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THE ROLE OF LOCAL GOVERNMENT IN ENERGY PLANNING

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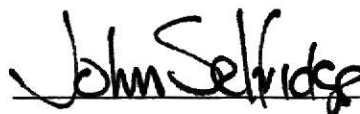
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TABLE OF CONTENTS

	Page
LIST OF TABLES . . . . .	iv
Chapter	
1. INTRODUCTION . . . . .	1
Proposed Solutions to the Energy Crisis . . . . .	3
The National Energy Plan . . . . .	5
The Department of Energy . . . . .	7
The National Energy Act . . . . .	8
Coordination of Federal Energy Policy with State and Local Government . . . . .	9
State Energy Planning . . . . .	13
Local Government Energy Planning . . . . .	14
Statement of the Problem . . . . .	15
2. SELECTED EXAMPLES OF ENERGY PLANNING BY LOCAL GOVERNMENTS . . . . .	19
Energy Planning in the State of Kansas . . . . .	19
Energy Planning in Garden City, Kansas . . . . .	25
Energy Planning in Wichita, Kansas . . . . .	27
Energy Planning in the State of California . . . . .	31
Energy Planning in Davis, California . . . . .	34
Summary . . . . .	39
3. ENERGY PLANNING OPTIONS FOR LOCAL GOVERNMENTS . . . . .	41
Municipal Energy Use Policies . . . . .	42
Land Use Policies . . . . .	45
Transportation Policies . . . . .	47
Housing and Building Codes Policies . . . . .	47
Renewable Resources Policies . . . . .	48

Chapter	Page
Implementation . . . . .	48
Federal Support for Innovative Local Government Policies . . . . .	50
4. CONCLUSION . . . . .	52
BIBLIOGRAPHY . . . . .	55
APPENDIX . . . . .	60

LIST OF TABLES

Table	Page
1. State of Kansas, Energy Conservation Bills Passed 1975-1978 . . . . .	22
2. State of California, Energy Conservation Bills Passed 1875-1978 . . . . .	32
3. Energy End Uses, United States, 1968 . . . . .	43

## Chapter 1

### INTRODUCTION

Until the oil embargo of 1973-1974, American consumers in general gave little thought to using energy efficiently. The real price of energy actually fell by 28 per cent between 1950 and 1960<sup>1</sup> and consequently most of the existing capital stock was not designed to be energy efficient. U.S. consumption of energy increased at approximately 3.5 per cent annually, so that in 1976 Americans were using double the amount of fuel used in 1963.<sup>2</sup> In 1978 U.S. energy consumption totalled 77.7 quads, the equivalent of 36.7 million barrels of crude oil per day. Domestic energy production grew by 3 per cent annually between 1950-1970 but has been at a virtual standstill since 1970, so that by the time of the oil embargo, the domestic economy was easily disrupted by shortages of imported oil.

It was not until consumers were faced with a quadrupling of oil prices during the embargo and actual shortages of fuel supplies which led not only to waiting in long lines for gasoline, but even to short-term unemployment for many, that a call went out for Federal government intervention to relieve the crisis situation.

During the 93rd Congress the Energy Reorganization Act of 1974 was passed into law establishing the Energy Research and Development

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<sup>1</sup>Executive Office of the President, The National Energy Plan, Washington, D.C.:Government Printing Office, April 1977, p. vii.

<sup>2</sup>Lovins, Amory B. "Energy Strategy : The Road Not Taken", Not Man Apart, Friends of the Earth, 6, 20, November 1976, p.12.

