_____ Shortages of sufficient severity to cause serious disruption of usual activities and lasting hardships

17. What percentage of the national energy supply will be met by the following types of energy by the year 2000 (percentages must total to 100%)?

_____ % municipal waste, agricultural and other bionmass converted to fuel

_____ % petroleum _____ % nuclear energy

17. (Cont'd)

_____ % coal

_____ % solar and wind energy

_____ % natural gas

_____ % other (list) _____

18. What percentage of the national energy supply will be met by the following types of energy by the year 2050 (percentages must total to 100%)?

_____ % municipal waste, agricultural and other biomass converted to fuel

_____ % petroleum

_____ % nuclear energy

_____ % coal

_____ % solar and wind energy

_____ % natural gas

_____ % other (list) _____

19. Assume that stringent mandatory energy conservation measures will be applied in the future. How would your area fare relative to the rest of the nation as a result of specific local energy requirements?

_____ Resulting changes in usual activities would be less disruptive compared to the rest of the nation

_____ Resulting changes in usual activities would be about equally disruptive

_____ Resulting changes in usual activities would be more disruptive

20. To what degree has your state government communicated with the local administration regarding area energy requirements, local energy problems, conservation plans, etc.?

_____ No communication

_____ Little communication

_____ Moderate Communication

_____ Extensive Communication

21. To what degree has the federal government communicated with local administration regarding energy requirements, local energy problems, energy conservation plans, etc.?

_____ No communication

_____ Little communication

_____ Moderate communication

_____ Extensive communication

22. Assume that mandatory energy conservation measures will be applied in the near future. Who should be responsible for implementation and enforcement of conservation programs?

_____ Federal government

_____ State government

_____ Local government

_____ State and local governments in coordination

_____ Federal, state, and local governments in coordiantion

_____ Federal and local governemnts in coordination

_____ State and federal governments in coordination

_____ Other (specify) _____

23. Assume that mandatory energy conservation measures will be applied in the near future. Who should develop the conservation programs?

_____ Federal government

_____ State government

_____ Local government

_____ State and federal governments in coordination

_____ Local and state governments in coordination

_____ Local and Federal governments in coordination

_____ Local, state, and federal governments in coordination

_____ Other (specify) _____

24. Since 1974, if there has been an increase in the installation of a second method of supplying heat to local buildings, indicate the type most often added:

_____ No increase _____ Coal _____ Solar

_____ Wood _____ Oil _____ Other (specify)

_____ Natural gas _____ Wind

25. To what extent have federal, state, or local government instigated energy conservation programs been effective in reducing local energy consumption?

_____ No programs implemented

_____ No reduction

_____ Some small reduction, but not significant

_____ A substantial or significant reduction

APPENDIX B

3515 Old Valley View Rd. #2
Knoxville, Tennessee 37917

Dear Respondent,

As a graduate student at the University of Tennessee I have undertaken a research project that I believe is of immediate interest to you as a city administrator. There is currently much publicity about our national energy situation. Indeed, President Carter has proposed and Congress has passed an energy act intended to change the way Americans consume energy. However, there is one important fact that must be acknowledged. The success of any program or plan is dependent on the cooperation of consumers and their local leaders. To date very little is known about the attitude and perception of city administrations toward the local and national energy situation. The enclosed survey is aimed directly at filling this important gap in our knowledge. Some of the questions may seem to require information that you do not have at your disposal. Factual answers are not essential. The intent is that you make an estimation, a judgement, that reflects your perception of energy conditions.

Please take the few minutes required to fill out the questionnaire. A stamped, self-addressed envelope has been included to facilitate return of the survey. Results of the survey will be published in a Masters thesis at the University of Tennessee, and data from the survey will also be used by a national laboratory in a federally sponsored energy study. Neither your name nor the name of your city will be used in any way. In fact, your returned survey will be identified only by a number indicating the state and census region from which it came.

Let me thank you in advance for your cooperation and effort in contributing to this research effort.

Sincerely,

Brian J. Hurlbut

BJH:sbd

Enclosures

APPENDIX C

TABLE 19

PUBLIC SURVEYS ANALYZED BY SERI

Author	Area Sampled	Date of Data Collection	Sample Size
City of Colorado Springs	Colorado Springs, Colo. SMSA	1976	400
City of Colorado Springs	Colorado Springs, Color. SMSA	1974	2,500
Morrison	Lansing, Mich.	1974 1976	216 264
Cheskin	Chicago, Peoria, Marion & Benton, Ill.	1977	602
Abt Associates	Calif. vs. rest of states, national	1976	796
Davis	Lansing, Mich.	1977	133
Gottlieb	Houston & Amarillo: portions of Colorado & Deaf Smith Cos., Tex.	1974	782
Willenborg	S. Carolina. 11 urban areas	1977	605
Thompson	Grand Rapids, Mich.	1976	515
National Demographics	Denver, Colo.	1977	365
Hitlin	Washington, D.C.	1974	1,115
Ruttenberg	Ohio	1975	2,300
Tech Analysis & Communications, Inc.	Calif., N.Y., Mich.	1977	1,060
Vollintine	Lake County, Calif.	1975	786
Welch	Nebr.	1977	1,877

