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THE EFFECTS OF UNCERTAIN ENERGY
SUPPLIES ON RURAL ECONOMIC
DEVELOPMENT

A COMPILATION OF PAPERS FOR THE
SUBCOMMITTEE ON RURAL DEVELOPMENT

OF THE

COMMITTEE ON AGRICULTURE AND
FORESTRY

UNITED STATES SENATE

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FOREWORD

Late in 1973, as the result of the Arab oil embargo and other factors, both the farm and nonfarm sectors of rural America began to feel severe economic stress from increasing prices and short supplies of vital forms of energy.

This development was most distressing to me because in both agriculture and nonfarm economic development the picture just before the energy crunch never looked brighter.

Therefore, I determined that it would be a service if certain persons inside and outside the Government could examine the question of the effects of uncertain energy supplies on rural economic development.

This publication is the result of that interest. It focuses primarily on nonfarm rural development because Senator McGovern, with the help of Dr. Don Paarlberg of the U.S. Department of Agriculture has issued a publication which has primarily an agricultural focus.

I asked the National Area Development Institute of Lexington, Kentucky, to prepare a paper on energy and rural development. This paper is followed by excerpts from a speech by Mr. Robert Partridge, Executive Director of the National Rural Electric Cooperative Association and an article from Great Plainsman magazine by Mr. Joseph Halow.

The subcommittee print is concluded with a series of questions on rural development and energy which I submitted on May 8 to Assistant Secretary of Agriculture for Rural Development, William Erwin. Using the resources of Dr. Lynn Daft and his staff at the Economic Research Service, Dr. Walter Guntharp's people at the Rural Development Service and other Federal resources, especially the Federal Energy Administration, the response to these questions was excellent. The Rural Development Subcommittee appreciates the effort that was made.

The members of the subcommittee do not necessarily agree with all of the assertions made in this publication.

DICK CLARK,
Chairman, Subcommittee on Rural Development.

CONTENTS

	Page
Foreword	III
Energy and Rural Development:	
Summary	1
I. Introduction	3
Energy, rural development and balanced national growth.....	3
The danger of overreaction.....	4
The energy crisis and rural development: An overview.....	4
The need for better information.....	5
Early response to the energy crisis.....	6
A systematic approach to the energy problem.....	6
A framework for analysis.....	7
Energy-rural development relationships.....	8
II. The impact of energy scarcities on rural America.....	11
Current economic impact.....	11
Jobs	12
Business and industry.....	14
Incomes	16
Summary	18
Transportation	19
Economic effects	19
Air service.....	20
Highways	20
Rural transportation needs.....	21
Social and demographic impact.....	22
III. Managing the energy crisis.....	24
Federal allocation program.....	24
Delivery problems.....	25
The politics of allocation.....	25
The allocation program and rural development.....	26
Development options for rural areas.....	27
Regional effects of "top down" allocation.....	29
Price equalization.....	30
IV. Organizing for energy management.....	31
Coordinating energy and development policies.....	31
Approaches at the Federal level.....	31
"Crisis management" by the States.....	32
An intergovernmental approach to energy and development	
policies	33
-A regional approach to energy and development.....	33
-A role for substate districts.....	35
V. Energy development and rural development: Future policy options.....	36
Energy requirements and balanced urban-rural growth.....	36
Strategies for a national energy policy.....	37
Increasing domestic supplies.....	37
Reducing energy consumption.....	38
Energy self-sufficiency and rural development.....	40
Future employment and industrial prospects.....	41
State approaches to planning for energy development.....	42
Kentucky's approach.....	43
Problems and constraints.....	45
Air quality problems.....	45
Powerplant siting.....	46
Preservation of rural areas.....	47
The demand for money.....	48

VI

Electric Power for Rural America—Political, Economic, Legal, and Regulatory Considerations:	Page
What is the energy crisis?-----	51
Dealing with the energy crisis-----	54
Conclusion -----	56
Energy and Agriculture:	
A crisis with far-reaching effects-----	57
Agriculture is a top energy consumer-----	57
Less purchasing power may reduce food consumption-----	58
Oil costs stimulate foreign wheat production-----	59
Global inflation affects consumer, foreign trade-----	59
Danger of increased protectionism-----	61
Long-term solutions are needed-----	62
Questions concerning energy and rural development:	
Introduction -----	65
Letter from Hon. Dick Clark, to William W. Erwin, Assistant Secretary for Rural Development, Department of Agriculture, April 1, 1974-----	65
Letter from William Erwin to Hon. Dick Clark, August 29, 1974--	66
Summary -----	67
I. Current and short-term effects of energy shortages on the quality of life in rural areas-----	69
A. Economic and social consequences-----	69
B. Federal allocation program-----	85
C. Transportation -----	93
D. Institutional roles-----	103
II. The potential implications of the energy crisis on rural economic development and balanced urban-rural growth-----	112
A. Economic development-----	112
B. Energy development and rural development-----	122
Appendix -----	135

**THE EFFECTS OF UNCERTAIN ENERGY SUPPLIES ON
RURAL ECONOMIC DEVELOPMENT**

A COMPILATION OF PAPERS FOR THE SUBCOMMITTEE ON
RURAL DEVELOPMENT

THE STATE OF NEW YORK
IN SENATE
JANUARY 1, 1907.
REPORT OF THE
COMMISSIONER OF THE LAND OFFICE
IN RESPONSE TO A RESOLUTION
PASSED BY THE SENATE
MAY 1, 1906.

ENERGY AND RURAL DEVELOPMENT

BY E. EVAN BRUNSON, NATIONAL AREA DEVELOPMENT INSTITUTE*

SUMMARY

An adequate supply of available energy is crucial to rural economic development. Efforts to promote rural development, achieve better balanced national growth and to upgrade the economic and social conditions of nonmetropolitan residents are extremely vulnerable to continuing scarcities of fuel and energy.

Although energy scarcities present a clear threat to rural America, a concerted national effort to solve the energy problem can also provide the Nation with an opportunity to achieve the twin goals of rural development and better balanced growth. To accomplish these goals, rural development objectives must be thoroughly and fairly considered at an early stage in the formulation of national energy policies.

The economic and social impact of last winter's energy crisis on rural America is difficult to isolate and analyze. Layoffs hit some rural-based industry, but in general, rural workers seemed no worse off than their metropolitan counterparts. However, economic uncertainties over future energy supplies threaten to hamper efforts to revitalize many rural areas.

To date, the major impact of energy shortages on rural residents can be characterized as emergency and income problems which limit personal luxuries and comforts. Higher prices for gasoline, diesel fuel and propane have reduced the spending power of many rural families, and could produce a domino effect resulting in fewer new jobs and a long-term rise in unemployment.

The impact of energy scarcities on rural transportation could virtually doom prospects for the revitalization of many rural areas and lead to more urban and metropolitan concentration. Acceleration of historic trends toward urban concentration as a result of continuing energy shortages would mean that rural communities would be the biggest losers in terms of people, jobs, incomes and services.

If rural communities are to survive and prosper, the Nation must balance energy, environmental and economic considerations in developing policies for the future. Prospects for achieving this balance are dependent upon intergovernmental organizational arrangements,

*The National Area Development Institute, Inc., located in Lexington, Ky., is a non-profit institution devoted to the development of the Nation's rural areas, towns and smaller cities. Mr. Brunson is currently Editor of NADI's bi-monthly newsletter, Area Development Interchange. Formerly, he served as Senior Programs Analyst with the Institute.

Federal allocation policies and Federal and State development strategies.

Federal allocation policies could lead to urban-rural conflicts over attempts to equalize fuel prices and energy supplies on a regional basis. Political competition for allocation of scarce energy resources could further encourage the concentration of people and economic activity in metropolitan areas, and further widen the urban-rural gap in terms of incomes, employment, Federal aid and overall standards of living.

To date, however, rural areas have generally received equitable treatment under Federal allocation rules. Nevertheless, prolonged fuel shortages combined with rigid allocation policies designed to ease regional disparities in fuel prices and supplies could severely limit development options for nonmetropolitan regions.

In designing organizational structures for formulating national energy policies, an intergovernmental policymaking and coordinating mechanism is vitally needed to integrate and coordinate energy and development policies. An intergovernmental decisionmaking system designed to provide a key role for substate planning and development districts and multi-State regional development commissions could assure optimum consideration of rural development objectives by coordinating the formulation of energy policies with other related national and regional growth and development objectives.

The push for energy self-sufficiency by the 1980's presents a major opportunity for progress in achieving rural development and balanced growth objectives. A national commitment to energy self-sufficiency through increased domestic energy production could be a positive influence while policies to encourage drastic reductions in energy consumption rates could severely hamper growth and development in nonmetropolitan areas.

The potential for energy-related economic growth makes it imperative that rural development goals be plugged into the energy planning process at an early stage and at all levels of government. The Federal Energy Administration is currently developing an overall blueprint for achieving the goals of Project Independence. In all likelihood, FEA will propose a combination of broad policy options which will include specific proposals for both energy conservation and new domestic development.

Employment projections published by the U.S. Department of Labor illustrate the potential economic impact of energy-related development. However, this development will not occur automatically. Through careful and comprehensive long-range planning, rural economic development based on energy development can help diversify rural economies, create new jobs and raise incomes through the extraction and conversion of raw energy to usable fuels and through a host of related jobs in service and support industries.

On the other hand, if the Nation opts for policies designed to curb energy growth rates through policies that encourage high density urban living and concentration of economic activity, the social and economic viability of the Nation's smaller cities, towns and rural areas could be seriously undermined.

I. INTRODUCTION

ENERGY, RURAL DEVELOPMENT AND BALANCED NATIONAL GROWTH

An abundant supply of energy is crucial to most development efforts—rural economic development is no exception. While the Nation struggles to manage energy supply and demand by developing new sources, formulating new policies, designing new institutions and encouraging new lifestyles, other vital national goals may be obscured and ignored.

Rural development and balanced urban-rural population and economic growth are particularly vulnerable. Until only recently, attainment of rural development and balanced growth objectives generally have not received priority consideration in formulating domestic policies at both the Federal and State levels. While the 1970's brought renewed interest in rural development policies and programs especially on the part of Congress, a severe and prolonged energy crisis threatens to engulf balanced growth objectives and wipe out progress that has been made in recent years.

On the other hand, while the energy crisis represents a severe threat, it also presents a propitious opportunity to achieve the twin goals of rural development and balanced growth. If, through apathy and neglect, the Nation succumbs to a crisis mentality and fails to take these goals into consideration in formulating new energy policies and institutional arrangements to carry them out, rural development as a viable alternative to metropolitan growth will quickly fade from public consciousness.

However, if in developing new energy-related policies, the need for vigorous nonfarm rural economic development based on the dispersal of jobs and people away from major metropolitan areas is recognized, the energy crisis could, over the long run, provide a major boost to rural development.

Failure to adequately consider rural development objectives in planning and implementing energy-related policies could, at best, cause many economic hardships and dislocations for the over 64 million Americans living in nonmetropolitan areas. At worst, recent policy commitments to rural development and balanced growth could be obliterated—further reinforcing and accelerating long-standing economic and demographic forces that have crowded most Americans into a relatively few large metropolitan centers with the resulting social and environmental problems that have dominated domestic policy considerations for the past 10 years.

Reinforcement of these trends would further sap the economic and social vitality of the Nation's rural areas, towns, and smaller cities, leaving over 95 percent of the Nation's land area sparsely populated and drastically underdeveloped. Already, the energy crisis has

spurred calls for drastic changes in the American economy and lifestyles. These precepts are usually based on idyllic images of an agrarian rural economy or idealistic notions of a Nation geared to high-density urban living, mass transportation and greatly reduced per capita energy consumption. Such conditions could result in the curtailment of much economic development—particularly in rural areas—and would require rigid controls over the use and development of land and other natural resources which are vital to rural economic development.

THE DANGER OF OVERREACTION

Over the past few decades, the Nation has experienced unprecedented growth and prosperity which has created an unexcelled standard of living. The development of our land, water, and other natural resources has played a major role in achieving this prosperity. While the growth ethic resulted in excesses based on the false notion that our energy and natural resources were inexhaustible, the past several years have seen what Kenneth J. Bousquet, executive vice president of the National Environmental Development Association,* has described as an "ecological overreaction."

The cumulative effects of this overreaction combined with the adverse impact of last winter's energy crisis has potentially drastic implications for the development of the Nation's rural and nonmetropolitan areas. Carried to its extreme, within a generation nonmetropolitan America could be reduced to a vast, depopulated land mass whose prime functions would be to accommodate large-scale farming and to serve as a retreat for harried urban residents seeking escape from congestion and pollution in the peace and quiet of the countryside. However, the social and economic decay of rural areas would serve only as a nostalgic reminder of American society's inability to control its own destiny.

While the above scenario no doubt seems farfetched, a monolithic urban society within the next generation is plausible if public policy fails to recognize what rural economic development can accomplish in terms of diversity of lifestyles, the provision of new economic opportunities, and the upgrading of the quality of life in nonmetropolitan areas.

THE ENERGY CRISIS AND RURAL DEVELOPMENT: AN OVERVIEW

At present, there is a basic lack of knowledge concerning energy and rural development. In fact, the impact of fuel and energy shortages on society generally is so uncertain that one can hear both optimistic and pessimistic forecasts from a wide diversity of experts.

For example, writing in the twelfth issue of *Brookings Papers on Economic Activity*, William D. Nordhaus asserts that: "We should not be haunted by the specter of the affluent society grinding to a halt for lack of energy resources."

Focusing specifically on energy and area development, a broadly diverse group of experts and officials attending a recent NADI Pol-

*"Energy and the Environment—The Need for Balance," Address to the meeting of the North Dakota Water Users Association and the North Dakota Water Management Districts Association on Dec. 6, 1973.

icy/Research Conference supported by the National Science Foundation concluded that:

Clearly there is no crisis in energy reserves. The crisis or "crunch" is in the productive capacity, or the ability to extract fuel from the ground, convert it into energy in an environmentally acceptable way, and deliver it in adequate amounts to the consumer. It is a crisis of deliverability.**

Other experts are not so optimistic, however. Noted physicist Ralph E. Lapp has said that:

There is no way we can sustain the giddy growth rates in energy consumption of recent years. Even under the best of circumstances, energy conservation is going to be mandatory. We are going to have to adapt our transportation system—indeed our whole system of generating and using energy—to an age of energy scarcity, and this will require a whole series of profound political and economic adjustments.***

There are no doubt some elements of accuracy in all of these divergent predictions. It is within the parameters of these diverse forecasts that energy policies and rural development objectives must be hammered out and reconciled.

THE NEED FOR BETTER INFORMATION

As recently as a decade ago, rural or nonmetropolitan problems were associated with farm problems and Government agricultural policies. However, with the latest census data showing that over 70 percent of the U.S. population were concentrated in the Nation's metropolitan areas, the early 1970's brought on a new interest in rural development and balanced urban-rural national growth along with increased attention to improving the quality of life for residents of nonmetropolitan America.

Energy scarcities could not doubt bring major social and economic changes influencing all areas of the country and segments of the population, and profoundly affect the general quality of life for residents of nonmetropolitan America as well as future patterns of national population growth and economic development.

However, at the inception of the "energy crisis" in late 1973, the basic knowledge necessary for policymakers to assess the impact of energy scarcities on rural development was lacking—making a realistic evaluation of alternative policies impossible. As yet, few can expect to accurately assess the potential impact of the energy situation on rural development, much less propose policies to solve as yet undetermined problems. What is needed is to conduct priority research based on the identification of demands for a wide range of new information and data needs on the relationship of energy to rural development.

While this paper makes no such pretensions, it represents a starting point—a systematic attempt to identify and define some of the po-

**The Conference, held in Lexington, Ky., Jan. 9-10, 1974, was one in a series of NADI conferences dealing with topics related to area development. The participants represented a broad range of experience in government, development organizations, research institutions, and private business and the professions. Financial support for the conferences was provided by the Ford Foundation and NSF's Office of Intergovernmental Science and Research Utilization. A report on the conference proceedings will be published in the near future.

****The Wall Street Journal*, April 23, 1974.

tential short- and long-term implications of overall energy-rural development relationships.

EARLY RESPONSE TO THE ENERGY CRISIS

The sudden emergence of a full-fledged energy crisis in late 1973 found most public policymakers at all levels of Government unprepared to deal with the complex public policy implications of alternative strategies for managing energy supply and demand. Not surprisingly, this unpreparedness initially resulted in a haphazard reaction on the part of Government and industry. As problems escalated, the Federal Government and the States relied on a series of interim arrangements for everything from the emergency allocation of gasoline to long-range solutions for developing new energy sources, while at the same time attempting to organize for a coherent, national response to the energy problem.

The crisis approach that characterized early efforts by public officials to cope with the emergency aspects of the energy shortage concentrated, not surprisingly, on efforts to minimize the impact of energy-related problems on the most visible and highly volatile public policy concerns. Environmentalists fear a faltering commitment to the national goal of cleaning up pollution; the oil industry fears increasing government regulation and punitive economic sanctions; consumers worry about rising prices, "windfall" profits and concentrated power in a few multinational corporations; urban interests advocate more Federal aid for mass transit and more gasoline for fuel-starved commuters; farmers are concerned about fertilizer shortages, inadequate transportation and enough fuel to harvest their crops; and truckers bemoan the high cost of diesel fuel and reduced speed limits.

Less well publicized has been the immediate need to reevaluate and reformulate plans for future national and regional economic development. And perhaps least publicized and consequently least understood are the implications and the potential impact of the energy crisis on residents of rural and small town America.

Under the current Federal definition, 64 million Americans reside in nonmetropolitan areas. With the subtleties and technicalities of census definitions put aside, the total population of rural and nonmetropolitan areas has been estimated at over 80 million or about 40 percent of the total population.

A SYSTEMATIC APPROACH TO THE ENERGY PROBLEM

The sudden end to the Arab oil embargo in March encouraged a more reasoned and systematic approach to energy policy and has given those responsible for rural development activities in Congress and the Federal establishment an opportunity to influence future energy policy.