Administration (E.R.D.A.), whose primary mission was to develop the necessary energy technologies to promote energy self sufficiency by 1984, and the Nuclear Safety and Licensing Commission (N.S.L.C.) to promote regulation of the growing nuclear power industry.<sup>3</sup>

The Congress found that:

"there is no comprehensive national energy policy but instead Federal energy activities consist of a myriad of laws, regulations, actions and inactions resulting in narrow, short range, and often conflicting decision making by individual agencies without adequate consideration of the impact on the overall energy policy, not future energy needs; and as a consequence of not having a comprehensive national energy policy, the Nation faces mismanagement of energy resources, unacceptably high adverse environmental impacts, inadequate incentives for efficient utilization and conservation of energy resources, shortages of supply, and soaring energy prices."<sup>4</sup>

The energy crisis had clearly pointed out the need for a comprehensive national energy plan. Comprehensive energy planning is concerned with the collection and analysis of data on the production of energy by fuel type, its supply, availability, price, and consumption patterns. Energy planning must include the development of a legal framework for the implementation of distribution and conservation measures, both in times of emergency and during times of adequate supply. This would help to assure the continued provision of services deemed necessary for the maintenance of adequate health, safety and welfare standards, and to allow for greater stability in the economy. Energy planning must also be coordinated with and responsive to all levels of government so that energy policies will reinforce rather than negate each other. Finally, comprehensive energy planning must assess the environmental impact of

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<sup>3</sup>United States Congress, Energy Reorganization Act of 1974, Washington, D.C.: Government Printing Office, 1974, p.2.

<sup>4</sup>Ibid., p.97.

energy production and conservation plans to assure that future generations might have similar aspirations to a high quality of life.

Proposed Solutions to the Energy Crisis

While the debate over policy and technology issues preoccupied the politicians, many of the moral implications of the energy crisis were debated at length among western intellectuals. After a flood of self recrimination about the exploitation of third world countries by energy gluttonous western society<sup>5</sup>, global pollution, nuclear proliferation, and general disgust with the wasteful and decadent lifestyle of the West in general, the U.S. in particular<sup>6</sup>, some solutions were proposed.

Noted environmental scientist Barry Commoner wrote that in order to solve energy problems policymakers should be guided by the second rather than the first Law of Thermodynamics<sup>7</sup>, and that the American political system should be changed from a democracy to a socialist state.<sup>8</sup> British economist E.F. Schumacher wrote that victory over

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<sup>5</sup>The U.S. with only six per cent of the world's population consumes one-third of the energy used in the world. Further consumption data is available in Energy Alternatives: A Comparative Analysis, Science & Public Policy Program, The University of Oklahoma, Norman, Government Printing Office, 1975, Pp.1-32.

<sup>6</sup>For example, in Barry Commoner, Human Welfare : The End Use for Power, A.A.A.S., 1975, p.102, he asks : "Is it just that a wealthy household should contribute so much more heavily to power consumption - and therefore to the resultant pollution - than an impoverished one, when the environment is the common property of both?"

<sup>7</sup>The First Law of Thermodynamics states that energy in the universe is constant. The Second Law states that the entropy of the universe is constantly increasing. See Barry Commoner, Poverty of Power, New York: Alfred A. Knopf Inc., 1976, p.29.

<sup>8</sup>Ibid. p.258.

man's "greed and envy" would be a viable solution to the energy crisis. <sup>4</sup>

He wrote that we need new technology and equipment that is:

- "Cheap enough so that they are accessible to virtually everyone;
- Suitable for small-scale application; and
- Compatible with man's needs for creativity.

Out of these three characteristics is born non-violence and a relationship of man to nature which guarantees permanence".<sup>9</sup>

Perhaps the most useful treatise written on U.S. energy policy was by Amory Lovins. He suggested that we must choose between two courses of action in meeting the energy challenge:

"The first path resembles present federal policy and is essentially an extrapolation of the recent past. It relies on rapid expansion of centralized high technologies to increase supplies of energy, especially in the form of electricity. The second path combines a prompt and serious commitment to efficient use of energy, rapid development of renewable energy sources matched in scale and in energy quality to end-use needs<sup>10</sup>, and special transitional fossil-fuel technologies. This path, a whole greater than the sum of its parts, diverges radically from incremental past practices to pursue long-term goals."<sup>11</sup>

Two key factors in Lovin's report are firstly, that the two paths outlined above are mutually exclusive because of the lead time required in setting up soft technologies<sup>12</sup> and limited capital resources. Secondly, he stresses that delay in energy conservation will only make

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<sup>9</sup>Schumacher, E.F., Small is Beautiful : Economics as if People Mattered, New York:Harper & Rowe Publishers Inc., 1973, p.32.