TABLE 19 (continued)

Author	Area Sampled	Date of Data Collection	Sample Size
Gill	Chicago Metro	1977	931
Opinion Research Corp. 1975	National, Vol. 13	1975	1,222
Opinion Research Corp. 1975	National, Vol. 15	1975	1,536
Opinion Research Corp. 1976	National, Vol. 23	1976	1,002
Opinion Research Corp. 1975	National, Vol. 7	Dec. 1974/ Jan. 1975	1,206
Opinion Research Corp. 1974	National, Vol. 5	Oct. 1974	
Opinion Research Corp. 1975	National, Vol. 8	Jan. 1975	1,211
Opinion Research Corp. 1975	National, Vol. 9	Feb. & Mar. 1975	1,209
Opinion Research Corp. 1975	National, Vol. 12	May 1975	905
Opinion Research Corp. 1974	Westchester, Jefferson City & Skymeadow, N.Y.	Nov. 1974	100
Opinion Research Corp. 1974	National, Vol. 1	Aug. & Sep. 1974	1,213

TABLE 19 (continued)

Author	Area Sampled	Date of Data Collection	Sample Size
Opinion Research Corp. 1974	National, Vol. 2	Sep. & Oct. 1974	1,210
Harris and Associates, Inc.	National	1975 1976	1,537 1,497
Murray	National	1973-1974	7,954
Sunstrom	Hartsville & Trousdale Co., Tenn.	1975	350
Opinion Research Corp. 1976	National, Vol. 21	Nov. & Dec. 1975	1,207
Roper 1978	National	Jan. 1978	2,000
Roper 1977	National	Dec. 1977	2,00
Roper 1977	National	Nov. 1977	2,000
Roper 1977	National	Sep. 1977	2,000
Roper 1977	National	Aug. 1977	2,000
Roper 1977	National	July 1977	2,000
Roper 1977	National	June 1977	2,000
Roper 1977	National	Mar. 1977	2,000
Roper 1977	National	Feb. 1977	2,000

TABLE 19 (continued)

Author	Area Sampled	Date of Data Collection	Sample Size
Roper 1977	National	Feb. 1977	2,000
Roper 1976	National	Dec. 1976	2,000
Roper 1976	National	Nov. 1976	2,000
Roper 1976	National	Aug. 1976	2,000
Roper 1976	National	July 1976	2,000
Roper 1976	National	June 1976	2,000
Roper 1974	National	Dec. 1974	2,000
Roper 1974	National	Aug. 1974	2,000
Roper 1974	National	Feb. 1974	2,000
Roper 1977	National	May 1977	2,000
Roper 1976	National	Mar. 1976	2,000
Roper 1977	National	May 1977	2,000
Roper 1975	National	Mar. 1975	2,000
Roper 1975	National	Jan. 1975	2,000

TABLE 19 (continued)

Author	Area Sampled	Date of Data Collection	Sample Size
Roper 1974	National	June 1974	2,000
Roper 1974	National	May 1974	2,000
Roper 1974	National	Jan. 1974	2,000
Gallup	National	Nov. 1977	1,500
Roper 1978	National	Mar. 1978	2,000
Cunningham & Lopreato	Austin & El Paso, Tex.; Flagstaff & Prescott, Ariz.	Oct. 1975	2,403
O'Brien	Ariz.	Apr. 1976	149
Blakely	Sacramento, Capay Valley & Winters, Calif.	Sep. 1975	1,600
Faulkner	Yellowstone River Basin	May 1975	2,058
Bartell	Los Angeles Co., Calif.	Feb./Mar. 1974	1,069
Gladhart	Lansing, Mich.	May 1976	264
Campbell	New York City; Southwest Minn.; Santa Clara Co., Calif.; Washington, D.C.	Sep. 1977	379
Hummell, et al.	Ft. Collins, Colo.	1973	238
Gallup 1973	National	June 1973	1,500

TABLE 19 (continued)