In May, Congress passed a bill creating the Federal Energy Administration (FEA) to replace the Federal Energy Office and separate legislation to establish an Energy Research and Development Administration (ERDA) was expected to be approved by early summer. President Nixon has urged that both of these independent agencies later be incorporated into a large-scale Department of Energy and Natural Resources (DENR). However, there is considerable con-

troversty over plans to put all energy responsibilities in one big department.

Nevertheless, the question of organization remains one of critical importance. The new FEA will concentrate on the immediate planning and operational needs of minimizing the adverse impact of fuel shortages, increasing energy supplies and reducing energy demand while ERDA would deal with the R. & D. dimensions where technology can yield new solutions to creating and using energy.

Authorized through June 30, 1976, FEA has responsibility for fuel allocation and price regulation; energy data collection and analysis; and broad energy planning with particular emphasis on energy conservation and expansion of energy supplies. It is in this latter area that rural development goals and objectives must be plugged into the policymaking process at an early stage.

As a first priority, the President has directed FEA to work with other governmental agencies to prepare a comprehensive plan for achieving the goals of Project Independence—the capacity for energy self-sufficiency by 1980. Thus, the time-frame to identify and analyze rural development considerations for inclusion in the energy-planning process is short. Particularly at the Federal level, those responsible for or concerned with rural and nonmetropolitan development and balanced urban-rural national growth must act quickly to assure that these objectives are thoroughly and fairly considered in formulating energy-related plans and policies.

Already, both the Department of Agriculture and the Subcommittee on Rural Development of the Senate Agriculture and Forestry Committee have taken such steps. With encouragement and support from the Senate Rural Development Subcommittee, USDA's Economic Research Service (ERS) has taken the lead in coordinating an interagency study of the impact of fuel shortages on rural residents and the potential impact on future economic development in nonmetropolitan areas. Of equal significance, the FEA has indicated that it will address a series of policy questions on energy and rural development submitted by the subcommittee in its long-term energy policy objectives and recommendations to be submitted to the President next November.

A FRAMEWORK FOR ANALYSIS

Rather than attempt to assign blame for the energy crisis or to take sides on what areas, institutions or segments of the population stand to profit or suffer from the energy crisis conundrum, this report will assess the current economic and social impact of the energy crisis on the quality of life in rural and nonmetropolitan America and to identify some of the implications and potential impacts of new energy-related policies for rural development.

Simply stated, an analysis of the impact of the energy crisis and related energy policies on rural development and balanced growth can focus on two broad considerations.

1. *Maintenance Goals.*—The extent to which on-going and developing jobs and incomes of nonmetropolitan residents are supported or prevented from being adversely affected. In other words, what has been the current economic impact of fuel shortages on nonmetropolitan

residents and what can be done in the short term to maintain the existing economic viability of these areas.

2. *Development Goals.*—The achievement of new jobs, higher incomes and related residential and community services (housing, transportation, public facilities, etc.) in nonmetropolitan areas. These goals imply economic and population growth for underdeveloped rural areas and can be generally classified under the broad category of future nonfarm economic development.

The above considerations must be examined in the context of maintaining and where practical, enhancing, the physical, esthetic and social environment and otherwise contributing to the overall quality of life for residents of rural and nonmetropolitan America.*

Finally, the maintenance and development goals listed above cannot be properly assessed without some attention paid to organizational and management tools and strategies necessary to carry them out.

ENERGY-RURAL DEVELOPMENT RELATIONSHIPS

Before attempting to analyze energy-rural development relationships in terms of accomplishing maintenance and development goals, several inherent conditions and factors should be put forward. The recognition and acceptance of these conditions and factors is essential to any situational analysis that attempts to isolate energy considerations as a separate and distinct element in the overall economy of rural and nonmetropolitan areas. While not subject to precise quantification, these empirical observations can form the basis for a better understanding of the relationship between energy and rural development.

Economic Conditions

Economic development creates jobs and raises income permitting people a higher standard of living which produces wider options to seek a better quality of life.

Rural development, indeed all economic development, thrives on an abundant supply of energy.

Many rural areas are at the end of the energy distribution system.

Energy is an extremely significant factor in manufacturing and manufacturing industries represent the best opportunity for economic development in many rural areas.

Fuel shortages have affected the distribution of goods in some rural areas and have adversely affected wholesale and retail trade.

The costs of all forms of energy will increase significantly though not necessarily on a par with other sectors of an economy experiencing the maladies of severe and prolonged inflation.

The costs of some leisure activities will also be significantly increased.

*While environmental objectives are explicit in almost all policies designed to promote rural economic development and, in some instances, will be the overriding consideration, this report will not address in detail tradeoffs between rural economic development and environmental enhancement. (A separate but related report on energy, the environment and rural development has been prepared for the Senate Subcommittee on Rural Development by the Congressional Research Service.)

Social Conditions

The impact of energy shortages, including increased costs, will have a major effect on personal income and, lower income groups will suffer disproportionately.

Since the average family income in nonmetro areas is lower than in metro areas, \$7,615 compared to \$10,406 in 1969, these areas are more likely to suffer adverse economic effects.

Residents of rural areas have fewer fuel options than do residents of urban areas.

The cost and availability of fuel is already influencing where people live and work. A severe and long term energy shortage will have a major influence on rural-urban settlement patterns.

Energy shortages have already caused the dislocation of some jobs and will result in the need for some retraining and relocation of people and jobs. At present, it is difficult to isolate these demographic and employment impacts on rural areas per se, but there is little doubt that continuing shortfalls will markedly effect economic and social conditions in rural America.

Physical Conditions

The major current and potential domestic sources of fuel and energy—coal, crude oil, natural gas, oil shale—are located in nonmetropolitan areas.

The increase in energy production capacity to obtain these resources will almost certainly increase the demand for water.

Decisions on water development, which is often an important component of rural development, must be factored into energy development.

The availability of water resources may be a limiting factor in energy development in some rural areas.

Land use planning in rural areas will require a detailed examination of the effect of energy development.

Political Conditions

Both the future development of rural areas and the future development of energy is highly dependent on actions or inaction on the part of the Federal Government.

Successful State programs dealing with energy and rural development will influence Federal policy decisions.

The demand for new controls on energy development will be tremendous at both the Federal and State levels.

Energy Requirements

The demand for energy will continue to increase for most sections of the country, segments of the population and sectors of the economy.

The era of low cost energy is over for U.S. consumers.

Planning Requirements

Successful rural development efforts are highly dependent on sound and comprehensive economic development planning.

Existing plans and policies for rural development must be reevaluated in the light of the current energy situation and anticipated future developments.

The reevaluation of economic development plans, programs and strategies must occur at all levels of government with particular emphasis placed on defining a role for nonmetro substate planning and development agencies in energy management. These agencies have, for the past few years, been in the forefront of efforts to develop rural areas.

II. THE IMPACT OF ENERGY SCARCITIES ON RURAL AMERICA

CURRENT ECONOMIC IMPACT

Nearly three-fourths of the consumption of energy in the United States is in one way or another job-related, according to John C. Fisher, Manager of Energy Systems Planning for the General Electric Company. This figure includes the associated transportation of goods and people to and from work—approximately three-fourths of all transportation. Fisher notes that the rest of the Nation's energy consumption is related to residential and recreational uses, which involves indirect employment effects.

Many have predicted the current fuel and energy shortage will cause widespread unemployment and disruption of industrial production. While such dire forecasts have not yet been borne out, inflationary price rises related to energy shortages have clearly had a severe impact on those geographic areas and socio-economic groups least able to cope. The latter can be accurately pinpointed—persons on fixed incomes, in marginal jobs or unemployed. However, it is exceedingly difficult to obtain a precise reading of those rural areas and regions of the country that are vulnerable to a shortage economy caused by energy scarcities.

The scarcity of fuels and the resultant shortage of materials have already caused structural unemployment in some areas and has contributed to inflation throughout the economy. Conventional macro-economic tools of fiscal and monetary policy have never been able to satisfactorily remedy one problem without aggravating the other. And it is unlikely that fiscal and monetary policy can ameliorate the adverse micro-economic effects of structural and chronic unemployment in regions and areas particularly hard hit by energy shortages.

The proposed Federal budget for fiscal year 1975, for example, proposes a major deficit to stimulate the economy and hopefully increase employment. However, apparently recognizing the inadequacy of deficit spending on regional and area development, the Administration has recently proposed a new Economic Adjustment Act to assist communities and areas in adjusting to structural changes in their economy; to help prevent major economic and social distress; to stimulate employment opportunities for the unemployed and underemployed in areas of persistent and substantial unemployment and low per capita incomes; and to stimulate expanded employment opportunities in rural areas.

According to the Administration's recent report evaluating Federal economic development programs, "the current energy crisis provides many examples of the potential economic changes which may be required to adjust to a change in the availability of a critical resource.

The impact of such a change will vary from region to region and the need for assistance to adjust to such changes also will vary.”*

To date, the economic effect of the energy crunch on rural and non-metropolitan areas has been uneven. However, since an adequate supply of energy is essential to the economic health of rural areas, even seemingly minor and inconsequential side effects have the potential to seriously disrupt rural economic activities.

The current economic impact of fuel and energy scarcities on non-metropolitan areas can be subdivided into four related problem areas—jobs, business and industry, income and transportation. These forces will in turn, profoundly influence the social conditions and demographic patterns that affect rural development.

JOB

A major problem in determining the economic consequence of fuel and energy shortages on rural areas is the need to develop ways to forecast the economic effects of the energy gap, including its effect on unemployment.

Last winter's energy crisis taught the Federal Government how little economic analysts know about the relationship between fuel and jobs. Consequently, Government analysts are making a crash effort to sharpen their statistical tools to the point where they can be used to give more precise forecasts of the impact that fuel shortages have on employment. So far, these forecasts have focused on projecting imbalances between supply and demand for petroleum, relating these projections to the total number of jobs, and pinpointing the effect on specific industry segments.

The approach of the Labor Department's Bureau of Labor Standards has been to get an idea of the importance of petroleum in terms of employment by taking the dollar value of petroleum purchases per worker. Some industries may not be large users of petroleum themselves, but they buy products made of petroleum—synthetic chemicals, synthetic rubber, products relying on petroleum feedstocks etc. When these surveys are finished, Government economists will be able to show such information across the board for all industries. However, this information alone will not indicate what actually happens to specific industries when severe shortages hit.

Some of the unknowns in the equation are the extent to which an industry may be able to offset petroleum shortages by using substitutes and by adopting effective conservation programs. According to DOL officials, “You can't say because an industry experiences a 10 percent cut in its fuel supply, its going to suffer a 10 percent cut in production and employment.” They also point out that another problem in making accurate forecasts is that relatively small amounts of petroleum are essential to some industries.

The major Federal study to date in this area has been the “Secretary of Labor's Report on the Impact of Energy Shortages on Manpower Needs.”** This report, required by section 506 of the Comprehensive Employment and Training Act of 1973, was sent to the Congress in March.

*“Report to the Congress on the Proposal for an Economic Adjustment Program,” February 1974.

**U.S. Development of Labor, Manpower Administration, March 1974.

The report concluded that the disemployment effects associated with the energy shortage coincided with the imposition of the Arab oil embargo. Some post-embargo impact on employment was also forecast as a result of fuel price levels remaining substantially above pre-October 1973 levels.

The report notes that Federal allocation policy under the Emergency Petroleum Allocation Act of 1973 has been designed to minimize the employment impact of fuel shortages as well as to protect the public health, safety and welfare, to maintain public services, agricultural operations, and national defense. However, it was found that an adverse employment impact has been experienced by those industries dependent upon high levels of fuel consumption—such as the private use of gasoline for automobiles and jet fuel for commercial aviation—that received allocations of less than 100 percent of their needs.

Noting that “both the nature of the energy shortfall and the Federal policy response to the problem influence the industries, geographic areas and occupations in which energy-related unemployment has occurred to date,” the Bureau of Labor Statistics estimated that “from November 1973 to February 1974 between 125,000 and 200,000 jobs were lost as the direct result of employers’ inability to acquire sufficient supplies of fuel or petroleum-based products to maintain their former levels of operation, principally in gasoline stations and airlines.” In addition according to the report, “industries that may have experienced at least some indirect effects owing to declines in consumer demand for certain products and services as a result of actual or anticipated shortages of fuel, posted employment declines of 300,000 jobs.”

Noting that there is no accurate way to determine how many of these 300,000 jobs were actually lost, the report emphasized that “it can reasonably be assumed that some number of those persons who were laid off in the energy shortage affected industries were reabsorbed in other industries or through recall.”

Some of the industries most affected, according to the report, “include those engaged in automobile production and distribution, aircraft and parts, ship and boat building, recreation vehicles, hotels and other lodging places, and amusements. While other factors have also contributed to these declines, it can be reasonably assumed that a significant proportion of the total stems, at least in part, from uncertainties over gasoline supplies.”

In terms of geographic areas affected, the report found that “the upper Midwest region appears to have suffered the greatest impact of energy-related unemployment, thus far.” (March 1974) This region includes the States of Michigan, Indiana, Ohio, and Wisconsin. Other States particularly hard-hit since the fall of 1973 include New York, Kansas, Iowa, Delaware, New Hampshire, California, and Tennessee, according to the report.

In most States, energy-related unemployment effects were linked with automobile manufacturing or industries heavily dependent on the auto industry. Layoffs in private aircraft manufacturing and airline services were significant in Kansas and New York respectively. The decline in demand for recreational vehicles hit Iowa while lay-offs in boatbuilding hit Wisconsin.

Other industries hard-hit include hotels and other lodging places, aircraft and parts, blast furnaces and basic steel products, plastics products, gas stations, radio and TV equipment, trucking, airline transportation and laundries and dry cleaning.

In terms of unemployment by occupation, the report estimated that "the majority of persons laid off—far higher than their proportion in the labor force—are semi-skilled." Four-fifths of these workers fall into the general production category—"production workers," or "assemblers," or "installers." When "machine operators" are included, the total rises to nearly 85 percent.

On the other hand, only 5 percent of total lay-offs involved unskilled workers, while the higher skill levels of the work force—professional, technical, and skilled workers—experienced relatively little energy-related unemployment.

A more precise analysis of energy-related unemployment, released by the Bureau of Labor Statistics in April, showed that the employment drop brought on by the energy crisis was more than offset by job growth in other industries. Based on a study of 172 private nonfarm industries, BLS found employment dropped 0.3 percent in "energy-critical" industries compared with a growth of 0.4 percent in other industries from November 1973 through March 1974. "Energy-critical" industries were defined as those likely to experience negative effects of energy shortages. They comprised 44 of the 172 industries studied.

In April, a BLS official predicted that the end of the Arab oil embargo would reverse the decline in energy related employment.

BUSINESS AND INDUSTRY

Many economists have warned that because of the interdependence of all economic segments, no industry can immunize itself from the adverse spin-offs of energy shortages forever. The domino effect of a specific shortage spreads out over the entire economy meaning fewer new jobs and a rise in unemployment. It is generally accepted that less fuel and petroleum byproducts may force curtailment of production and employment in such important rural industries as textiles, apparel, chemicals, farming, food processing, mining, lumber and wood and paper products.

In determining the impact of energy shortages on specific business and industrial segments, a key research task has been to find out which industries have the highest ratio of energy consumption to total output. The Cost of Living Council has published such a study which shows that metalworking, such as aluminum, has the highest ratio. Other major energy intensive industries identified in the survey include logging; pottery and related products; concrete, gypsum, and plaster products; paving and roofing materials; miscellaneous chemical products. Paper and agricultural chemicals also rank relatively high on the list.

When industries are ranked according to the total dollar amounts spent on purchased fuels and electric energy, the blast furnace and steel products industries are the runaway leader, followed by petroleum refining, paper milling, nonferrous metals, motor vehicles, and plastics and synthetics.

Last March, the FEO announced that it and three other agencies would jointly finance 60-day studies of the impact of energy shortages

on 13 categories of U.S. industries. These 13 industry groups account for 10 million jobs, 75 percent of the energy used in manufacturing, 100 percent of the energy used in contract construction, and 50 percent of the energy used in mining. These studies should answer such questions as who will be unemployed when the price of fuel goes up, and what groups will bear the brunt of the burden.

Other questions being examined as part of these studies include the variations of fuel use among companies in each industry, and how substitutions or conservation of fuel can save money.

At the height of the energy crisis in February, Thomas Kleppe, head of the Small Business Administration, predicted that the small business sector is faced with growing business failures and serious unemployment. In announcing the creation of an Office of Special Advisor to the Administrator on Energy and Materials, Kleppe said the new office would take a number of steps to help ease the energy crunch and materials shortages on small businesses.

Rural Industry and Employment

While it has been generally assumed that workers in industrial plants, transportation, and retail stores would be most seriously threatened with loss of jobs and income as a result of fuel shortages, the various government studies and surveys to date give little indication of the specific impact on jobs, industry, and business in rural areas.

A few general observations can be put forward, however. The actual and potential effects of fuel shortages on the tourism-recreation industry have been well documented. Tourism and recreation are of major significance to the economy in many rural areas, and some of those areas will be hard hit. However, with fuel supplies expected to be near normal levels for the rest of 1974, the impact on the tourism-recreation industry may not be as severe as expected last winter, when resort areas dependent on skiing and snowmobiles suffered heavy losses.

Nevertheless, recreation related manufacturing will continue to be hurt. Forest City, Iowa, a small town of 4,200 population, provides a cogent example of what fuel shortages can do to a rural area whose economy is tied to the recreation-tourism industry. Home of Winnebago Industries, one of the country's largest makers of motor homes, and the Forester Division of Kagot, Inc., the leading makers of travel trailers, both the town and surrounding region have been particularly hard hit. Since the spring of 1973, more than 3,000 workers have been laid off by the two firms. Most of these workers commuted to Forest City from farms and tiny scattered towns in northern Iowa and southern Minnesota. While farm prosperity has helped residents and businessmen in the area survive the massive lay-offs, as of last March Winnebago's payroll was 950 compared to 3,900 fifteen months earlier.

The food processing industry could also be hard hit by fuel shortages. Processing plants located in rural communities throughout the United States must have adequate and reliable sources of energy to operate necessary processing equipment.