<sup>10</sup>For example, in using electricity to produce heat two-thirds of the original fuel energy has been wasted - Carnot's heat engine law.

<sup>11</sup>Lovins, op. cit.,p.4.

<sup>12</sup>Ibid. p.7. Lovins defines soft technologies by the following characteristics :

- they rely on renewable energy flows, such as sun and wind;
- they are diverse, so that energy supply is an aggregate of many individually modest contributions, each designed for maximum effectiveness in particular circumstances;
- they are flexible and relatively low-technology;
- they are matched in scale and in geographic distribution to end-use needs; and
- they are matched in energy quality to end-use needs.



the energy crisis a reality because a smooth transition from fossil fuels to either the nuclear solution or the renewable resource solution will require some new technologies ("bridges"), probably based on coal, which need to be developed now.

It is no small wonder that politicians charged with formulating national energy policy have been reluctant to propose quick solutions to the challenge of meeting future energy requirements. A Budget Issue Paper written for Congress in early 1977 listed another barrier to the formulation of a national energy policy. The problem is that many of the goals of energy conservation are in direct conflict with one another. For example,

"providing low cost energy encourages energy use, which in turn generates pollution. Protecting the environment through strong regulations on air quality, strip mining, and nuclear waste disposal raises the cost of energy. Protecting the nation from supply interruptions means the creation of domestic reserves or alternative energy sources, which would raise energy costs. The efficient use of alternative energy sources, which would require modifying the regulations that currently hold down the price of natural gas and domestic oil, might adversely affect both the rate of inflation and unemployment."<sup>13</sup>

Policymakers must rank national priorities and there will ultimately be a tradeoff among the objectives.

### The National Energy Plan

Comprehensive national energy planning became closer to a reality when the National Energy Plan of 1977 was presented to Congress and the American people by President Carter. The Plan stated that the U.S. has three overriding energy objectives :

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<sup>13</sup>United States Congress, Congressional Budget Office, Energy Policy Alternatives, Washington, D.C.: Government Printing Office, 1977, p.xiii.

"-in the short term to reduce dependence on foreign oil and vulnerability to supply interruptions;  
 -in the medium term to keep U.S. imports sufficiently low to weather the period when oil production approaches its capacity limitation; and  
 -in the long term to have renewable and essentially inexhaustible resources of energy for sustained economic growth".<sup>14</sup>

The national energy plan is based upon ten principles :

"1) The energy problem can be effectively addressed only by a government that accepts responsibility for dealing with it comprehensively, and by a public that understands its seriousness and is ready to make the necessary sacrifices.

2) Healthy economic growth must continue.

3) National policies for the protection of the environment must be maintained.

4) The United States must reduce its vulnerability to potentially devastating supply interruptions.

5) The United States must solve its energy problems in a manner that is equitable to all regions (to avoid "energy Balkanization"), sectors and income groups.

6) The growth of energy demand must be restrained through conservation and improved energy efficiency.<sup>15</sup>

7) Energy prices should generally reflect the true replacement cost of energy.

8) Both energy producers and consumers are entitled to reasonable certainty as to Government policy.

9) Energy resources in plentiful supply must be used more widely, and the nation must begin the process of moderating its use of those in short supply.'

10) The use of nonconventional sources of energy must be vigorously expanded."<sup>16</sup>

In general, the President's plan was well received and marked the beginning of earnest comprehensive national energy policymaking. One study projected that implementation of the conservation element alone would save consumers \$27 billion between 1978 and the year 2000.<sup>17</sup> This would be achieved by appliance efficiency targets which would save

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<sup>14</sup>The National Energy Plan, op. cit., p.ix.