Author	Area Sampled	Date of Data Collection	Sample Size
Gallup 1974	National	Nov. 30/ Dec. 1, 1973	1,500
Gallup 1974	National	Dec. 7-10, 1973	1,500
Gallup 1975	National	Jan. 10-15, 1975	1,500
Gallup 1977	National	Feb. 18-21, 1977	1,500
Gallup 1977	National	Apr. 29/ May2, 1977	1,500
Gallup 1977	National	Apr./Aug. 1977	1,500
Burdge	Kentucky	Aug./Oct. 1975	3,428
Purdy	Plymouth, Mass.; Waterford, Conn.	Feb./Aug. 1975	308
Harris 1973	National	Nov. 12-15, 1973	1,459
Harris 1974	National	Oct. 1973/ Feb. 1974	1,496
Harris 1977	National	Aug.1, 1977	1,540
Harris 1976	National	Oct. 23-26, 1976	1,728
Harris 1975	National	Nov. 1975	1,519
Harris 1975	National	Mar. 3, 1975	1,543

TABLE 19 (continued)

Author	Area Sampled	Date of Data Collection	Sample Size
Harris 1977	National	Apr. 29-May 6, 1977	1,540
Harris 1973	National	July 1973	1,537
Harris 1975	National	Mar. 13, 1975	1,513
Harris 1975	National	Oct. 6 & 13, 1975	1,519
Harris 1974	National	Jan. 18-22, 1974	1,594
Harris 1977	National	Aug. 10-13, 1977	1,491
Harris 1974	National	Sep. 2, 1974	1,447
Harris 1975	National	July 1975	1,497
Harris 1975	National	Mid-Apr. 1975	1,568
Harris 1977	National	Dec. 2 & 3, 1977	1,200
Harris 1974	National	Dec. 19, 1974	1,525
Harris 1977	National	Feb. 1977	1,459
Harris 1977	National	July 23-30, 1977	1,515
Harris 1976	National	Oct. 7-11, 1976	1,539

TABLE 19 (continued)

Author	Area Sampled	Date of Data Collection	Sample Size
Harris 1975	National	Jan. 16-20, 1975	1,532
Harris 1976	National	Nov. 18, 1976	1,532
Harris 1974	National	Mar. 1974	1,495
San Diego Gas & Electric	San Diego Co., Calif.	Aug. 1976	400
Gallin	New Hampshire	Apr. 30- May 2, 1976	256
Opinion Research Corp. 1975	National, Vol. 11	Apr./May 1975	1,208
Opinion Research Corp. 1975	National, Vol. 10	Mar. 10-21, 1979; Mar. 24/ Apr. 6, 1975	1,208
Opinion Reserach Corp. 1976	National, Vol. 19	Sept. 9/ Oct. 8, 1975 Oct. 14-22, 1975	503
Warren	Detroit, Mich.	Apr./June 1974	766
Gallup 1978	National	Apr. 14-17, 1978	1,319
Opinion Research Corp. 1975	National (no volume given)	Aug. 4, 1975	1,007
TRW	Phoenix, Kansas City & Minneapolis	Feb. 1974	270

TABLE 19 (continued)

Author	Area Sampled	Date of Data Collection	Sample Size
Survey Research Laboratory	Mason, Oceana, Newaygo Cos., Mich.; Natrona, Converse, Carbon, Albanay, Platte, Goshen, Laramie Cos., Wyo.; Clallan, Jefferson, Grays Harbor, Mason, Pacific Cos., Wash.; Bristol, Newport Cos., R.I.; McHenry, Lake, Kane, DuPage, Cook, Will Cos., Ill.	Spring & Summer, 1976	1,431
Doering	Indiana	Apr. 1974	670
Vollintine	Cobb Valley, Lake Co., Calif.	July 1975	142
Opinion Research Corp. 1975	National, Vol. 6	Nov. 11/ Dec. 8, 1974	1,207
Gallup 1978	National	Aug. 5-8, 1977	1,500
Gallup 1977	National	Nov. 18-21, 1977	1,500
Becker Research Corp.	National	1974	1,252

VITA

Brian James Hurlbut was born in Grand Rapids, Michigan, November 27, 1948. He attended elementary school in Grand Rapids until he moved with his parents to Lake Worth, Florida, in 1961. He graduated from Lake Worth High School in 1966, and immediately entered Florida State University.

In 1968, Mr. Hurlbut entered the Army Security Agency and served his country in Vietnam and various locations within the United States. He was honorably discharged in 1972.

In 1972, he reentered Florida State University and, in 1974, recieved a Bachelor of Arts degree in Psychology.

Mr. Hurlbut received his Master of Science in Planning from The University of Tennessee, Knoxville, in June 1980.

Mr. Hurlbut's work experience includes over two years with the Oak Ridge National Laboratory working in the Urban and Regional Studies Division on the Building's Energy Use staff.