The dairy industry is potentially vulnerable. While milk production is consistent 7 days a week, demand for various dairy products fluctuates throughout the week which means fluid processing plants operate 4 or 5 days a week and manufacturing plants operate 7 days

a week. Between the two different types of operations, they have demands for energy 7 days a week, 24 hours a day. It takes a considerable amount of energy to operate much of the sophisticated cooling, processing and heating equipment in a modern dairy processing plant.

According to the 1971 Survey of Manufacturers conducted by the U.S. Department of Commerce, plants processing dairy products purchased \$123.2 million worth of energy. Dairy plants also generated an additional 41.6 million kilowatt hours of electricity for their own use.

A significant increase in the cost of energy or a shortage of energy on dairy farms or in rural-based food processing plants can have a severe effect on rural economies.

Economic Uncertainty

An even greater threat of fuel scarcities on rural economies concerns the uncertainty in economic outlook brought on by the energy situation. The mere fact that businesses are unable to project the future outlook acts as a brake on expansion. In terms of this uncertainty, business and industry are much less likely to make capital investments—resulting in fewer new plants and new jobs for rural areas. Several reports have appeared in the media concerning industries that have postponed plans to locate new plants in nonmetro areas because of the uncertainty over the availability of energy.

A major facet of rural economic development policy has been the location of new businesses. In the past, while consideration was given to the availability of energy, for the most part adequate supplies were available and it was not a major constraining factor in plant location. This situation has been drastically altered and the availability of adequate energy supplies both now and in the future is a major question that must be answered before the location of a new plant can be given serious consideration. This is due to the fact that 100 industrial jobs may create as many as 80 other jobs in the area, each one in effect demanding additional energy supply. Since there are widely differing energy consumption rates for various types of industrial activities, rural economic development efforts must consider the "energy impact" of locating new industries in rural areas.

Of course the overall, economic impact of the energy situation on nonmetropolitan areas is not all gloomy. Selected energy-related industries stand to make significant gains. For major industries such as coal, railroads, and petroleum, the energy crisis could be the biggest break in years. An economic boom for the coal and rail industry could permit major opportunities for economic development in some rural areas. These and other prospects are discussed in section V.

INCOMES

The immediate energy-related problems of rural residents have been emergency and income problems rather than limits on personal luxuries and comforts. For example, higher prices for gasoline, diesel fuel, butane and propane have already adversely affected the economic well-being of rural residents in many areas. Rural residents are more dependent on the automobile to provide vital transportation to non-

farm jobs, markets and essential services such as health care than residents of metropolitan areas.

Since alternative modes such as mass transit and car pools are generally unavailable, many workers who reside outside SMSA's and commute long distances to industrial and service jobs in larger cities and towns have been especially hard hit. For the employee who has to drive 30 miles to work, a 30 cent-per-gallon price rise would cost an extra \$300 or so a year. And many rural workers drive even further to get to and from their jobs.

Since the burden of higher gasoline and fuel prices falls most heavily on low-income groups, the overall economies of rural areas will be affected disproportionately as will the well-being of millions of rural families. The median family income in rural areas is considerably lower than in urban areas, and it has been estimated that 48 percent of all persons with incomes below the poverty level reside in non-metro areas. Furthermore, in 1969, the incidence of poverty in non-metropolitan counties was twice that of metropolitan counties—20.2 percent in contrast with 11.3 percent for metro areas. Thus, rural areas will be hard-hit by energy-related inflation.

The effects of a shortage economy and an energy gap promise to remain a problem for many rural areas for at least the next 5-7 years, reducing the average discretionary income available to rural residents. While the extent and affect of such a reduction in spending power is not yet fully evident, there is little doubt that such activities as wholesale and retail trade, recreation, personal savings and investments will be adversely influenced.

Such economic effects would no doubt increase unemployment levels in some rural communities and hit especially hard at those areas where chronic unemployment is already a problem. Just as significant but perhaps less visible will be the impact on the vast numbers of under-employed and subemployed rural residents.

Farm family income is also vulnerable to these same economic forces since many farmers also hold full or part time off-farm jobs to supplement their farm earnings. In 1971, USDA estimated that off-farm income represented about 53 percent of the average farm family's net income.

The first real impact of the energy shortage to affect rural residents came from the short supply and resultant price increase of diesel fuel and liquid propane gas (LPG). Farmers are particularly dependent on diesel fuel for their trucks and farm machinery, and continued price rises could have a combined effect of reducing consumption to save costs which would lower productivity and raise prices of farm products.

It is estimated that around 40 million Americans—mostly in rural areas of the South and Midwest—depend on propane for home heating, cooking, drying crops and other uses. Last winter, the price of propane rose by as much as 300 percent in some parts of the country. Because propane is used mainly in sparsely populated areas, it accounts for only a small portion of total U.S. energy consumption. When prices began to rise and consumers complained, Federal officials were slow to react to what has been characterized as price gouging by some propane dealers. While subsequent action has been taken to roll back the price of propane, the problem was virtually ignored until it got out of hand.

Overall the use of propane gas is steadily increasing. Despite inflationary prices, consumption now exceeds 23 billion gallons annually. However, the market is close to saturation because production of propane is governed by the production of natural gas and crude oil.

Other segments of the rural population have been hard hit by rising energy prices. It has been estimated that as much as two-thirds of the Nation's substandard housing exists in rural areas. Most of this housing is in need of energy-saving devices such as storm doors and windows, weather stripping and better insulation. Without such improvements, the cost of home-heating becomes exorbitant to millions of rural families.

Another segment of the rural population especially vulnerable to high fuel costs are migrant farm workers. A Labor Department analyst has estimated that the added expense for gasoline could equal 5 percent of a migrant worker's individual yearly earnings.

SUMMARY

Most experts predict it will be at least 5-7 years before the Nation begins to feel any relief from the effects of the energy shortage. During this period, a shortage economy and energy gaps will profoundly influence national and regional economic activities. Business and industry will be forced to focus on the dependence and interrelationships between production, distribution and marketing. The implications caused by these changing economic patterns and lifestyles are yet to be fully felt or understood.

The preceding discussion of the economic impact of the energy shortage on rural people and nonmetropolitan communities merely highlights the most visible problems evident to date. Left unanswered are important questions concerning current rural economic development strategies and programs.

Federal economic development programs have for the past 15 years or more concentrated on depressed nonmetropolitan areas with high unemployment and low income levels. Several Federal programs have adopted a growth center strategy for nonmetropolitan economic development, focusing investments on larger towns to provide jobs and services for residents of surrounding rural areas. The potential implications of prolonged energy shortages on the growth center strategy are largely unidentified. In addition, there are few readings to date of the impact of fuel shortages on chronically depressed nonmetro areas such as Central Appalachia and the Upper Great Lakes region.

It is reasonable to expect, at least for the foreseeable future, that there will be considerable emphasis on expanded Federal public works projects and improved unemployment compensation to assist the residents of these areas. Other Federal programs such as public service jobs can serve as interim emergency measures, but offer no permanent solutions.

Also of particular concern is research and development related to natural resources and a reevaluation of current plans to conform with a shortage economy.

One policy area that requires immediate concern is that of reviewing current economic development plans to conform with the energy situation. Up until quite recently it has always been assumed that

there would be abundant energy available for economic development and it was the availability of land, water capital and labor that was of primary concern. Now it will be necessary to consider energy in the same manner as land and water, etc. Two particular subpolicy areas are highway construction planning and land-use planning. These subjects must now be reviewed in the context of energy shortages and higher fuel prices.

While the current effect of the energy gap on these policy areas has not been fully determined, the relationship between alternative energy development policies and rural economic development strategies are discussed in more detail in section V.

TRANSPORTATION

Adequate transportation systems are absolutely essential to the overall economic and social well-being of rural and nonmetropolitan areas. And since transportation is the second largest user of energy, consuming about one-fourth of all energy produced in the United States, as the Nation moves into a period of energy scarcities, transportation will prove both sensitive and powerful in transmitting and multiplying the economic effects of the scarcity.

ECONOMIC EFFECTS

Rural and nonmetro areas are particularly sensitive to the economic effects of energy shortages on transportation. For many rural areas, a major development goal is to overcome isolation through improved highway, rail, air, and water transportation linkages. Over the past 20 years, emphasis has been placed on improving highways, air service, and inland navigation systems.

Continuation of these efforts are now directly threatened by the energy gap. Almost every method suggested to improve the efficiency of energy use in transportation favors high density or clustered activities. Thus, rural and nonmetro residents face greater proportionate increases in transportation costs and greater reductions in transportation costs and greater reductions in transportation services.

Last winter's independent truckers strike catalyzed in the public's mind the gravity of the energy crisis and hopefully reminded urban dwellers of their dependence on rural areas for food, fuel and other essential goods and services. Congress and some Federal agencies are becoming more aware of what rural development specialists were describing as a "crisis" in rural transportation even before last winter's energy crisis.

Deteriorating rural roads, the failure of many States and the Federal Government to invest in farm-to-market roads, combined with rail abandonments and the shortage of rail cars in nonmetro areas have left many rural communities without adequate transportation linkages to large regional and metropolitan centers. Although some rural areas have been able to rely on trucks and water transport for movement of goods, high diesel fuel prices and lower speed limits have combined to create high costs resulting in slower and fewer deliveries.

And even though gasoline shortages appear to be alleviated—at least temporarily—increased fuel costs have brought economic conse-

quences affecting freight distribution patterns, energy production and distribution, manufacturing production, and marketing patterns. For example, transportation costs represent a substantial portion—approximately 40 percent—of the delivered price of coal. Higher transportation costs thus affect coal's ability to compete with other energy sources, influencing the whole pattern of fuel use and distribution. The total long-term impact of these and other complex interrelationships between transportation and economic activities on rural areas cannot yet be fully determined. However, some immediate effects of energy related transportation factors on rural areas are easier to identify.

Shortages and inflated costs of gasoline have hit hard at rural areas where the economic livelihood is highly dependent on the recreation industry. Some resorts near major metropolitan areas may prosper as urban residents travel shorter distances for vacations and recreation. However, even those resorts within a tankful of gas of major cities will suffer if they can't guarantee tourists enough gasoline for their return trip home. Reports last winter from resorts in Florida indicate that motorists have often been unable to purchase enough gasoline for their return trip home. Ski resorts in rural New England were also hard hit by the threat of gas shortages.

AIR SERVICE

Another sector adversely affected by fuel shortages has been local and regional air service to small cities and towns. Last winter, average fuel costs per gallon increased over 33 percent for local service air carriers—those certified to serve smaller cities and towns. Many of the flights eliminated last winter because of shortages and high fuel costs served smaller cities where load factors were lighter.

One consumer group has accused the airline industry of using the energy crisis to cut low-profit flights while keeping high profit ones. Communities where air service has been reduced or ended have made similar charges.

In all, at the height of last winter's fuel shortages the airlines sought to withdraw all service from 25 small cities across the Nation. In many of these communities, an end to air service would virtually isolate large areas, leave business and industry paralyzed and make long distance travel both costly and time consuming.

Invariably, local officials responsible for economic development insist that local air service is vital to local business and industry which depend on air freight service to ship goods and essential supplies, as well as transport of corporate executives to and from their big city headquarters. Small manufacturing industries in rural areas are particularly vulnerable because of their reliance on air freight for speedy delivery of parts and machinery.

HIGHWAYS

Small towns and rural areas stand to suffer the greatest harm as a result of energy scarcities through cutbacks in highway construction and maintenance and de-emphasis of motor transportation. Already, some States and Federal officials are de-emphasizing highway trans-

portation by allocating funds traditionally set aside for highways for mass transit construction and operation.

Federal Highway Administrator Norbert T. Tiemann has said that the energy shortage "undoubtedly is going to have an adverse effect on the Federal aid highway program" by seriously curtailing funds available to Federal, State and local governments for highway purposes in 1974. According to Tiemann, "if a 30 percent reduction in gasoline usage is required in 1974—then the Highway Trust Fund receipts would be reduced to about \$4.7 billion and the State receipts from highway users would be cut back to about \$10.8 billion." Such cuts would reduce revenue to the highway program by some \$3.3 billion at present tax rates.

In Virginia, State officials have estimated that highway revenue losses attributable to the energy crisis during the 1974-75 fiscal year will total some \$22 million. This figure represents both an actual loss of income and the failure to achieve normal growth. Revenue from both the State's 9 cents-per-gallon motor fuel tax and its motor vehicle title tax are expected to be adversely affected.

The Advisory Commission on Intergovernmental Relations estimated last winter that gasoline tax collections for 1974 would be 17 percent below 1972 levels. Maryland reported an 18 percent drop in revenues for March 1974 compared with a year earlier. Other States have reported that income from toll roads has been significantly reduced. Maine and South Carolina have reported revenue losses of about 8 percent in 1973 even before the full effect of the energy crisis was felt.

As a result of these revenue losses, highway construction projects had been delayed or canceled in at least 27 States as of March. These cutbacks involved both construction of new roads and repairs on old roads.

Fuel shortages and inflation are forcing the trucking industry to switch to larger hauling units. Heavier loads, coupled with increased truck traffic caused by branch-line rail abandonments, increase the strain on rural roads necessitating greater maintenance costs. Reduced highway revenues means State highway departments will not have adequate budgets to maintain and improve rural roads systems.

The Department of Transportation is encouraging rural mass transit to help ease the rural transportation crisis and reduce the high cost of energy consumption for transportation. While such systems will no doubt enable some rural people to maintain or increase their mobility—particularly the elderly and low-income groups—the immediate need is for modern roads and bridges and rail lines to move both agricultural and industrial products to and from rural areas. Other rural transportation priorities include continued expansion of air service and airport facilities to small towns, and maintenance and expansion of the national network of navigable inland waterways.

RURAL TRANSPORTATION NEEDS

In summary, adequate transportation must be available if rural and nonmetro areas are to prosper. The further a plant is located from its suppliers and its markets, the smaller will be its operating margin. Thus, transportation facilities are essential to every enterprise located

in a nonmetro area and are an especially vital factor in new business locations in rural and nonmetro areas.

The energy crisis has worsened the burgeoning crisis in rural transportation. In terms of priorities, rural roads systems need to be maintained and improved, rail service upgraded, air service expanded and water transportation encouraged and supported.

If these components of an overall rural transportation network are to be maintained and improved, concerted Federal action is essential. However, rural residents will not be the sole beneficiaries of improved rural transportation systems. Since transportation increases the cost of food, raw materials, and the finished product, efficient transportation can help offset high costs associated with distant markets and raw materials. Both metropolitan and rural residents pay for inadequate and expensive rural transportation. What is needed are realistic national transportation and energy policies that take the importance of adequate rural transportation into account and earmark sufficient Federal funds and energy resources to maintain and upgrade rural transportation.

SOCIAL AND DEMOGRAPHIC IMPACT

In the final analysis, the ultimate influence of energy scarcities on rural and nonmetro areas will be determined by millions of individual decisions involving where people choose to live and work. While economic conditions and the availability of adequate transportation play a major role in these choices, personal attitudes concerning residential preferences are also influenced by national leadership and the overall social climate of the country. If the energy gap promotes a national mood of austerity and pessimism, current economic, demographic, and social trends are unlikely to change significantly. Continuation of recent trends would mean more concentration of population in metropolitan areas and further economic and social decline in many rural areas.

Those concerned with urban problems and lifestyles are already predicting that efforts to stimulate the growth of small towns and rural areas will falter as a result of energy scarcities. As an alternative, these same experts call for the revitalization of central business districts and areas along corridors where efficient movement is possible. While medium-sized cities would experience some growth if high-density urban living is accepted as the solution to higher energy costs and fuel shortages, smaller towns and rural communities would be the biggest losers in terms of people, jobs, and services. The key to determining future national settlement patterns will hinge both on public policies and energy-related costs differentials for goods and services whose production and delivery entails extensive use of energy and transportation.

If public policies, such as diversion of highway trust funds away from rural roads to urban mass transit, allow or encourage cost differentials to favor concentration of people and economic activities, the resulting patterns of consumption and lifestyles will have a major adverse effect on the social and economic viability of rural areas.

Much also depends on how the Nation organizes to manage energy scarcities and on Federal policies to deal with energy development. These public sector policies will profoundly influence energy-related

III. MANAGING THE ENERGY CRISIS

There are essentially three alternatives for dealing with and overcoming scarcities—central allocation, rationing, or adjustment in the price of the material or product—i.e., letting the price rise to allocate the material or service to its most efficient uses.

To cope with the energy crisis precipitated by the Arab oil embargo, the United States chose to use the central allocation method under the authority of the Emergency Petroleum Allocation Act of 1973. In addition, a modified version of the third method—price rises—has occurred under the close scrutiny and regulation of the Federal Government.

FEDERAL ALLOCATION PROGRAM

The Federal Government's petroleum allocation program has significant implications for rural development. Originally designed to allocate crude oil among all refineries and among priority uses, existing fuel supplies and industries, the program has been used primarily as a political mechanism for allocating scarce petroleum products between States and regions of the country.

So far the most visible impact of the Federal Energy Office's (FEO)* allocation program has been its attempt to allocate refined fuel from the "top down." At best, under this approach the impact of the gasoline allocation program on rural areas has been uneven. Generally speaking, small towns and rural areas have received enough gasoline to avoid long lines and to enable most rural industry and commerce to continue to operate at a near normal pace. In addition, the allocation program has prevented major droughts of fuel in most regions of the country that are least accessible to refineries and thus most expensive to serve.

However, several problems implicit in any governmental attempt to allocate scarce resources among competing users, States, regions or population groups could significantly affect rural development. These problems can be summarized as follows:

—The inability of Government to deliver or distribute fuel to certain isolated rural areas creating emergency supply problems in scattered rural locales.

—The potential conflict between sections of the country and between metropolitan and rural areas for scarce supplies of energy—particularly gasoline.

—The requirement that otherwise adequate fuel supplies in energy sufficient areas be exported to those areas of the country where there is no production or refining capability.

*The FEO will officially become the Federal Energy Administration around July 1, 1974, pursuant to legislation signed into law in May.