<sup>15</sup>This is often referred to as a "technical fix" where resources other than energy, such as design, capital, technology, etc., are substituted, so that you have the same output using less energy.

<sup>16</sup>The National Energy Plan, op. cit. Pp26-31.

<sup>17</sup>

Hirst, Eric and Janet Carney, "Effects of Federal Residential Energy Conservation Programs", Science, 199, 4331, 28 February 1978, p.845.

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20 per cent by 1980, thermal performance standards for new construction which would reduce energy used for space heating by 40 per cent and energy required for air conditioning by 30 per cent, and retrofitting (weatherization) of existing housing units which would typically save 35 per cent of energy use during the heating season.<sup>18</sup>

### The Department of Energy

The National Energy Plan called for the consolidation of federal energy agencies into one single federal department. Creation of this 12th Cabinet department, the Department of Energy (D.O.E.) on October 1, 1977, marked the beginning of the likelihood of a comprehensive approach to national energy planning at the federal level.<sup>19</sup>

The new department assumed many of the functions and resources from other federal bodies in order to eliminate duplication and to centralize energy activities. It has taken over all functions from the Federal Energy Administration, the Federal Power Commission, and the Energy Research and Development Administration. Energy planning functions from the Department of Interior, the Defence Department, the Interstate Commerce Commission, and the Department of Commerce are now also incorporated in the D.O.E. in order to consolidate and coordinate energy planning.<sup>20</sup>

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<sup>18</sup>Hirst, Eric and Linda Pearlstein, "Residential Energy Use, How Much Can We Save?", Sierra, 63,2, March 1978, p.15.

<sup>19</sup>See Appendix 1 for the outline of purpose of the U.S. Department of Energy.

<sup>20</sup>United States Department of Energy, Organization and Functions Fact Book, Washington, D.C.: Government Printing Office, September, 1977, Pp. 3-4.

The National Energy Act

On October 15, 1978 passage of the National Energy Act (N.E.A.) further strengthened the new department's ability to implement a national energy policy. Energy Department Secretary James Schlesinger said that the N.E.A. would help to decrease oil imports by:

"-replacing oil and gas with abundant domestic fuels in industry and electric utilities;  
-reducing energy demand through improved efficiency;  
-increasing production of conventional sources of domestic energy through more rational pricing policies; and  
-building a base for the development of solar and renewable energy sources."<sup>21</sup>

The N.E.A. is composed of five bills: The National Energy Conservation Policy Act of 1978, the Powerplant and Industrial Fuel Use Act of 1978, the Public Utilities Regulatory Policy Act, the Natural Gas Policy Act of 1978 and the Energy Tax Act of 1978.<sup>22</sup>

The Conservation Policy Act includes weatherization grants to low income families, energy conservation loan programs, energy audits for public buildings, appliance efficiency standards, automobile fuel efficiency standards and solar demonstration programs. The Industrial Fuel Use Act prohibits new oil and gas fired boilers and establishes an \$8 million pollution control program to reduce the negative impacts of increased coal production. The Public Utilities Regulatory Policy Act sets standards on rate design, sets rules favoring industrial cogeneration establishes a loan program for small hydro projects, and funds additional university coal research laboratories. The Natural Gas Policy Act lifts price controls on new gas as of January 1, 1985 and gives the President

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<sup>21</sup>D.O.E., Energy Insider, 1, 28, October 1978, p.4.

<sup>22</sup>Ibid., p.1.

the authority to declare an emergency if a gas shortage is imminent. The Energy Tax Act provides for residential tax credits for insulation and conservation and solar applications, business energy tax credits, it sets a graduated excise tax on gas guzzling cars, and exempts gasahol from excise tax.

Although the N.E.A. is a weaker version of the proposals submitted by the President in his National Energy Plan of 1977, the D.O.E. still predicts a reduction of oil imports by 1985 and a savings of 2.5 to 3 million barrels of oil per day as a result of the new legislation.