DELIVERY PROBLEMS

Since the beginning of the mandatory allocation program in January, there have already been unexpected instances of small towns and rural areas being completely without gasoline. In southeastern Kentucky, several small towns ran completely out of gas in February. Local officials charged that several local service stations based out-of-State had their allotments diverted to other areas. This coupled with the closing of some independent stations and a 15-percent cut in supplies by the major oil companies resulted in a severe shortage of gas for residents in the area—many of whom are miners who must travel up to 50 miles to get to work. In addition, since the area has a dense, rural nonfarm settlement pattern, residents scattered throughout the valleys and hollows must often travel some distance to get to the nearest gas station.

A similar problem plagued the coal miners of southwestern Virginia and southern West Virginia. There, the gas shortage resulted in a work stoppage last March, keeping 21,000 miners off the job for several weeks and further exacerbating the fuel shortage. Here again, many of these miners must drive up to 100 miles a day to and from their jobs.

During the embargo, small towns and rural areas in such diverse States as Oregon, Connecticut, and Arizona, reported serious gas shortages. A major problem plaguing many of these areas has been the closing of many independent dealers. When independent stations began closing because their supplies had dried up, rural areas were left with fewer stations and consequently less available gas. Although under the Federal allocation program, oil companies are supposed to consider the volume of gasoline pumped by all stations in 1972, including those since closed, in practice the closed stations were sometimes ignored in figuring allocation levels.

Furthermore, economic and population growth was not initially factored into allocation formulas, penalizing communities and areas that have experienced significant growth over the past few years.

The dispersed pattern of population settlement in rural and non-metro areas also contributed to fuel shortages last winter by creating distribution problems. Often rural residents were forced to drive a considerable distance to find an open service station. This same problem also hampered distribution of propane, butane, and other home heating fuels. Local dealers complained that they could not afford the high transportation costs of delivering small quantities of these fuels to rural residents scattered across a relatively large service area.

THE POLITICS OF ALLOCATION

If the Arab oil embargo had continued, potential conflicts over energy supply and demand could have created serious regional cleavages leading to considerable pushing and shoving over such controversial issues as extraction of raw resources, bulk energy sites as well as allocation of scarce supplies. Already some rural areas are unable to take advantage of local energy resources—especially natural gas—because supplies have been committed to metropolitan consumption in distant regions.

In some States, urban officials have urged Governors to reallocate intrastate gasoline supplies from rural to large metropolitan areas. To provide relief for hard-hit States, the FEO changed its rules for allocating gas last March 1. Referring to the changes, then Deputy FEO Administrator John C. Sawhill said that "larger metropolitan areas where we are seeing lines forming that are just intolerable" should benefit from the changes.

The FEO's allocation rules are part of an effort to create new centers for the production and distribution of fuel and to redistribute refinery capacity more evenly throughout the country. However, the original regulations contained no requirement for equitable distribution among the States.

After the first month in operation, results of the allocation program showed wide disparities among the States, with Maine experiencing a 26-percent shortage while Minnesota was only around 3 percent short. As a result, the hard-hit States began demanding that the allocation program aim for equal distribution among the States. Although it had never planned to allocate among the States, political pressure quickly forced the FEO to accept the principle.

This action raised a threat of a scramble for gasoline that could have become a test of strength among regions, States, intrastate rural and urban areas, and political candidates. While the lifting of the embargo has eased these problems, an allocation program overly sensitive to political considerations could result in nonmetro areas losing out to the political clout of the large metropolitan areas.

Critics of the allocation program have charged that the use of 1972 as a base year discriminates against areas and regions that are growing most rapidly. However, if local growth is taken into account, the primary beneficiaries will be the rapidly growing suburban communities and areas around major metropolitan centers rather than nonmetro areas.

Another fuel allocation problem also may leave rural areas short-changed. According to recent American Automobile Association reports, rural areas may come up short under EPA formulas for designating which stations must carry unleaded gas—required for nearly all 1975 model cars. In addition, the AAA reports found that independent stations—most of which serve rural areas—could be without adequate supplies. Specifically mentioned were 13 Midwest States where distribution problems may leave independents without adequate supplies. Currently FEA has responsibility for supply and distribution, while EPA designates retail outlets.

THE ALLOCATION PROGRAM AND RURAL DEVELOPMENT

An assessment of the allocation program to date leads to the conclusion that rural areas have not fared badly—especially when compared to long lines and gas shortages that have plagued some of the larger cities. Agriculture has received top priority, usually close to 100 percent of its needs. Rural areas experiencing spot shortages have generally been allocated additional supplies—usually by the State through their emergency set-asides.

The FEO has made continuous adjustments to the program to alleviate inequities built into early allocation criteria. Tourism, recreation and resort growth has now been more or less taken into account.

The States have served as the "front-line" managers of the program and, on the whole, appear to have taken cognizance of the special problems of rural areas. More than anything else, however, the easing of the embargo has allowed the FEA and the States to adjust the allocation program to meet changing demands.

The allocation program appears superior for rural areas when compared to the alternatives of free market determination and coupon rationing. Continued price rises would have a drastic impact on rural areas—no doubt forcing many more rural residents and businesses to relocate in urban areas and causing a severe hardship on the less mobile segments of the rural population—the poor and the elderly.

Under the FEO's standby rationing plan, persons living in small cities and nonmetro areas would be allowed extra gasoline coupons compared to persons living in larger metropolitan areas with access to mass transit. However, the extra coupons would only entitle rural residents to a slightly higher monthly allocation of gas than allowed residents of metropolitan areas. There is little doubt that rural workers and families would suffer disproportionately under any rationing plan due to the increased distances they must travel to jobs, schools, stores, medical facilities, and other vital services.

Over the long run, however, the allocation program could seriously damage the economic and social well-being of rural areas, particularly if fuel shortages become as severe as last winter. Continued scarcities, "top-down" allocation coupled with the necessary emphasis on conservation practices would encourage the concentration of people and economic activity in urban areas. The development implications of such conditions are obvious—dispersed rural settlement patterns and business activity would become more and more costly leading to more relocations and urban concentration.

A more subtle but potentially harmful consequence of current allocation policies involves the possibility that political considerations will lead to regional conflicts over policies to equalize fuel prices and to distribute supplies evenly across the Nation. Such policies—particularly if susceptible to political forces—could profoundly affect the future economic development of many nonmetro areas.

The lifting of the embargo has eased this problem for the time being and should provide a respite from the crisis atmosphere allowing planners and policy makers an opportunity to formulate energy policies compatible with development objectives. In the meantime, the allocation program can serve as an interim measure. However, if energy, environmental and economic development goals are to be pursued in a balanced, systematic manner, certain inherent problems in the current allocation program must be overcome.

DEVELOPMENT OPTIONS FOR RURAL AREAS

Under the Federal petroleum allocation program, FEA regulations require that, after meeting certain priority needs, oil companies must allocate refined petroleum products proportionately among the States in order to spread gasoline supplies equally around the country. Last March, the agency announced plans to equalize the distribution of gasoline among the States, aiming for a spread of no more than 5 percent above or below the national average in any individual State's supply.

These policies have serious implications for those nonmetro areas that have easy access to relatively abundant supplies of fuel and energy. In some States and rural areas, officials are planning to formulate economic development strategies based on their relative advantage in terms of available energy.

Developing countries with surplus supplies of natural energy resources enjoy essentially two strategic options for the use of their energy resources to promote development. The quickest and easiest approach, particularly in times of a worldwide energy shortage and high prices, is to export raw energy resources to developed nations and import the capital, and technical and managerial capability necessary to promote economic development and raise living standards. A second alternative strategy involves the conversion of raw energy resources internally to create jobs and promote economic diversity through industrial development.

Recent media reports indicate that Saudi Arabia and Iran are using combinations of these approaches to raise living standards and promote economic development. Saudi Arabia is attempting to diversify its economy by using oil and natural gas for industry, developing electric power generation, water desalinization, and feedstocks for a variety of industrial processes. Iran has launched a massive social and economic development program to be financed through increased revenues from oil. To accomplish their goals as fast as possible, both countries are relying on trained manpower from developed countries, offering high salaries to attract both the technical and management capability needed for industrial development, and for trained teachers, medical technicians, and other social workers needed for human resource development programs.

If these developing nations can attract the enormous amounts of capital needed to begin to process their own raw materials and energy resources, the value of these resources to the country would increase because of the value-added factor. At the same time, jobs would be generated and the economy diversified.

Such a strategy would appear to make sense for nonmetropolitan regions in the United States with abundant supplies of energy reserves, such as Appalachia. For regions and areas in the United States with abundant supplies of energy resources these options are not as clear cut, however, particularly for rural areas. Since much of the mining and drilling in the United States is controlled by large national or multinational corporations, little capital from the production and sale of coal, oil, and natural gas remains in the regions where it is extracted. Thus, for the most part, rural economies benefit only from wages and salaries paid to local workers. If the region is a typical depressed rural area, much of this money also flows out of the area through the purchase of goods and services from businesses based in other areas.

Thus, the most feasible strategy for nonmetro areas in the United States that wish to utilize their natural resources to promote economic development must involve the need to recover, refine and consume some of their energy resources locally thereby creating jobs and diversifying local economies through research and development, construction and operation of conversion facilities, and by attracting energy-intensive industries to locate near the front-end of the distribution system to take advantage of the accessibility and relatively low costs of available fuel and energy supplies.

REGIONAL EFFECTS OF "TOP DOWN" ALLOCATION

However, the current Federal allocation rules and other regulatory policies could make such a strategy difficult to implement. Some have suggested that an allocation policy based on equalization of scarce fuel and energy supplies penalizes those States and areas that have encouraged construction of refineries, powerplants and storage facilities and favors States that have resisted efforts to construct new refineries and other bulk energy facilities such as deep-water ports and atomic powerplants.

In addition, some have argued that such policies also work to the disadvantage of States that have permitted offshore oil and gas exploration by forcing them to share fuel supplies with States that have resisted offshore exploration.

Similar allocation problems exist with regard to natural gas and electricity. The Governor of Louisiana has complained publicly that the northeastern States are unfairly consuming natural gas produced in his State. The Nation's leading producer of natural gas, Louisiana, has experienced local shortages because 75 percent of its production is committed to customers in other States under federally regulated long-term contracts.

Although sentiment is growing in Louisiana and other producing States to cut out-of-State exports and save gas for local consumption, States are virtually powerless to stop current oil and natural gas production from being distributed for consumption in other areas. Cutting off oil and gas supplies to other States is a form of interstate commerce restraint and previous attempts to do so have been ruled unconstitutional.

Louisiana's Governor Edwards summarized the issues involved by asserting that "it is unfair for eastern States to sit on their oil on the Atlantic seaboard while they are using ours." "If they had no oil, it would put them in a different position," he argues, "but we are producing, we have refineries, we are paying the consequences to our environment and they must share the burden," the Governor added. The Governor also charged that consumers in producing States like Louisiana are paying a higher price for their natural gas than out-of-State users due to Federal price controls. Interstate gas prices are regulated by the Federal Power Commission but natural gas produced and consumed in the same State is not regulated and thus can be sold for whatever price it will bring.

Other Governors have also complained about Government allocation plans. At the National Governors' Conference meeting last March, Governor Dale Bumpers of Arkansas and Governor J. James Exon of Nebraska complained that the FEO's allocation formula—which adjusts a 1972 base to account for increases in registered motor vehicles in each State, did not adequately account for growth—especially in tourism and agriculture. Bumpers said the allocation formula was unfair since the South's economy—tourism, manufacturing, and agriculture—had grown at a rate far exceeding increased auto registration. He added that overall, the South's economy had grown at a rate of 9–11 percent in recent years compared to a 5.5 percent national growth rate.

Electric utility officials in some of the less-populated regions have also been grumbling about requirements for sharing power with

heavily populated areas when demand for electricity exceeds local generating capacity. Through interconnective power grids, electric systems serving the major metropolitan centers of the East can receive electricity from as far away as the South and the Midwest. However, some officials in these less-developed regions are questioning why they should have to pay the environmental costs of electric power generation and then be required to share it with metropolitan areas that have refused to increase local generating capacity by building new powerplants.

PRICE EQUALIZATION

Some Governors have called for a "National Price Equalization Policy" to eliminate disparities in the price of gasoline between States and regions. However, such a national price equalization policy might also work to the disadvantage of nonmetro areas that are located close to energy and fuel supplies—natural gas, coal, and oil refineries—offsetting any economic advantages these regions might otherwise enjoy by employing these energy resources to promote economic development. Arguments that major refineries, powerplants and other bulk energy sites (such as deep water ports) in nonmetro areas can stimulate local economies by creating more jobs and attracting energy intensive industries are being met with the counter argument that oil products must now be distributed evenly across the Nation rather than concentrated locally—neutralizing any possible regional economic advantage.

In short, both policies to equalize fuel supplies and fuel prices could have a major influence on the welfare of rural residents and the future development of nonmetro areas. The short-term impact of such equalization programs on predominantly rural States where residents have fewer transit options other than private automobiles must be carefully considered.

Furthermore, the long-term impact of Federal allocation policies may hinder less populated States and underdeveloped rural areas in their attempts to attract new business, industry, and people to upgrade income levels and services and reduce unemployment and underemployment. These development goals should be carefully considered as part of long-term energy policies such as the planning for Project Independence—energy self-sufficiency by the 1980's.

IV. ORGANIZING FOR ENERGY MANAGEMENT

In April 1973, a Senate Interior Committee study found that power to make decisions in energy matters is fragmented among 64 different Federal agencies that act in a cumbersome and sometimes contradictory manner. A year later, a Presidential study team found that Federal energy regulation is unresponsive to change, poorly coordinated and suffers from a lack of an overall national energy policy.

COORDINATING ENERGY AND DEVELOPMENT POLICIES

To those concerned with rural development and balanced national growth, these problems have a familiar ring. For several years, many development specialists and policy makers have called for a national growth and development policy to plan and implement an intergovernmental approach to rural development and better balanced urban-rural growth. While the Congress has endorsed these goals in the Agriculture Act of 1970 and the Rural Development Act of 1972, no organizational mechanism at the Federal level has been created to formulate national balanced growth objectives and to coordinate the many fragmented Federal development efforts and programs to accomplish such objectives.

Thus, not only are the organizational problems of a national energy policy and a national development policy similar, the goals of both could be compatible.

APPROACHES AT THE FEDERAL LEVEL

The fuel emergencies of 1973-74 has spurred a number of organizational proposals for a national energy policy. The most recent recommendation, to establish an independent National Energy Council to provide guidance to energy regulatory agencies through formulation of national energy objectives, comes from an interagency study team headed by William O. Doub, a member of the Atomic Energy Commission.

On release of the report, Mr. Doub criticized regulatory agencies that set policies affecting energy "without regard to long-range national objectives and goals."* Criticizing the "lack of cohesive coordination," Doub specifically criticized the Federal Power Commission and EPA as hindering national energy objectives.

The interagency study team concluded that consolidation of energy regulatory functions into a "super agency" could be counterproductive and disruptive at this time. However, the group did recommend a new Federal office and new State organizations be established and work together by exchanging information continually, coordinating actions

*The Wall Street Journal, Apr. 15, 1974.

on siting energy facilities and cooperating in formulating overall energy objectives. In this regard, the study warned that the Federal Government might eventually have to preempt State and local authority for locating and licensing major energy facilities.

The report's recommendation for creation of a National Energy Council is expected to generate considerable controversy and has been characterized by some as "politically unacceptable." The point the report makes is a valid one, however, regardless of whether or not its recommendations are implemented. That point is that energy policies are set at the Federal level in a narrow perspective without regard to long-range national goals and objectives.

This same problem has plagued development agencies and created a policy vacuum in the area of rural development and balanced national growth. As energy specialists call for an agency to coordinate overall energy policies throughout the intergovernmental system, regional development planners have also recommended a special office at the Presidential level to set policies and coordinate programs to achieve national growth and development objectives. However, these proposals are also a long way from becoming a reality.

In the meantime, energy policies will be guided by the FEA and a proposed new Energy Research and Development Administration (ERDA) now being considered by Congress. The ERDA would be responsible for all energy research such as coal gasification and solar energy, as well as nuclear energy programs. Another new agency, the Nuclear Safety and Licensing Commission would regulate all nuclear powerplants.

However, the FEA is still responsible for developing plans to alleviate short term energy shortages and to formulate a comprehensive plan for achieving energy self-sufficiency—which is due to go to the White House next November.

"CRISIS MANAGEMENT" BY THE STATES

In the meantime, the States have taken some significant steps to deal with energy scarcities. A Federal Trade Commission report issued earlier this year praised the States for making the Federal allocation program work.

To administer the allocation program, the States have tried a variety of organizational mechanisms to deal with energy problems. However, most of these efforts have, of necessity, focused on emergency allocation problems and conservation measures.

In a special report on "The States and the Fuel and Energy Crisis," the Council of State Governments concluded that there is a need in the States for a "Crisis Management" program. The report called for the States to develop legislation, plans, and guidelines for crisis management and emergency planning to deal with fuel and energy scarcities. According to the report:

There should be a single State agency with authority and responsibility for coordinating overall emergency planning, administration and crisis management generally. The Governor should have sufficient authority to exercise his leadership and administer a crisis management program. This agency would be responsible for coordinating responses to natural and man caused disasters, economic disasters including power failures, fuel,

energy and transportation problems as well as nuclear attack and civil defense preparation.*

Several States have moved beyond the crisis and emergency approach to fuel scarcities, however. Tennessee has established an Energy Task Force to review the State's role in the energy crisis. Arizona's Office of Economic Planning and Development has established a Nonmetropolitan Gas Availability Information System to combat the tremendous drop in the tourist trade in Arizona's smaller communities. Maryland has passed special legislation which broadens the definition of emergency to include the threat of an actual or impending acute shortage in usable energy resources. In Arkansas, an act designed to ease problems encountered in siting new powerplants was signed into law.

In Pennsylvania, the State Department of Agriculture's Research Committee has undertaken 18 new research projects seeking cheaper sources of fuel and fertilizer.

Several States have relied on their substate district agencies to assist in the emergency allocation of fuel supplies. Kentucky's Area Development Districts serve as information centers for the State Office for Mandatory Fuel Allocation, informing those in need of additional allocations how to apply and verifying the applicants' eligibility. In South Carolina, the State Energy Management Office asked each of the State's 10 substate districts to establish county fuel distribution committee's to evaluate and refer hardship applications from end-users and distributors.

While most States' efforts to organize for energy management have concentrated on emergency distribution and conservation measures, a few States are in the process of developing policies designed to encourage the development and production of new sources of fuel and energy, using natural resources available within the State. States that have taken a major step in this direction include Kentucky, Illinois, Oklahoma, North Dakota, and New Mexico. Some of these efforts are summarized in the discussion of energy development and rural development in section V.

AN INTERGOVERNMENTAL APPROACH TO ENERGY AND DEVELOPMENT POLICIES

The danger in current Federal and State efforts to organize for energy shortages is that any agency organized in response to immediate demands for crisis management will fail to consider related policy objectives such as rural development. While a "crisis management" approach was necessary to deal with the immediate shock of last winter's crisis, the development of energy policies must now look beyond a narrow energy perspective and consider other related growth and development goals.

A REGIONAL APPROACH TO ENERGY AND DEVELOPMENT

There have been some suggestions for a regional approach to energy-related planning and policies, including allocation and distribution of

*"The State and the Fuel and Energy Crisis," Special Report, Council of State Governments, Lexington, Ky., p. 10, 1974.

scarce fuel supplies and the selection of suitable sites and the development of standards for energy facilities. An effort by New England Governors to develop a regional oil plan under the auspices of the New England Regional Commission failed when the States decided to handle fuel allocation problems on their own. This failure to develop a regional approach was editorially criticized by the *New York Times* which urged New Englanders to face up to their oil dilemma instead of attacking the problem piecemeal.

Perhaps the most articulate spokesman for a regional approach to both energy and development policies is John Whisman, State's Regional Representative to the Appalachian Regional Commission. At NADI's energy conference last January, Whisman explained how an intergovernmental energy-development system would work using multistate regional commissions and substate districts.

Responding to calls for a broad national energy policy, Whisman urged that the development of energy policies be integrated into long-standing proposals for a national growth policy, asserting that the key to formulating compatible energy and development policies is an intergovernmental structure for shared decisionmaking providing energy, regional development and a host of related policy areas.

Whisman downplays the need for extraordinary government powers to deal with energy scarcities arguing that such a strategy represents a fragmented approach to intergovernmental decisionmaking in which problems are approached and programs designed in "bits and pieces." *

Pointing out that energy is a crucial consideration in most planning and development decisions, Whisman believes that the current energy problem can be the key to a national development policy because it illustrates the need for States to work together with the Federal Government to solve common regional problems.

This proposal for an intergovernmental organizational structure could relate and integrate the technical needs and policies of local, State and Federal Government. To manage the system for implementation by local governments, Whisman would rely on substate planning and development agencies which now blanket most of the Nation. Supporting program development at the State and substate levels would be Federal-State regional development commissions established to provide the setting for State and Federal officials to negotiate solutions to regional problems.

Substate districts represent not only a legitimate but also the most viable available forum for local officials, private sector and citizen interests to hammer out local goals, strategies and plans. Development programs negotiated at the substate level within the context of national and State policies could achieve more credibility and receive more acceptance than if passed down by executive fiat from the Federal level.

In summary, such a comprehensive, intergovernmental approach would be geared to formulation and coordination of policies for both energy management and development strategies in a unified and comprehensive manner—involving the Federal Government, multistate regional development commissions, the States, substate districts and

*"Development System Urged for Energy Management," *Area Development Interchange*, vol. IV, No. 2, Jan. 15, 1974.

local governments. The substate planning and development district could be the key to effective implementation because local people have final control over their planning and development district directors who would be responsible for implementing programs to meet local and areawide needs.

Such an approach should enable the Nation to pursue both energy and rural development objectives in a consistent manner avoiding the narrow "emergency" perspective which often results in conflicting policies and the obfuscation of essential national goals.

A ROLE FOR SUBSTATE DISTRICTS

Others familiar with nonmetropolitan development problems have urged that substate planning and development agencies and other development agencies and other development oriented groups serving rural areas play a major role in energy management. Specific actions that could be taken at the substate district level include:

- Inventing areawide energy supplies, including actual and potential bulk energy sites, the availability of raw and refined sources of energy, and generating capacity in order to compare energy requirements with optimal energy sources.

- Preparing energy impact statements or energy elements defining trade-offs between energy needs and environmental considerations as part of comprehensive areawide development plans.

- Providing coordinative services between government and private industry and among local, Federal and State agencies.

- Delivering technical assistance on energy needs and requirements to local governments and businesses.

- Serving as a communication link between energy suppliers and energy users, and

- Managing areawide energy supply and demand by treating energy as a scarce economic resource.

Once a model for assessing energy needs and supplies and relating these considerations to development strategies at the areawide level becomes operational, the technical capability of nonmetro agencies to apply the necessary planning and techniques should quickly evolve, allowing rural development objectives to be pursued in the context of national energy and growth and development policies.

V. ENERGY DEVELOPMENT AND RURAL DEVELOPMENT: FUTURE POLICY OPTIONS

In response to a question from Representative Harold Johnson of California at hearings held last December by the Subcommittee on Economic Development of the House Public Works Committee, Warren T. Lindquist, personal assistant to David Rockefeller for development and public affairs, testified on prospects for satisfying rural growth objectives through efforts to meet national energy needs.

Even in old time economics, it would seem to make sense in that it should be a lot better to bring the production process to where it is needed, then haul the product to where it is needed.

In our national planning sense, it does seem this kind of thing can give us an opportunity to disperse, or attract, some of our population growth away from the existing metropolitan areas at no sacrifice to those areas and to the benefit—rather than no sacrifice—to the benefit of our existing metropolitan areas, and also to the benefit of certain of these rural areas where those converting facilities could be developed as well as the whole nexus of support which would inevitably grow up around such major facilities.

When you get into this kind of thing, we are talking about more than just converting coal or petroleum into fuel, and the fuel substitute. We are getting into the whole petrochemical industry, and many related kinds of industry. It does seem a conscious effort to deliberately develop efforts of this kind as a part of the creation of an economic base for a new community, for a new community and new growth centers in these areas, is feasible and should be aggressively pursued as a matter of national policy.*

ENERGY REQUIREMENTS AND BALANCED URBAN-RURAL GROWTH

The above prescription for dovetailing rural development and energy development objectives can only be successful in terms of specific Federal and State policies for dealing with long-range national energy needs. The management and organizational approaches discussed in sections III and IV will be crucial in determining whether the Nation gives adequate consideration to rural development and balanced growth objectives in dealing with energy scarcities. However, organization and management strategies can only be instrumental in assuring a systematic approach to dealing with energy and development policies. Specific policies for managing the energy problem will be the key factor influencing the future of rural and nonmetropolitan areas—and these policies will be determined to a large degree by political considerations.

*Hearings: Subcommittee on Economic Development of the Committee on Public Works, House of Representatives. "A National Public Works Investment Policy: A Strategy for Balanced Population Growth and Economic Development." p. 115.

STRATEGIES FOR A NATIONAL ENERGY POLICY

The direction the United States takes to both increase energy supplies and reduce energy demand is of vital importance to rural development and balanced growth. A myriad of proposals to solve supply and demand problems have been put forward in recent months by a variety of experts—economists, scientists, engineers, political scientists, Federal officials, etc. These proposals range from grandiose and exotic plans for energy development to calls for austerity, drastic reductions in energy consumption and a retreat from the goals of an affluent society.

INCREASING DOMESTIC SUPPLIES

Two major energy policy proposals that have received national attention in recent months illustrate the potential implications of energy policies on rural development. Last winter, the press reported that the administration was seriously considering spending up to \$100 billion over the next 14 years to subsidize the development and production of synthetic fuels—primarily coal gasification and liquefaction and oil shale recovery. This plan, which was reportedly put forward by Commerce Secretary Frederick B. Dent, would provide for Federal support of new synthetic fuel industries by guaranteeing a fixed price for refined synthetic fuels or by outright Government purchase.

The rationale behind the so-called "Dent plan" is based on political and economic grounds. Supporters argue that the private sector has not developed synthetic fuels because of the high initial costs required and market uncertainties. Thus, they believe the Government should provide the incentive to spur development of both the necessary technology and production. Supporters of the plan also contend that it would help the United States achieve its goal of energy self-sufficiency and decrease reliance on foreign sources. In addition, they believe the plan would provide a massive spur to the U.S. economy.

As initially conceived, the proposal envisioned 68 new plants to produce synthetic oil and gas by 1982—costing an estimated \$49.95 billion to be raised on Wall Street or elsewhere. The raw material to be processed into the synthetic fuel could be anything except natural crude oil or gas. Garbage, tar sands and wood were mentioned along with coal and oil shale.

There appears no doubt that if such a massive effort were undertaken, it could provide a major boost to economic development in some nonmetropolitan areas—particularly in the western and northern Great Plains area. Under the plan, the private sector would invest around \$48 billion for building the plants. It could be expected that these conversion facilities would be located in or near the area where the raw materials—coal and oil shale—are extracted. This would mean major new plants and jobs in some rural areas.

In his testimony to the House Subcommittee on Economic Development, Warren Lindquist noted that "it would seem to make a lot more sense to put the physical plant near the supply of coal than to put it someplace far away and haul the coal to the plant." Such a strategy could result in the development of new jobs and industry in diverse and sparsely populated rural areas in such States as

Kentucky, Illinois, West Virginia, the Dakotas, Montana, Colorado, Wyoming, Utah, and New Mexico.

Critics of the "Dent plan" say that it would represent a tremendous cost to the U.S. taxpayers, would contribute to a "fortress America" atmosphere, and would create severe environmental problems. However, Secretary Dent is reported to believe that the environmental problems can be overcome and that, over the long run, the initial costs to the Treasury would be offset by the economic stability gained from less dependence on foreign sources and by stimulating the domestic economy.

On the other hand, Dent is said to feel that the major problem would be the lack of materials and technical manpower necessary to develop and operate such a massive effort. Thus it would take a concerted marshalling of both public and private resources to successfully implement the plan.

In effect, the "Dent plan" represents the most ambitious proposal to date for achievement of energy self-sufficiency through intensive development of new domestic resources. Other broad strategies for a national energy policy include calls for the imposition of an oil tariff wall to protect new high-cost domestic energy industries from being undercut by cheaper foreign oil. Another proposal, referred to as the "oil bank" option, is based on the contention that it would be much cheaper, in the long run, to store huge quantities of crude oil rather than developing high-cost domestic energy sources.

REDUCING ENERGY CONSUMPTION

The most publicized and prominent alternative to all out development of domestic energy sources as exemplified by the "Dent plan" are policies to drastically cut the rate of U.S. energy consumption aiming for a zero energy growth rate.

A prominent spokesman for policies to curtail energy consumption as an alternative to all out domestic development is David Freeman, director of a major research project on U.S. energy policies funded by the Ford Foundation. Especially critical of plans for increased production of coal and oil shale to achieve self-sufficiency, Freeman asserts that the country should focus on development of mass transit, more Federal spending on urban rehabilitation and more efficient auto fuel consumption.

The Ford Energy Policy Project's preliminary report apparently has been strongly influenced by Freeman's views. Issued in March 1974, the report said that "the most fundamental issue is a sense of direction about growth in energy consumption." *

The report examined three possible scenarios for future U.S. energy consumption: (1) Continuation of recent growth rates of about 3.4 percent a year since 1950; (2) the so-called "technical fix," which implies a growth rate of about 1.7 percent a year and would allow the Nation to press hard on only one of the major possible expanded sources of energy—nuclear power, synthetic gas, or mining of coal and oil shale in the Rocky Mountain area; (3) zero energy growth, which

*"Exploring Energy Choices: A Preliminary Report," Energy Policy Project of the Ford Foundation, Washington, D.C., 1974.

envisions "a real break with our accustomed way of doing things" by increasing energy efficiency and a major reordering of priorities.

Obviously disapproving of the "historical growth" alternative, the report asserted that continuation of recent trends would involve some dangers such as changes in the character of many rural, oceanfront and underindustrialized and lightly populated parts of the country.

The report also identified five objectives of a national energy policy. Although for the most part these objectives merely repeat the standard prescriptions for assuring energy supplies, achieving low costs to society, protecting the environment and minimizing international problems, the report calls for one objective of national energy policy to be the avoidance of economic and regional inequities.

This latter recommendation may appear ironic to those who have long been urging stronger national policies for balanced growth and rural development both to help ease urban problems and to reduce existing social and economic inequities between urban and rural areas. Suddenly, the Nation has become concerned over regional inequities in the price and supply of fuel bringing calls for "sharing the wealth"—with wealth in this context meaning energy resources such as coal, natural gas, oil shale, refined petroleum, synthetic fuels, etc. Combined with calls for more spending for mass transit and physical rehabilitation in urban areas, a national policy of avoiding regional inequities in the price and supply of energy could result in widening the gap between metropolitan and nonmetropolitan residents in terms of incomes, employment, Federal assistance and overall standards of living.

Such misgivings are reinforced by press reports quoting Freeman on the need to revitalize cities. "I would symbolize Project Independence more by mass transit than by coal gasification plants," is a quote attributed to Freeman by the Wall Street Journal.

To even the casual reader, the Ford report seems to favor the "zero growth" scenario. Defending the credibility of the zero growth alternative, the report said that preliminary figures indicate energy consumption could be stabilized by the year 2000. Work is continuing on this scenario and will be described in detail in the final report on the project due out next fall.

The preliminary report and its apparent preference for drastic reductions in the rate of energy consumption has been strongly criticized by some on grounds that it underestimates the recent growth in energy consumption and fails to fully examine the consequences of zero energy growth on economic growth. Four of the six industry representatives on the Project's advisory board criticized the assumptions underlying the report. According to one dissenting member:

The clear implication of the report is that we should delay the development of additional energy supplies on the assumption that they will not be needed, because we can reduce our use of energy.

Representative Bill Frenzel of Minnesota charges that the Ford report makes solutions to energy scarcities "look attractive and easy" and argues that the report's assumptions on energy demand are seriously understated making the "historical growth" scenario "not historical at all." Frenzel also attacks the "technical fix" scenario for

assuming that the quality of life could be maintained little different from the historical growth mode.

"Little different means one-third less energy in the year 2000. One-third less energy also means sharply reduced quality of life, unemployment and a changed life style," according to Frenzel.

Frenzel's harshest criticism concentrates on the zero growth alternative, which he said "looks like austerity * * * wholesale unemployment, and the dampening of aspirations for a better life for millions of our citizens."*

While the Congressman did not specifically refer to rural development, a policy of zero energy growth could have a drastic impact on the aspirations of millions of rural residents.

ENERGY SELF-SUFFICIENCY AND RURAL DEVELOPMENT

In terms of rural development and balanced growth objectives, it would appear that a national policy of energy self-sufficiency which focuses on increased domestic energy production would be a positive influence, while drastic reductions in energy consumption rates would adversely affect attainment of increased economic and population growth in the Nation's nonmetro areas. Policies to drastically curtail energy demands could also have a negative influence on attempts to create more jobs, higher incomes and better services such as health, education and public facilities in rural areas. Failure to achieve rural development goals could in turn lead to more congestion and pollution in metropolitan areas.

However, esoteric debates over future energy consumption cannot alter present realities. Despite the energy crisis, the United States used a record amount of energy in 1973, according to the Interior Department. The rate of increase for the year was 4.8 percent, slightly less than the 5 percent increase recorded in 1972. Energy use increased in all consuming sections. Electric utilities were the leader with a 6.7 percent increase over 1972, while household and commercial use grew by 5.2 percent, industrial use by 4.2 percent, and transportation use increased 3.8 percent.

At the same time, the Department reported that domestic production of crude oil and coal declined in 1973. Although natural gas production was up 1.6 percent, the decline was offset primarily by rising net imports, which rose 33.1 percent over 1972, and accounted for 16 percent of total domestic consumption.

These figures have no doubt increased the Administration's determination to push ahead on Project Independence despite criticism from some quarters—most notably the Ford Energy Policy Project report which criticized plans to rapidly develop domestic energy resources to attain self-sufficiency.

Under the leadership of the newly created Federal Energy Administration, a Project Independence blueprint will be finished by the end of the year. The plan is expected to chart the legislation and programs needed to exploit domestic resources, improve production and utilize a whole new spectrum of technology.

At present, planning for self-sufficiency must rely heavily on coal, oil shale, nuclear power, offshore drilling and new discoveries of natu-

* *Congressional Record*, April 23, 1974, p. E2458.

ral gas. Development of any or all of these energy resources would have a major impact on rural economic development. In addition, new techniques for generating solar and geothermal energy could also have a major positive influence on rural areas. Solar energy is a potential source in the South and Southwest, while geothermal energy could be utilized in many rural areas of the West.

FUTURE EMPLOYMENT AND INDUSTRIAL PROSPECTS

The U.S. Department of Labor's report on the impact of energy shortages on manpower needs discussed some of the longer term effects of energy scarcities, focusing on efforts to achieve the goal of Project Independence by 1980. In discussing the long-term effects on employment, the report said that "the search for alternative power resources and more intensive utilization of domestically available fuels should provide the stimulus for the creation of many new jobs in a number of industries."*

Citing some preliminary estimates developed by the National Planning Association, the report examined a scenario which assumes the achievement of self-sufficiency by 1980 through accelerated development of energy resources considered technically feasible, coupled with a conservation policy to substantially reduce U.S. dependence on imported oil and natural gas. The scenario envisions an overall increase in total energy production amounting to 23 percent from 1973 to 1980. "Over 90 percent of this increase in domestic production would come from two sources, coal and nuclear energy," according to the report. However, 58 percent of total energy would come from petroleum and coal sources, since nuclear power would still account for only 10 percent of total production.