#### Coordination of Federal Energy Policy with State and Local Government

In order to carry out federal energy planning policies, a framework for delegation of certain responsibilities to state and local governments has been established. Firstly, the D.O.E. Organization Act sets out the relationship with states in Section 103:

"Whenever any proposed action by the Department conflicts with the energy plan of any State, the Department shall give due consideration to the needs of such State, and where practicable, shall attempt to resolve such conflict through consultations with appropriate State officials. Nothing in this Act shall affect the authority of any State over matters exclusively within its jurisdiction".

The Act also established an Office of Intergovernmental Affairs which is charged with:

"assuring that national energy policies are reflective of and responsible to the needs of State and Local governments, and for assuring that other components of the Department coordinate their activities with State and Local governments, where appropriate, and develop intergovernmental communications with State and Local governments". (Section 203 (a) (6) ).

Two Divisions in the Office of Intergovernmental Affairs are charged with specific liason with State and Local governments. They are the Division of City and County Relations and the Division of State

Relations. The following objectives serve as a guide to their implementation of Section 203 (a) (6):

1. To develop a variety of mechanisms which provide a strong voice and a fully active role for States and Local governments in the development and implementation of national energy policies and programs.
2. To identify and remain fully cognizant of the energy needs and desires of State and Local governments and to insure that this information is always available to other components of the Department.
3. To serve as a linkage between our State and Local constituencies and the various programmatic areas of the agency to facilitate communication, arrange for assistance (financial, technical, or advisory) and to promote a better understanding of our interdependency.
4. To serve in liason capacity for State and Local governments so that such representatives always have a "window" into the agency and a readily identifiable entity who will serve (when it is consistent with national energy programs and priorities) in a position of advocacy.<sup>23</sup>

The Division of State Relations is responsible for State briefing packages and papers, Federal region liason, nuclear waste issues, the Energy Emergency Management Information System (E.E.M.I.S.), and day to day operations. The Division of City and County Relations is responsible for the Local Government Outreach Program, the Local Government Energy Advisory Committee, awarding urban consortium grants, community assistance programs, and day to day activities.

In addition to these formally delegated intergovernmental relationships, the Federal government has delegated many other energy planning functions to State and Local governments. For example, the Community Services Administration's Weatherization program which filters down money to State Economic Opportunity Offices and Community Develop-

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<sup>23</sup>Information received from correspondence with Mr. William Peacock, Director, Intergovernmental Affairs Office, U.S. Department of Energy, December 27, 1977 and November 7, 1978.

ment Corporations is designed to:

"enable low-income individuals and families, including the elderly and the near poor, to participate in energy conservation programs designed to lessen the impact of the high cost of energy on such individuals and families and to reduce individual and family energy consumption".<sup>24</sup>

Other examples of federally financed projects at local and state level are D.O.E. Solar Heating and Cooling Demonstration projects<sup>25</sup>, D.O.E. grants to cities to help them develop methods for adapting energy technologies to urban needs<sup>26</sup>, D.O.T. grants for bicycle lane networks, and H.U.D. grants for solar water heating systems for single family homes. By disseminating grants such as these the federal government enables communities to share the benefits of energy research and development.

Federal money is also being channelled into states for the purpose of developing statewide energy conservation programs. The Energy Policy, and Conservation Act (E.P.C.A.) of 1975 authorized \$50 million per annum for 1976-1978 to be used by the states to produce state energy conservation plans. Funding was contingent upon a projected energy use reduction of 5 per cent or more by 1980. State plans had to contain the five following elements: mandatory lighting efficiency standards for public buildings, programs promoting carpooling, mandatory

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<sup>24</sup>Community Services Administration, A Community Guide to Weatherization, Washington, D.C.: Government Printing Office, September, 1975, p. 30.

<sup>25</sup>U.S. Department of Energy, Solar Heating and Cooling Demonstration Project Summaries, Washington, D.C.: Government Printing Office, May 1978.