"While a number of industries are expected to expand their output and manpower requirements as a result of increased efforts to achieve energy self-sufficiency, the National Planning Association study suggests that the search for new energy resources will have major manpower implications for the extractive industries (coal mining, crude petroleum and natural gas extraction), petroleum refining, electric utilities, the construction of plant facilities and the manufacture of engines and turbines," according to the report.

"Overall, it is expected that employment in these six industries would increase from 2.2 million in 1970 to just over 4 million by 1980, an increase of 81 percent." Moreover, the report predicted "these increased manpower requirements will cover a wide spectrum of occupations ranging from unskilled laboring jobs and semi-skilled operatives to increased demand for high level manpower, particularly the engineering professions."

The report went on to predict that the search for alternative domestic power resources will result in substantial expansion of jobs in the petroleum and coal industries. New jobs would be generated in the exploration, extraction and processing of oil and coal with employment increases expected in a variety of supporting industries necessary for the required expansion—such as the manufacture of plant and mining equipment and plant construction.

*"Secretary of Labor's Report on the Impact of Energy Shortages on Manpower Needs," U.S. Department of Labor, March 1974, p. 14.

A big expansion in employment in the electric utility industry is also foreseen if domestic energy development is pushed hard between now and 1980. The Labor Department estimates that 1 million workers will be needed by utilities in 1980, almost double the 557,000 currently employed. Increased reliance on coal, geothermal and nuclear power will have a major impact on this industry segment.

Finally, the report predicts that "employment among heavy construction establishments is expected to increase substantially. Jobs in the general construction industries are expected to increase to slightly over 2 million workers by 1980, more than double the number of jobs in 1970," according to the report.

In summary, the National Planning Association projections show increased employment for six positively affected industries between 1970 and 1980—general construction (except building); manufacture of engines and turbines; crude petroleum and natural gas extraction; petroleum refining; electric utilities; and coal mining. The estimates, which correspond to an FEO "intermediate scenario" for Project Independence, show a gain of 81 percent in employment for these six industries—or 1,798,645 jobs. Total employment by 1980 is estimated at 4,011,500 compared to 2,212,855 in 1970.

These increases are predicted for all skill levels. Professional, technical and managerial jobs should increase by 69 percent—(engineers by 102 percent), crafts and kindred workers by 80 percent; operatives by 69 percent; laborers by 101 percent; and sales, clerical and service workers by 88 percent. In terms of absolute numbers, over 640,000 new jobs for skilled workers are projected, with retail, clerical and service workers expected to increase by 310,000 for the six "positively affected industries."

The employment implications of these future energy-related manpower needs on rural economic development are of major significance, not only in light of the total number of potential new jobs (nearly 1,800,000 workers), but also in terms of the diversity of occupational categories to be affected. Many rural areas should be in a good position to compete for a large share of these energy-related jobs, and since manpower needs are projected from high paid administrators, technicians and managers to unskilled laborers, domestic energy development should provide an excellent opportunity to diversify the economies of many nonmetro areas.

Such a boom in rural industry and employment will not occur automatically, however. Bolstering rural development through increased domestic energy production will require a deliberate approach based on long-range comprehensive planning at all governmental levels to assure that rural economies and the quality of life are upgraded on a permanent basis.

STATE APPROACHES TO PLANNING FOR ENERGY DEVELOPMENT

For example, increasing demands for coal have already upgraded the economies of rural areas where coal mining is the major industry. Recent press reports indicate that the coal fields of eastern Kentucky—an area that has been economically depressed for the past 25 years—are experiencing a major economic boom.

With coal prices reaching as high as \$33 per ton, more people are working and more money is being spent. Some coal counties report that people who left years ago to find employment in cities in Ohio, Indiana, and Michigan are beginning to drift back. Bankers report increased deposits, assets, and loan demand. While much loan capital is required for coal related activities, demand for consumer loans to purchase appliances, furniture, and cars is also very strong. Merchants report increased sales, and unemployment, while still high, has dropped sharply from 1973 levels.

However, eastern Kentucky has experienced coal booms in the past that have ended abruptly. The traumatic effects of the cyclical nature of the industry promotes exploitation and an attitude of "make it while you can." One businessman was quoted saying, "The next 5 years will be the time to make it. If we don't get something out of our coal resources while we can, we might as well forget them."

As increased coal production becomes a big factor in dealing with the energy crunch predicted for the next 5-7 years, other areas will be subject to the same boom or bust psychology that has plagued Appalachia, causing economic instability and depression leading to accelerated outmigration.

Thus, nonmetro areas that have available vital energy resources such as coal must develop long-range plans to assure economic and social stability. A prime objective of any economic development strategy for areas dependent on natural resources such as coal must focus on economic diversification.

KENTUCKY'S APPROACH

Kentucky has recently initiated a major effort to promote economic development based on coal. At the recommendation of the Governor, the 1974 legislature approved an appropriation of \$57.7 million for a three-pronged expansion of the State's "energy resource utilization program," which includes \$3.7 million for expanded research, \$6 million for a new specialized research facility for coal gasification and liquefaction, and \$50 million over 6 years to provide seed money for pilot and demonstration synthetic fuel plants.*

The State's strategy is based on the simple notion that increased energy supplies in the future are essential to maintain a healthy, growing economy; that coal will be a major contributor to new energy development and that the production of synthetic fuel from coal will become a multibillion dollar industry by the end of the century. Since 1973, Kentucky's Institute of Mining and Mineral Resources has been participating with Ashland Oil and the National Science Foundation in a \$780,000 experimental project dealing with the production of synthetic oil from coal.

Building from this effort, a Kentucky Energy Council has been established to administer the State's energy management program. While the ongoing research and development program is expected to generate long-term economic growth based on coal, creation of a \$50 million Energy Development Trust Fund should produce an immediate posi-

*Kentucky's Response: Research Applied to Meet the Nation's Energy Needs. 1974.

tive impact. The fund will be used to attract Federal and private funds to support construction of pilot and demonstration plants for coal gasification and liquefaction. The State funds can be used for designing, constructing and operating pilot projects. To hold down transportation costs, plants will be located near the coal mines in rural eastern and western portions of the State. Private participation will be allowed under a "buy-back" arrangement to recover the State's investment once the commercial feasibility of a plant has been established.

The implications of Kentucky's strategy for managing energy resource utilization on rural development are obvious. Most conversion facilities are planned for nonmetro areas near the source of coal. Not only can such plants increase employment and incomes in the mining industry, jobs will also be created in energy research and construction and operation of conversion plants. Most significant, however, are the implications for related economic and industrial growth through energy support industries and by the location of new industry near the source of available, relatively low cost, clean burning fuel. Such a strategy could produce a major spin-off effect by attracting new industry and generating retail trade and services occupations. Over the long-run, this approach could help diversify rural economies that have been at the mercy of the cyclical nature of the coal industry.

Other more direct benefits from coal are already being realized by local governments in Kentucky's rural areas. Under the provisions of a so-called "Mountain Amendment" passed by the 1974 legislature, coal producing counties will receive about \$5 million in surplus funds from the State's coal severance tax. The amendment directs that surplus severance tax receipts be returned to the counties in proportion to the amount of severance taxes the county generates. The counties may use the funds for public projects such as roads, water and sewer systems, parks, and industrial development projects. In addition, in setting up the State's Energy Development Trust Fund, the legislature authorized the State to sell revenue bonds for such purposes as county or municipally owned coal gasification plants.

Other States that are formulating plans for energy development include North Dakota, which is studying the economic impact of large-scale development of its vast deposits of lignite coal; New Mexico, where a private utility plans to build six gasification plants in a rural part of the State; and Illinois, where Commonwealth Edison plans to build a \$19 million gas system at its power station near Pekin in central Illinois. In Pennsylvania, a \$30 million coal gasification pilot plant is already under construction in Homer City, as part of the Interior Department's \$120 million gasification research program. Maryland has received a \$125,000 grant from EDA to conduct an energy-management program to stimulate long-range economic growth.

To promote both rural development and energy development objectives, these State efforts will require careful and comprehensive long-range planning based on relevant data needs. Detailed studies must be made of the impact of energy on employment, income and tax base, and on industrial, commercial and residential construction.

In addition to data gathering and economic concerns, energy-related development planning must consider trade-offs among other natural

resource and environmental considerations. For example, with the help of a grant from EDA, North Dakota is undertaking a major study of lignite development which will analyze the impact of various levels of lignite production on natural resources and physical infrastructure such as roads and utilities in communities affected; the capability of communities to cope with the population influx anticipated with major lignite development; the impact on agriculture and tourism in order to assure an optimal mix of all three activities; and review the commercial development and anticipated requirements of the industry and increased population.

PROBLEMS AND CONSTRAINTS

Prospects for energy self-sufficiency through increased energy consumption must overcome several major roadblocks if both energy requirements and development objectives are to be accomplished in unison. Environmental problems and the need to formulate policies which properly take development and environmental trade-offs into account is the most formidable task facing energy planners at all levels of government.

In addition, requirements for huge amounts of capital to finance a major push in new domestic energy production will bring fierce competition for money in future years and could jeopardize the goal of energy self-sufficiency. Another major concern is that the drive for new domestic energy production could alter the "social fabric" of rural areas, or could bankrupt small local governments unable to handle an influx of new people and industry.

Three critical subareas involved in formulating policies dealing with environmental and energy development trade-offs that will likely affect rural growth objectives include the need for vast quantities of water for use in conversion processes; Federal laws prohibiting significant deterioration of air quality in regions where little or no air pollution exists; and the whole thorny question of powerplant siting.

In many rural areas, the lack of adequate water supplies is probably the greatest problem confronting prospects for energy development. Electric generating plants, conversion of coal to synthetic fuels, oil shale processing and nuclear power generation all require vast amounts of water. Particularly in rural areas of the West and Southwest, water for energy development must compete with other priority uses—such as irrigated agriculture. In Wyoming, Colorado, Montana, the Dakotas, Utah, New Mexico, and Arizona, competing claims for scarce water supplies are likely to lead to intense political conflicts over water rights.

AIR QUALITY PROBLEMS

Proponents of rural development have been worried over the impact of Federal air quality regulations ever since an appeals court ruled that the States could not allow any "significant deterioration" in the quality of air that already exceeds Federal standards. At this writing, EPA was expected to propose strict rules requiring the States to classify pristine areas within their borders where almost no new heavy industrial growth could occur. Over 80 percent of the Nation's land area would be affected by the so-called nondegradation rules, including

practically all rural and nonmetro areas. Both the appeals court ruling, which was upheld by the Supreme Court on a 4-4 tie vote, and EPA's proposed regulations have been sharply criticized by energy and development planners, who believe that a "nondegradation" policy would be a serious roadblock to economic growth and will place restraints on new energy facilities such as coal-fired powerplants and shale oil production.

EPA officials argued before the courts that a policy of no significant deterioration could impose a Federal no-growth policy on developing industrial States and that construction of new housing, roads, plants, and even new towns may be prevented in many nonmetro areas denying people the opportunity to leave congested urban areas. However, EPA's latest proposed regulations would preliminarily classify all areas in the strictest category (Class I) under which "practically any change in air quality would be considered significant" and therefore would prohibit almost any development.

While the States could reclassify areas in zones where some deterioration would be allowed, the burden of proof would be on the States, which would be required to follow rigid procedures and hold public hearings. Furthermore, EPA could reject a State's plan based on "inaccurate technical data." After 2 years, all areas not reclassified and approved by EPA would automatically fall under the strictest or "no development" category.

Both the President and FEA have asked Congress to amend the Clean Air Act to relax the nondegradation requirements. While legislation to that effect has been introduced in Congress, EPA now opposes these amendments preferring instead to attempt to control regional growth by promulgating national standards.

POWERPLANT SITING

The problems of water supply and nondegradation of air quality are closely tied to the broader issue of powerplant or bulk energy siting. Opposition to new refineries and bulk energy sites has surfaced in many areas and States such as New Hampshire, Maine, Delaware, Maryland, Colorado, and California. Some energy planners contend that State restrictions on bulk energy siting limits expansion of the job market while increasing the tax burden on individuals and putting pressure on State budgets.

Some Federal officials have suggested that the Federal Government require States and regions to absorb their fair share of bulk energy sites such as refineries, nuclear and coal-fired powerplants, deepwater ports, and hydroelectric projects. Governors in some southern and western States have urged the States along the Atlantic seaboard with heavy metropolitan concentrations to develop energy facilities to serve their own regional needs.

Last March, former FEO Administrator William Simon urged the State of New Hampshire to allow construction of a major new oil refinery. Simon argued that the new facility would result in lower fuel prices and available supplies for residents of the State. Other proponents of building a new refinery contended that it would promote economic development in the region. Later, in urging Governor Marvin Mandel of Maryland to veto two bills prohibiting construc-

tion of a proposed oil refinery in a rural county of Maryland, Simon said localities must make sacrifices to deal with the fuel shortage. "It is distressing that so many take for granted the conveniences and necessities provided by an adequate energy supply, yet insist that the facilities absolutely essential to providing these supplies be located elsewhere," Simon added.

The States' dilemma over interstate conflicts involving bulk energy siting and associated issues such as offshore drilling and deepwater ports is vividly contrasted by the remarks of two Senators expressing different viewpoints. Explaining why he would not oppose offshore drilling along the Florida coast, Senator Lawton Chiles said: "I have realized that Florida could not enjoy the luxury of saying that Louisiana, Texas, California and other States should drill off their coasts, producing oil and gas to meet our energy needs, and simply say we don't want to have oil wells off our coast."*

Another view is expressed by Senator William Roth of Delaware, who noted that his State is the "unwilling prime candidate" for a deepwater oil terminal to serve the East Coast. Senator Roth said that: "According to our State Planning Office, the construction of the port would result in quadrupling the population of Delaware's two lower counties, Kent and Sussex * * * which form the heart of the State's recreation, fishing, and farming industries." Senator Roth added that this would "compel a dramatic shift in the economy and lifestyle," and "would require that roughly 125,000 acres, most of which are now dedicated to farming or conservation, be used for residential or industrial development" to house and employ the large population increase.**

PRESERVATION OF RURAL AREAS

There is little doubt that Federal and State policies for bulk energy siting could be designed and implemented to help accomplish rural development and balanced growth objectives. However, the issues involved in powerplant siting and associated industrial development in nonmetro areas will generate political conflicts between proponents of increased domestic energy development and those who want to preserve the character and lifestyles of rural areas. In fact, both energy development and rural economic growth objectives would be jeopardized if it is decided that a major priority of national growth policy is to preserve the "social fabric" of rural areas. The advantages to be gained from energy development—more jobs, more people, higher incomes and diversified economies—will almost certainly change the "social fabric" of rural areas that have long been plagued by unemployment, outmigration, poor housing, low incomes and other maladies resulting from economic distress.

Those who favor exclusionary policies for rural areas also argue that new energy-related development will overwhelm small rural communities that would be unable to meet new demands for schools, roads and other vital public services. Proponents of rural development counter this argument by pointing out new energy-related industry will create new jobs, broaden the tax base and spread public costs over more people and industry.

*"Conservation Foundation Letter," January 1974, p. 8.

**Ibid., p. 3.

While new energy-related development will pose a major challenge to the financial and physical capacities of some rural communities, these problems can be dealt with through careful long-range comprehensive planning back-up by financial and technical assistance from the States and the Federal Government. An intergovernmental approach is needed to support planning and the provision of public facilities in rural communities where new energy development is expected to bring an influx of new people and supporting industries.

Thus, while the character of some rural areas will be altered, these changes should be beneficial both to the communities involved and to the Nation as a whole. Skeptics should be reminded of the success of the Tennessee Valley Authority, which has helped revitalize a large, primarily nonmetropolitan region through the production and availability of low-cost electric power. Over a 30-year period the economy of the TVA region has been changed from poverty-plagued depression to one of thriving new population and industrial growth in a number of smaller cities and towns that have provided jobs, incomes and services to rural residents of the area.

THE DEMAND FOR MONEY

The expected unprecedented demand for money by energy industries to finance new powerplants, mines, refineries and new fuel conversion technology will place a considerable strain on U.S. money markets. This staggering need to borrow funds will be a severe test of the flexibility and responsiveness of the Nation's financial system.

An FEO study estimates that a maximum program to produce more domestic energy will cost \$255 billion between now and 1980. Huge amounts of capital will be needed both to produce the extra raw energy products such as coal and oil, and to convert them into usable power and fuel through construction of new refineries, powerplants and synthetic processing facilities.

FEA Administrator John C. Sawhill has said that new financial instruments must be developed to channel the excess dollars of oil-producing nations into long-term capital investment in this country. In addition, energy industries must become more attractive to investors by improving productivity, according to Sawhill.

Pointing to the coal industry, Sawhill has estimated that an increase of 10 percent a year in coal production will require capital outlays up to four times over present levels by 1985. This figure includes \$23 billion for mine development, \$6 billion for new rail facilities, and \$10 billion for synthetic gas and oil plants and research.

Capital needs of the oil and utility industries dwarf coal's needs. Capital needed for oil exploration and production is estimated around \$250 billion while expanding electric generating capacity will cost between \$300 and \$400 billion if self-sufficiency is to be achieved. Recently, the ability of utilities to raise capital funds has deteriorated, partly because they are not earning enough income relative to interest costs. This means that they are often effectively barred from floating long-term debt. Thus, they are forced to seek rate increases meaning that the increased costs are passed on to the consumer. On the other hand, most rate increases are granted on the basis of past rather than

prospective costs, which fails to take inflation and future capital requirements into account.

These demands for capital for coal mining and electric utilities' expansion could have an indirect adverse effect on rural development. Both electric power and coal are vital sources of energy to provide power in rural areas. Since utilities' internal financing can contribute only about 35 percent of the amount of capital required over the next 10 years, the industry must rely on external financing. This also means that, over the long run, consumers will have to pay even higher electric bills.

To ease the burden of electric costs on consumers and promote conservation, some advocate an "inverted rate structure" to penalize heavy users of electricity. Opponents of such pricing policies argue that such a practice would represent a departure from charging each customer rates which reflect as closely as possible the actual cost of the service. Overcharging industries which are large users of electricity to subsidize residential rates could inhibit industrial development in rapidly growing nonmetropolitan areas. Such economic discrimination against wholesale industrial customers in high growth areas could put growing regions at a disadvantage by slowing industrial growth. A spokesman for the National Association of Rural Electric Cooperative has testified before the Federal Power Commission against changes in pricing practices such as inverted pricing blocks which "do not track cost."

In summary, the United States has embarked on a course to achieve energy self-sufficiency by attempting to provide better production incentives for the energy industry. The crucial question for proponents of rural development and balanced national growth is whether a national energy policy which provides adequate incentives for energy production can be planned and implemented to also provide incentives for rural development.

ELECTRIC POWER FOR RURAL AMERICA—POLITICAL, ECONOMIC, LEGAL, AND REGULATORY CONSIDERATIONS

[Excerpts from remarks by Robert D. Partridge, executive director, National Electric Cooperative Association, at a seminar in series on Energy and Agriculture held at Texas A. & M. University, College of Agriculture College Station, Tex., Apr. 15, 1974]

WHAT IS THE ENERGY CRISIS?

For us, this is pretty old stuff. We've been hollering about an approaching power crisis for, I guess, 13 years—more and more in recent years. We were the first organization, I believe, to face up to the fact that the Nation had on its hands an across-the-board energy crisis, and we labeled it as such.

Naturally, we did not foresee the Arab embargo. Nor did we predict the fantastic rocketing inflation of fuel prices.

But we did see very clearly that a few companies were taking possession of all energy resources and facilities—oil, gas, coal, uranium, oil shale reserves, transportation facilities, refining, liquefaction. They were taking strong hands in foreign production and import facilities. They control the data on reserves, production, and much of the information being derived from research. In 1973, profits of oil companies shot up roughly 60 percent over 1972 profits—despite, or perhaps because of, the shortages of products.

Since everybody's daily living depends directly on fuels, it takes no great genius to perceive that this concentration of ownership and control of energy resources is a very dangerous situation.

Rural electric cooperatives take a double interest in this—first, the individual member's interest as a citizen, and, second, the interest of a very small electric utility without much muscle to compete in the market place for electric power or for fuels with which to generate power. They figure that if somebody gets left out or if somebody gets gouged, the co-ops will be among the first.

I presume previous speakers in this series of seminars have given you a good picture of the energy crisis. I don't want to burden you with repetition of details. But let me list major elements in addition to the concentration of economic power:

1. Limited supplies of exhaustible resources. Our potentially recoverable petroleum reserves are estimated to be sufficient for no more than 50 years. Yet currently we depend upon domestic petroleum for 42 percent of our energy. Natural gas provides another 32 percent. Some well-informed people tell us domestic supplies of these two will be depleted by the year 2000. Contrary to earlier expectations, uranium is also a very limited resource.

We have vast reserves of coal, but the amounts that can be used are limited. Only a limited amount of high-sulfur coal can be burned. Technology for economic conversion of high-sulfur coal to form for cleaner burning fuel has not been developed for commercial use. Low-sulfur coal is mostly located far from the plants that need it, and even if enough could be mined, the railroads probably could not possibly haul as much as the generating plants need. Also, coal mining is beset by problems of safety, public opposition to surface mining, the high cost of restoring strip-mined land, and the need for new equipment and technology (remember that quite recently, nobody was investing in coal mining technology and nobody was opening new mines because users were shifting to other fuels).

2. Sites for hydroelectric development are limited. High prices of fuel and electricity make more hydro sites economically feasible, especially those where water can be pumped back up above the dam during hours when electricity can be used for that purpose. But there are not enough to solve the fuels problem, and of course there is a lot of public opposition to dams even though they make possible the only production of absolutely clean power.

3. Environmental considerations cause delays and also limit the development of energy resources. Consumer-owned electric cooperatives are and will be on the side of consumers. Co-op consumers tend to be better informed consumers than some others, and they don't automatically accept some of the extremist dogma about the environment. But neither do they go along with the other extremist view that says the public will lose interest in the environment when the lights go off.

At any rate, environmental considerations limit the use of coal, especially high-sulfur coal, and the use of high-sulfur oil; necessitate heavy investments in equipment to clean up the smoke; necessitate heavy investments in cooling towers and other means of holding heat out of rivers and lakes; have put electric utilities far behind schedule in siting, constructing, and using generating plants to be fueled with fissionable uranium; made everybody face up to the tough questions associated with strip mining; necessitated many-fold increases in industry and government expenditures for research and development.

The Federal Power Commission reported in February that strict adherence to existing air quality standards would force many steam electric plants to shut down, causing critical deficiencies in power supply reserves of seven out of nine areas across the nation. The East Central region not only would have no reserve capacity but would be over 27 percent short of zero. On a national average basis, reserve capacity would drop from an acceptable level of nearly 25 percent to a totally unacceptable level of 7.4 percent in 1975, and 13.8 percent in 1977.

4. Demand for energy continues to increase rapidly. Looking just at electrical energy, we see, as I mentioned earlier, that the public increased its use of electricity 7 percent a year in the 1968-72 period (and in rural areas the rate was 11.4 percent).

Many rural electric cooperatives have always had education programs to show the consumer members how to use electricity economically. Many are now stepping up their conservation efforts.

Nationally, there is a great debate about limiting energy use.

Some people think high prices will force cuts in consumption and that the market place is the proper place to make the decisions involved. They strongly advocate deregulation of natural gas in interstate commerce so as to let demand govern. NRECA does not agree with this. We do not think deregulation of gas will produce more gas. We think the FPC has already hurt the public by granting natural gas producers the biggest price increases in history. The normal regulated well-head price of natural gas in interstate commerce is on the order of 20 to 35 cents per thousand cubic feet. If deregulation occurs, such "free market competition" as exists will come from synthetic gas manufactured from coal, from imported liquefied natural gas, or from Alaskan natural gas, all of which are estimated to cost in excess of \$1 per thousand cubic feet. The temptation under deregulation is obvious. All gas will be priced in excess of \$1 per thousand cubic feet. For each one cent increase in the price, the consuming public will pay an additional \$240 million annually at the present level of consumption. Thus, a 10-cent increase would cost the consumers \$2.4 billion per year. Crude oil prices have quadrupled in a few months. The chairman of the Federal Power Commission, John Nassikas, recently told the Joint Economic Committee of Congress that, even if inflation is halted, electric power rates probably will triple before 1990—that is, in about 15 years.

That's easy to believe when you look at a few examples of coal price increases. A G&T manager in Kentucky reports that in a recent few months the price he paid for coal went up from \$8 to \$12 a ton, and then for the next order the price was up to \$28.

A few days ago the public got the results of a 2-year study made by the Ford Foundation's Energy Policy Project, headed by S. David Freeman, former White House adviser on energy and one of the best overview men in the country. It gives us a look at three options: (1) Try to continue increasing energy consumption at the same rate as in recent years, (2) cut to half that rate and (3) reduce the rate of increase to a plateau by year 2000. To keep going as we have been, the report says, we would have to deemphasize environmental protection and heavily subsidize energy development. The no-growth option would call for radical changes in our lives—we would have to go in for more multi-family homes, more "new towns", more mass transit, stepped-up efforts to revitalize cities, put the brakes on urban sprawl, and let such industries as petrochemicals and aluminum move to countries that have cheaper energy. The middle option—consumption increases at half the historical rate—would require strong conservation measures but would not necessarily cut the Nation's overall economic growth rate. Members of the board of this study project are reported to disagree about the findings. Many other people will disagree, but as *Business Week* magazine said in the story about the study: "For now, everyone agrees that energy conservation is part of the long-term strategy needed to resolve U.S. energy problems. As the Ford study notes, steep growth rates are not inevitable. 'The nation . . . does have energy choices.'" (End of quotation.)

In the long run, you will find the members of rural electric systems against the waste of energy and in favor of policies that favor balanced economic development. They want more jobs and greater economic opportunity in rural America, not only for their own benefit

and the benefit of their children, but to take the pressure off the cities. They know that such development requires good electric utility service, and they are determined to provide it if at all possible.

I would also like to make this point about conservation: Energy conservation is not just turning off lights and reducing gasoline consumption in our cars. To be effective in energy conservation, we should encompass in our plans and programs all energy resources, the decisions as to which resources to use for particular purposes, the processes of recovery, refining and transporting; the design of buildings; the engineering of vehicles and equipment; and so on and on.

Well, I could give you more of the ins and outs of the energy crisis, but I must move on to the matter of what we should do about it. As I said in the beginning, I don't think anybody can offer a pat solution. But for starters, here is what NRECA favors:

DEALING WITH THE ENERGY CRISIS

1. National energy policy. The Nation is drifting, not planning or properly allocating energy resources. The NRECA membership recently adopted a resolution which says the Federal Government should develop and implement a national policy on fuels and energy that will include at least these elements:

(1) Surveillance over the production and marketing of fossil fuels to assure reasonable availability of same and to avoid a situation in which prices for scarce fuels are set by a relatively few producers and processors.

(2) Establish a Federal Government corporation empowered to undertake oil and gas exploration and recovery operation on Federal lands in order to evaluate the true cost of such operations claimed by major oil producers.

(3) Allowance to fuel producers, processors and marketers of a reasonable return on whatever investment is required by them to optimize U.S. fuel production.

(4) Encouragement in bringing into production new energy sources (coal, coal gasifications, oil shale, geothermal, etc.) "by business organizations which will provide added competition in the production, processing and marketing of fuels.

(5) Vigorous application of anti-trust laws to the fuel industries.

(6) Establishment of guidelines to maintain a reasonable balance between energy availability and environmental protection.

(7) Increased emphasis on research and development of new energy sources and energy conversion techniques.

(8) Coordination and cooperation between energy production and energy consumption industries.

(9) Means through which to discourage waste of energy and to encourage conservation and efficient use of same.

2. A massive, federally directed and funded research and development program. We need not wait for the development of a national energy policy to know that we must vastly increase our efforts to develop energy resources and technologies that are consistent with energy requirements and compatible with a healthful and pleasant environment.

Rural electric systems are contributing to industry-financed research and development through the Electric Power Research Institute and

the Liquid Metal Fast Breeder Reactor program. But these efforts are puny in relation to the need. American leaders in government and industry must place the same priorities on solving the energy crisis in the 1970's and 1980's that they placed on space exploration in the 1960's.

We need to get on with an "earth lab" type of program with an adequate commitment of funds.

Let's get on with development of the liquid metal and gas-cooled fast breeder reactors. Let's explore our geothermal resources and develop the technology for using them successfully. We need to check out the practicality of magnetohydrodynamics as a means of generating electricity, cryogenic cable for efficient transmission, ocean tides and temperature gradients as energy sources. We need to know more about the conversion of coal to gas for clean burning, about the extraction of oil from shale. On an immediately practical level, we need better batteries; we need electric vehicles and more efficient appliances and equipment. We need environmental research, especially on relationships of pollutants to health. For the long pull, we have got to check out all the possibilities for harnessing solar energy. And the ultimate question is whether we can contain the process of nuclear fusion, the process through which sea water may become our unlimited supply of non-polluting fuel.

3. A national power grid.

Without waiting for the development of comprehensive policy, most people would agree, I believe, that we need to interconnect power systems so as to move large amounts of electricity back and forth across the country as requirements change in the different regions. Interconnections that might not be profitable for utilities should be constructed by the Federal Government, but the pluralistic ownership of the systems should be preserved.

4. A national energy corporation.

We are asking Congress to establish a Federal cooperation patterned on the TVA concept for the purpose of developing oil, gas and coal resources on publicly owned Federal land.

5. Enforcement of antitrust laws.

We have called for investigation of antitrust law violations in the energy field, and we call for strict enforcement.

6. Reliability legislation.

One of the needs that can be seen most clearly is the need for prompt handling of disagreements over location of powerplants and transmission lines. We also need to make sure that the little co-ops and municipal systems have a chance to participate in regional power planning activities and share in use of transmission facilities and power supplies. Legislation is needed promptly for those purposes.

7. Hydroelectric development.

Nine congressionally authorized hydroelectric projects await the appropriation of funds. This doesn't make sense to us, and we are asking the Administration and the Congress to move ahead rapidly on these projects. The Administration should also revise its cost/benefit standards for hydro. At present, there's a game of "let's pretend" in progress. The cost side of the ratio is burdened with an unrealistic administrative decision to tie costs to open market financing rates. We think it's time to get back to the real world.

8. Energy conservation.

With fuels scarce and terribly expensive, the obvious starting point in dealing with the energy crisis is to make war on waste. We needn't wait for the development of a comprehensive national policy, and we are not waiting. The Federal Energy Office says that conservation had a lot to do with getting us through the Arab oil embargo without disaster. We need to keep working at it.

CONCLUSION

I have mentioned several categories of actions that need to be taken now, and obviously I have not exhausted the possibilities. Let me emphasize, however, that we must press very hard for the development of a comprehensive national policy. If we continue to drift very much longer, we may never recover.

ENERGY AND AGRICULTURE

A CRISIS WITH FAR-REACHING EFFECTS

BY JOSEPH HALOW, EXECUTIVE VICE PRESIDENT, GREAT PLAINS, INC.

(Reprint from the Great Plainsman/May-June 1974)

Recent articles dealing with the Middle Eastern situation tend now to refer to the group of oil countries as a new world power, and indeed there can be little doubt that they are just that. Largely neglected for years, they have suddenly become ardently wooed by both the developed and developing nations. The effects of their changes in oil policies are of grave concern to a world which a scant few months ago was entertaining thoughts of attempting retaliatory boycotts. There was even some talk—fortunately never taken very seriously—of having developed nations go into the Middle East and forcibly taking over the oil wells. The league of oil producing nations achieved a degree of unity which was totally unexpected and which has been remarkably effective. They have dealt such a blow to the European Community that its future is now seriously in question. The Japanese have also been deeply concerned over what the Arabs might do to them, and the United States has modified what appeared to be a completely inflexible position with regard to the Middle East. The Arabs have accomplished with their petroleum what they could never have hoped to achieve with any amount of weapons or diplomatic negotiations. This show of strength has brought the world to a brutal acknowledgment of the extent to which it is using and needs energy.

It may appear trite but important to mention that nothing in this world can move without energy and, hence, there can be no life without energy. In order to maintain a standard of living even slightly higher than a mere existence man depends on outside sources for energy. These sources of energy are varied, but man's dependence on petroleum has increased at an alarming rate during the past two decades. An industry which was once fired with coal has been almost completely converted to petroleum. The average citizen has no difficulty understanding the extent to which manufacturing depends on oil, but many people outside of agriculture do not realize that agriculture is also highly dependent on oil. The energy crisis has, therefore, been of far greater significance to agriculture than even farmers could have imagined.

AGRICULTURE IS A TOP ENERGY CONSUMER

When asked about how the energy crisis might affect agriculture anyone attempting to respond might feel he could move out into a

morass, for the answer may go off into many different directions—all of them correct. The most immediate area in which the energy crisis affects agriculture and the one which comes most readily to mind is, of course, in the form of fuel for tractors and other farm machinery. Concern during the fall of 1973 that there might not be enough fuel for this purpose was enough to send commodity markets shooting higher. Conversely when this fear wore off market prices receded. Direct agricultural inputs from farm to final consumption account for approximately 12 percent of total U.S. energy consumption—a figure which would startle most urban dwellers and even many farmers.

Perhaps the next most basic area in which agriculture depends on petroleum is for transportation—both in bringing supplies to agriculture and in carrying agricultural production to consumers in the United States and abroad. This too appears to be an obvious area, and one which concerned both farmers and consumers for a relatively short period of time.

The shortages of fertilizer are also closely linked to the energy crisis, for even those fertilizer components which do not come directly from petroleum or natural gas must be mined or produced through processes which require consumption of energy. Almost 90 percent of the world's nitrogen production is derived from natural gas or petroleum products. The transportation of fertilizers is, furthermore, dependent on petroleum. The higher fuel costs also increase transportation costs, making fertilizer more expensive for the farmer.

LESS PURCHASING POWER MAY REDUCE FOOD CONSUMPTION

A more profound effect of the energy crisis on agriculture is its effect on the purchasing power of nations and, subsequently, individuals as well. This is also a much more subtle effect, because it cannot always be measured. It is also usually of greater duration.

One of the main factors which has increased world food consumption has been the rising affluence of the world's population, permitting people and nations to purchase more of the types of food which they wish to consume. It is obvious that if there is a shift in this trend, with decreasing rather than increasing ability to purchase, agricultural trade will suffer. Even if consumption per capita is decreased slightly, the total decrease per nation can make a remarkable impact. This point was made quite dramatically by Morton Sosland, Editor of *Milling and Baking News*, when he pointed out that if each Chinese ate one half pound chicken more per year this would translate into 400,000 tons of feed grain necessary to produce it. Conversely, if each Chinese ate one half pound less annually, this would translate into a reduction of 400,000 tons of feed grain which the world might otherwise use. The total amount of feed grains involved in such a minor consumption shift would be 800,000 tons.

Improved economies have permitted nations to import more foodstuffs for their populations. The higher cost of petroleum has materially changed the world balance of payments, and countries with favorable balances of trade are finding that more and more of their foreign reserves are being expended for oil. Oil prices which have (doubled-tripled-quadrupled?) During the past 2 years will prob-

ably never return to earlier levels, even should there be some reduction in price from the highest levels. This means that countries whose reserves of foreign exchange are being hardest hit must consider means of bringing their payments back into balance. An example of how one nation is considering doing just that is the Brazilian response.