<sup>26</sup>In October 1978 the D.O.E. awarded \$878,000 to Chicago, Baltimore, Seattle, Los Angeles County and Dade County for projects designed to be transferable to other cities and urban areas. D.O.E. press release, October 25, 1978.

energy efficiency standards for state procurement practices, mandatory thermal efficiency and insulation standards for new and renovated buildings, and provision for motorists to make a right turn on a red light.<sup>27</sup>

The Energy Conservation and Production Act (E.C.P.A.), August 14, 1976 authorized \$25 million for fiscal year 1977 and \$40 million for 1978 and 1979 for supplemental state energy conservation programs. These plans had to include provision for public education, coordination of state and federal programs, and procedures for conducting building audits.<sup>28</sup>

With federal funds available for state and local government energy planning, it would be wise for them to make use of these resources and "devise energy conservation programs that reflect their own preferences rather than invite future federal intervention and control of yet another matter with significant state and local impacts"<sup>29</sup> because of poor local and state response to planning opportunities.

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<sup>27</sup>Harrington, Winston, Energy Conservation: A New Function for Local Governments? Chapel Hill, N.C.: Center for Urban and Regional Studies, University of N. Carolina, 1976, p.49.

<sup>28</sup>"Energy audit" refers to the ways energy is lost in a system. It concentrates on the distribution system (pipes, ducts, etc.) and the applications (production processes, space conditioning, materials handling, etc.) to identify losses and possible reductions in needs. See Looney, Quentin, "Energy Audits and Information Systems", in Energy Management Seminar Proceedings, Institute of Electrical Engineers Inc., New York, 1977, Pp.35-41.

<sup>29</sup>Harwood, Corbin Crews, Using Land to Save Energy, Cambridge, Massachusetts : Ballinger, 1977, p.4.



State Energy Planning

State energy offices were established in response to a growing awareness of the need for energy planning. In many states fuel shortages were directly responsible for cutbacks in manufacturing and consequently higher short-term unemployment rates, closing of schools, and rapid increases in utility rates. The grave political consequences of inaction probably gave the state energy planning effort its greatest boost.

New Jersey was the first state to establish a State Department of Energy in April 1977, and by now most states have either created their separate D.O.E.'s or have an Energy Office within the Executive branch of government.

States are responsible for policy which can influence energy use in the following areas:

- "-Exercise of controls over land use, environmental effects, and facility siting;
- Utility regulation;
- Imposition of taxes and subsidies;
- Energy conservation policy actions; and
- Control of resources on state-owned land."<sup>30</sup>

Because of this wide regulatory authority it is apparent that the energy planning emphasis taken by a state will set the tone for any action or inaction by local governments.

The federal government has delegated energy planning to the states in three main areas. In the maintenance of the E.E.M.I.S. the states are fact gatherers of data for federal energy decision making. The states will also play a major role in utility reform programs guided by federal objectives. Finally, the states will serve as educators in the pilot

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<sup>30</sup>Ahearn, William, Ronald Doctor et.al, Energy Alternatives for California: Paths to the Future, California: The Rand Corporation, 1975 p.9.

Energy Extension program funded in ten states.<sup>31</sup>

### Local Government Energy Planning

After the oil embargo some local governments acted immediately to incorporate energy planning into community development goals and to implement energy conservation programs. Davis, California and Portland, Oregon are among the best examples of this. However, the vast majority of local governments are still not actively engaged in comprehensive energy planning.

One example of state coordination with local government energy planning is in the state of Oregon. In 1973 Oregon Senate Bill 100 authorized the state land use agency, the Land Conservation and Development Commission (L.C.D.C.), to review all local plans to determine whether they conform to state goals. Energy conservation was included as one of the state goals with which major projects had to comply.

"The Oregon L.C.D.C. review gives local governments a high degree of flexibility in determining the relative weight given to energy considerations by giving them the right to list reasons for non incorporation of a goal, including the goal of energy conservation, if it does not match overall community development goals. Choices range from a locality requiring maximum energy conservation at all times to a situation where energy conservation is only one of many considerations to be weighed in developing a comprehensive plan."<sup>32</sup>

Because of the extreme emergencies that could develop in the larger metropolitan areas in case of energy supply interruptions, most major cities have now developed their own contingency plans and many are making use of federal grants for demonstration programs. It is encouraging to note the high degree of success that some cities have had

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<sup>31</sup>U.S. D.O.E., Energy Reporter, November 1977, p.2. The States are: Alabama, Connecticut, Michigan, New Mexico, Pennsylvania, Tennessee, Texas, Washington, Wisconsin, and Wyoming.

<sup>32</sup>Harwood, op.cit., p.50.

when their emergency plans were put to the test even though stiff penalties of 50 per cent billing surcharges or even five-day power shut offs had to be drawn up to ensure adherence to conservation goals.<sup>33</sup>

Federal delegation to local government in the coordinated planning effort lie mainly in the area of conservation through such items as reviewing local building codes to improve the thermal efficiency of new buildings, retrofitting existing housing, regulating the traffic flow, demonstration projects of wide applicability, and so on.

#### Statement of the Problem

Because of the complexity of devising a comprehensive energy plan and the distinct characteristics of each community, it is essential that local government take the initiative for developing and implementing an energy plan of action. Each community should attempt appropriate energy resource management techniques that will work and are suitable for that community.

There are several reasons for local government involvement in energy planning:

"First, a municipality has the capacity to influence how energy is used at the local level by virtue of its planning and other regulatory powers. Second, a municipality can save on energy costs, for itself or for the community it represents. Third, a municipality would be wise to develop some measure of local energy self-reliance if possible. Finally, energy considerations can reinforce other municipal objectives such as efficient land use and environmental protection."<sup>34</sup>

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<sup>33</sup>For example, the commercial sector in Los Angeles cut energy use by nearly 30 per cent and residential and industrial use dropped by 10 per cent during the winter of 1973-1974 by voluntary conservation coupled with stiff sanctions. See F.E.A. Office of Conservation and Environment, "How Business in Los Angeles Cut Energy Use by 20 per cent", January, 1975.

<sup>34</sup>Bryant, Pamela and Anne Golden, What Can Municipalities Do About Energy?, Canada: Bureau of Municipal Research, 1978, p.i.

Other considerations include the need for emergency allocation programs in the larger metropolitan areas where the health, safety and general welfare of the population would be in jeopardy if essential services were cut.<sup>35</sup> In smaller communities needed capital improvements may have to be delayed if scarce financial resources have to be diverted to meet increasing energy costs. For example, in a statewide survey of cities and counties in Texas it was found that capital improvement programs were adversely affected in 17 per cent of responding local governments during the energy crisis of 1973-1974.<sup>36</sup>

Because of the unique energy requirements of each community it is proposed that local governments incorporate energy planning and development policies in their general plan. One reason for this is that:

"Although the Federal government can establish the broad contours of a national conservation program, the intelligent and efficient use of energy resources is, in the final analysis, dependent upon local consumption patterns."<sup>37</sup>

In the State of Kansas Planning Statutes 12-704,<sup>38</sup> which outlines the powers and duties of the planning commission with regard to the comprehensive plan and its review, provision is made for showing the general location, extent, and relationship of the use of land for major utility facilities. What this has usually meant is the inclusion of a

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<sup>35</sup>See Edward H. Allen, Handbook of Energy Policy for Local Governments, Massachusetts: Lexington Books, 1975, for model ordinances to deal with the setting up of emergency programs.

<sup>36</sup>Calderon, Cinda Martin and David W. MacKenna, Energy and Local Government: A Report to the Cities and Counties of Texas, Arlington: University of Texas, September 1974, p.74.

<sup>37</sup>Collins, Eugene N. "Conservation of Energy in Chattanooga", Municipal Attorney, January 1975, p.12.

<sup>38</sup>League of Kansas Municipalities, Kansas Planning Laws, May 1976, p.52.