OIL COSTS STIMULATE FOREIGN WHEAT PRODUCTION

With a booming economy Brazil has continued to increase its imports of food. Brazil's two big import items are oil and wheat. As oil prices rose sharply, Brazil found that it was expending more and more of its exchange for oil, serving to cancel out what has been a favorable balance of payments. The Brazilian Government felt compelled to do what it could to correct this situation. It reasoned, not illogically, that if it could not increase its exports to offset the higher energy costs it must find some way to reduce the value of its imports. Considering its two large import items, Brazil reasoned since it could do virtually nothing to decrease its dependence on oil imports—it was not in a position to increase its own natural sources of petroleum—it would have to consider the other import item as the solution. Wheat, reasoned Brazilian government officials, can be produced in larger quantities in Brazil, meaning less wheat that would have to be imported to meet annual needs. In order to do this in a single action, the Brazilian Government approved an increase in the domestic support price to almost double its former level. Brazilian wheat support prices are now established at only a little below the highest world wheat prices in history. What this may do to Brazilian wheat production and hence to its own level of imports is yet to be seen, but the Government has obviously attempted to do what it could by providing an attractive incentive. This will affect not only Brazilian agriculture but the agriculture of the nations which have been supplying Brazil's import needs.

Other nations are taking similar measures, although none other appears to have raised its support price to the extent the Brazilians have. Various Latin American countries are among those which have increased their support prices. A more modest increase in the Chilean import price should serve to stimulate production. Argentina and Colombia have also increased their support prices.

The European Community has also increased its internal prices for agricultural products, despite an earlier determination not to alter prices and despite an inflation rate which is causing grave concern.

GLOBAL INFLATION AFFECTS CONSUMER, FOREIGN TRADE

Higher costs for fuel quite naturally increase production costs for both agricultural and industrial products—all of which must consider consumption of energy one of the largest cost factors. Higher production costs must be transferred, and consumers find they are paying higher prices for food and consumer goods. This creates either a consumption decrease or a demand for more income in order to maintain the same standard of living, or both. The demand for greater incomes appears, however, to be the more logical and easier approach, for no one wants to consume less. Labor wage demands follow quite

closely any increase in the price of consumer products, accelerating the rate of inflation.

Inflation has been the subject of greatest concern throughout the world for at least the entire last decade. A slight rate of inflation may be the sign of an improving economy, but any acceleration of the rate of inflation beyond that frightens economists. If fast enough, the rate of inflation creates panic among government officials who then wonder how it is affecting the consumers and fear how the consumers will react. At the present time there appears to be no major country which is immune, and some governments have already toppled because of a rate of inflation which alarmed the public. Current crises in many of the developed countries are attributable to a rapid rate of inflation due largely to the increase in the price of petroleum. Since the developed nations tend to trade with one another, economic problems in any one of the developed countries has its effect on the others. This is obviously even more pronounced in groups of countries which trade together in blocs, such as the European Community. Because of the heavy drain on its reserves due to the higher price of oil imports France was forced to "free" the French Franc in the foreign exchanges, permitting it to find a different value in relation to other currencies. This action placed an unbelievable strain on unity within the European Community, and, together with subsequent events, may provide part of the means by which Community policy will be changed.

As the largest agricultural producer in the European Community France must now be viewing its intra-EC trade with more than little distaste. World prices for certain agricultural commodities—particularly grains—have been higher than prices within the Community. As a member of the European Community, France was obliged to sell its grain to other EC members at the established EC price. In need of greater income to offset its greater outlays for oil, France must consider each sale to one of the members of the Community as a lost opportunity for additional revenue.

Actually the closest thing the Community has to a "common market" is its agricultural system, established on the basis of a Common Agricultural Policy of harmonized prices. Changes in the exchange rates have made a farce of the CAP, since prices cannot be harmonized in a situation in which currencies have changed or are constantly changing in value. Whether or not the Common Agricultural Policy will survive and in what form are questions which cannot now be answered, but the CAP has had a major effect on European imports and exports, which in turn affected U.S. agricultural exports not only to the Community but also the area around the Community and the former European colonies which constitute a large part of the Community's "traditional" customers.

A perhaps even greater threat to the CAP now is the situation in the United Kingdom. Here the rate of inflation and labor demands, made more acute because of the higher cost of importing oil, caused the defeat of the Prime Minister and brought back to that position a former incumbent. The United Kingdom is perhaps the largest importer of foodstuffs within the Community, and its acceptance of the Common Agricultural Policy as an obvious condition of its membership in the Community created distortions in agricultural trade which affected

the Commonwealth countries as well as the United States. Aware of the conditions which caused the downfall of the Heath government the new government will attempt to reduce the rate of inflation and bring down food costs. Pressure by the United Kingdom for a modification of the Common Agricultural Policy is almost a certainty. The United Kingdom could, furthermore, probably not select a more favorable time for applying such pressure.

Another new EC member, Denmark, is likewise feeling the pressure of the energy crisis in the form of higher fuel costs. A recent governmental crisis, due principally to the rate of inflation, avoided the downfall of the government but brought to government officials a clear message of popular discontent.

An energy crisis could hardly exist without affecting Japan, whose economy is built almost completely on an industry which depends on imports of raw materials and exports of finished products. One of Japan's greatest advantages has been its ability to put on the world markets good quality merchandise which is very price competitive. It has been able to do this with low-cost inputs of labor and materials. Lately the cost of its labor has been going up, and higher petroleum costs are not only drawing on Japan's foreign exchange holding but are increasing production costs as well. Japan has been able to become the world's largest single food importer because it wanted to concentrate on manufacturing and had ample foreign exchange holdings with which to buy food. Japan now is paying a higher price for food and for oil, the net result of which is an appreciably reduced rate of economic growth. In order to continue exporting its industrial products Japan also strongly encouraged imports of raw agricultural products from its trading partners. This has greatly helped U.S. farmers, who have seen Japan become the number 1 customer for U.S. wheats, corn and soybean, among other products. If Japan's positive balance of trade and payments suffer a greater decline Japan may become less interested in encouraging imports. Japan is now reported, in fact, to be attempting to again increase its exports in order to improve its balance of trade and stimulate its economy.

Not all the effects of the energy crisis are negative, however, for since someone's expense is always someone else's income, what the oil importing countries are spending is bringing new wealth to the oil exporting countries. Many—if not all of them—are deficit food producers and must, therefore, import a major or at least a large part of their requirements. Chief among these are the Arab countries, but the group includes also Venezuela, Ecuador and Nigeria. In all these countries oil wealth has greatly enhanced the Government's ability to import and the people's ability to buy more food. While those countries which are affected negatively by the energy crisis feel they may have to curb imports in order to conserve foreign exchange, the oil exporters will undoubtedly appreciably expand imports in order to provide better diets for their people and to use some to their additional income.

DANGER OF INCREASED PROTECTIONISM

Of particular concern throughout the world is the strong possibility that many countries—including the United States—are beginning to

shift some of their thinking from liberal trade policies to policies based on trade control. Even those nations who may not be under pressure from a worsening trade balance may feel they too must control trade if many of their trading partners do so. Protectionism breeds even more protectionism, and some of the benefits which the world has been able to obtain from the move to liberal trade policies may be eroded as individual countries begin to take measures which they consider necessary to maintain a positive trade balance.

What has been termed the "energy crisis" is obviously a very major shift in the world energy situation, just as there has been in the world agricultural situation. The two shifts came into being at almost the same time and are now being dealt with by the world perforce at the same time, although each one of them is important enough to merit individual attention. Some of the background factors in both situations are similar, and, as a result, and because they are being coped with at the same time, governments tend to attempt to apply the same solutions. One of the factors which has created the crises is production restriction—either willful or as a result of a force of nature. It does not appear logical to attempt to solve the problem of shortages, created by restriction, by applying further restrictions.

LONG-TERM SOLUTIONS ARE NEEDED

As in most other economic situations each disruption eventually finds a new balance, and the energy situation will also again come into balance. The length of time required to find a new balance will, however, depend on the extent to which natural economic forces are permitted to play. The same is obviously true of agriculture. Each situation should be considered in terms of the future—the long rather than the short range. Although there is obviously a need to counter problems which require immediate attention, hence the need for short-term solutions, problems are merely prolonged or intensified if those who attempt to meet them do so by adopting long-term policies to resolve an immediate, short-term situation. Under such circumstances policies are based on reaction rather than long-term planning and, as a result, frequently served merely to distort further the economic machinery they have been instituted to correct. Crisis fighting frequently does not normally result in the best type of long-term policy. It may merely bring about a strong shift in the opposite direction or create stress on another sector of the economy.

The energy crisis will not be solved by taking what may be uneconomic actions in agriculture. It will, in any event, not be solved quickly and should receive full and serious consideration leading to long-term resolution. Trade liberalization, with access to world commodities for all may appear a highly idealistic goal, but a greater move in that direction would help provide the solution.

**QUESTIONS CONCERNING ENERGY AND RURAL
DEVELOPMENT**

A RESPONSE TO QUESTIONS OF THE SENATE AGRICULTURE SUBCOMMITTEE
ON RURAL DEVELOPMENT—JULY 1974

COMPILED BY THE ECONOMIC RESEARCH SERVICE,
U.S. DEPARTMENT OF AGRICULTURE

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PLANT INDUSTRY

PLANT INDUSTRY
BUREAU OF PLANT INDUSTRY
WASHINGTON, D. C.

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INTRODUCTION

To his letter of April 1, 1974, to Assistant Secretary Erwin, Senator Clark, Chairman of the Senate Agriculture Subcommittee on Rural Development attached a list of 68 questions pertaining to the rural development implications of higher fuel prices.

Given the broad range of topics treated in these questions, we sought * * * with the cooperation of Senator Clark and his staff * * * the help of several other Federal agencies and departments. The list of agencies contributing to this response is also attached. We are indebted to each of them for their help. The Federal Energy Administration made a particularly significant contribution, supplying responses to over half the questions.

The responses are essentially as we received them from the agencies, with some minor editorial changes. The assignment of questions to individual agencies was strictly judgmental on our part. Each participating agency was asked to review our choice of questions and to amend it as they saw appropriate. Thus, responses were not received for all questions for which they were invited.

U.S. SENATE,
COMMITTEE ON AGRICULTURE AND FORESTRY,
Washington, D.C., April 1, 1974.

MR. WILLIAM W. ERWIN,
Assistant Secretary for Rural Development, Department of Agriculture, Washington, D.C.

DEAR MR. SECRETARY: On May 8 and 9 in Room 322 of the Russell Senate Office Building, my Subcommittee on Rural Development of the Committee on Agriculture and Forestry will hold hearings on a number of matters relating to rural development.

I would appreciate it if you, Dr. Guntharp, and Mr. Elliot would arrange to be the lead-off witnesses on May 8.

The Subcommittee will want to discuss the following:

1. An evaluation of the regulations for Title I and Title V of the Rural Development Act of 1972 as prepared by the General Accounting Office. It is my understanding that this evaluation is now in your hands for comment. If it is not, please let the Committee staff know so that you can have the benefit of being able to study the report before the hearing.

2. We would appreciate it if, a few days prior to the hearing, a member of your staff meet with the Committee staff to update our flow chart.

3. The Subcommittee will want to discuss the Administration's request for rural development appropriations, including those of the Forest Service and the Soil Conservation Service.

4. Mr. Elliott has been most cooperative with the General Accounting Office in assisting with an evaluation of the staffing of the Farmers Home Administration. It would be helpful if he would submit, in advance, a brief report on how this survey is going from his point of view. I want to stress that this is *not* an investigation.

5. We will be most anxious to hear in detail how efforts are going toward full implementation of the Rural Development Act of 1972. Prior to the hearing, please provide a list of all of the beneficiaries of any kind of assistance under the Act up to the time of the hearing.

6. We will be anxious to hear from you about any changes in the Act that you feel might be necessary now that you have been using the legislation for a time.

7. The continuation of the Concerted Services in Training and Education Program will be a matter which we will want to discuss with you.

8. And finally, we will want to get the benefit of the research you have underway in regard to how the energy crisis will affect national strategies for rural development. In that regard, I am enclosing a series of questions which we would like to have answered. This is a very comprehensive list, and we will not expect you to have a response by the time of the hearing. The Committee staff will be pleased to work with your staff and the Economic Research Service on a reasonable time when this report can be completed.

With every good wish, I am,
Sincerely,

DICK CLARK,
Chairman, Subcommittee on Rural Development.

DEPARTMENT OF AGRICULTURE,
OFFICE OF THE SECRETARY,
Washington, D.C., August 29, 1974.

Hon. DICK CLARK,
*U.S. Senate,
Washington, D.C.*

DEAR SENATOR CLARK: This letter transmits to you our responses to a series of energy-related questions which were sent to us in your letter of April 1, 1974. The USDA Economic Research Service has compiled these responses with the cooperation and assistance of other Federal agencies and departments, which are listed in the Appendix to the attached report.

We appreciate the opportunity to provide this response to the Subcommittee's inquiry into the impact of the energy shortage on rural development.

Sincerely,

WILLIAM ERWIN,
Assistant Secretary.

SUMMARY

Overall Effects of Higher Fuel Prices

Increased fuel prices will affect the nature and extent of rural development in two principal ways. One will be expressed through the price system as higher fuel prices prompt a realignment of the production, marketing, and consumption patterns. These effects will be nationwide, though they will impact proportionately more on particular regions. The second major effect will be that associated directly with energy production, much of which will occur in rural areas.

With regard to the former, existing information suggests the following. Employment effects will be more product specific than location specific. And since the products that are affected (some positively, some negatively) are produced and marketed rather uniformly in both rural and urban locations, the *net* effect is not expected to be large. Some rural areas will benefit while others will be disadvantaged.

From the point of view of the household consuming unit, higher fuel prices will tend to adversely affect: (a) lower income people and (b) rural people. The former occurs because low income families spend proportionately more of their incomes on food, housing, and transportation, the more energy intensive components of the family budget. The adverse affect on rural people is attributable to their relatively greater dependence on energy for transportation and space heating.

The rural manpower implications of higher fuel prices (as reflected in the responses) have received comparatively little attention at this writing.

There is no evidence to date that the energy problem has prompted a measurable change in population settlement patterns.

Employment Effects in Energy Producing Areas

Some rural areas are already experiencing significant increases in job opportunities associated with the extraction and processing of fuels. Other areas will be similarly affected in the coming months and years. Estimates of the location, magnitude, and timing of these effects are now being made.

The extent to which this situation will give rise to significant secondary employment effects is far less certain. For some high energy consuming industries there will be increased incentive to locate nearer the energy sources. But whether this incentive will be great enough to be *the* determining factor requires a more elaborate assessment than has been possible here.

There is general uncertainty over the developmental effects of deregulating interstate natural gas prices. The assurance of readily available supplies of natural gas in the producing States has in the past favored these States as sites for industrial development, despite the higher gas prices users were required to pay. Though under deregulation producing States would benefit from not having to pay transportation costs required to move the fuel over great distances, it

is not clear what effect the competing uses for natural gas would have on its cost effectiveness as a source of energy in industrial production.

Some nonmetropolitan areas will likely benefit from the establishment of energy research and development activities in the vicinity of fuel deposits. Yet, in the absence of concentrations of technical expertise and community amenities, much of this activity will take place in more distant urban centers.

Use of Energy Policy to Further Rural Development Aims

It is recognized that a national energy policy could—at least theoretically—be used to influence patterns of regional growth and development. This necessarily requires agreement or consensus on developmental objectives . . . e.g. Where is the development to occur? What form is it to take? Etc. While there is general agreement over the need for and general nature of a national energy policy, the form and substance of a rural development policy is less precise. The opportunity for linkage of the two policies depends in major part on the depth of understanding and articulation of their potential complementarities.

Clearly, through implementation of an energy policy, the Federal Government will set in motion activities that will have disruptive effects on people and communities. Some will gain and some will lose as a result. What role the Federal Government will play in assisting in the adjustment is being discussed but has not yet been formulated.

Some possibilities for mutually supportive actions that have been suggested include measures to assist in the development of a continuing economic base in the areas of energy production as well as measures to assist in the provision of community infrastructure. Land use planning and environmental protection are public values of major concern to many of these areas. They will undoubtedly be looking to State and Federal units of government for help in coping with these dimensions of the issue.

Resource Allocation

Most of the initial allocation problems that resulted in inequalities of fuel supply have been corrected. It is noted that in the period of most extensive fuel shortage, rural areas generally experienced less severe shortages than did urban areas, particularly those along the east coast.

Having gotten through the initial shortages, much of the adjustment is now being directed through the marketplace. Though this adjustment will require time and some public intervention periodically, it appears to be proceeding apace. Our experiences with allocation have generally reinforced respect for the market as an efficient allocator of resources. Though intervention to keep the market process competitive and responsive is required, attempts at national price equalization do not appear warranted.

Institutional Implications

Many State governments acted with dispatch and authority in dealing with the problems associated with higher fuel prices. This is evidenced through individual State actions as well as the Appalachian states collective actions working through the Appalachian Regional Commission. This at once points up the increasing capability of these units to participate effectively in public policymaking and implementation as well as pointing up the value of having an institutional ca-

pability of the type represented by ARC to deal with urgent national and regional issues of this nature.

Other Energy Sources

Though there are some opportunities for the further development of water power sources, they are somewhat limited nationally.

With further technological development, it appears likely that geothermal and solar sources of energy will become more important in the future though it appears unlikely either will play a major role in the foreseeable future.

Further Analysis

A wide variety of investigations relating to the effects of higher fuel prices on rural areas are now underway. These studies are addressing a wide range of issues including: the developmental opportunities for energy producing areas; means for small businesses to cope with higher fuel prices; measures to improve state government capability to evaluate economic and social implications; evaluation of transportation implications, etc. As findings from these studies become available over the coming months, they will provide an improved basis for recommending appropriate policy response.

I. CURRENT AND SHORT-TERM EFFECTS OF ENERGY SHORTAGES ON THE QUALITY OF LIFE IN RURAL AREAS

A. ECONOMIC AND SOCIAL CONSEQUENCES

Question 1(a). Federal economic and development programs have for the past 15 years or more concentrated on depressed nonmetropolitan areas with high unemployment and low income levels. Has there been any analysis of the impact of the energy crisis on employment and income levels in these areas?*

Answer. Estimates, at the national level, of the effect of the current petroleum shortage on employment in various industries have ranged from no impact at all up to 2.7 million job losses.¹ At the subnational level there has been no systematic analysis of the impact of the energy crisis on employment and income levels. However, we can make some rough estimates of the effects in nonmetro areas.

If we ignore the problem of fuel and energy shortages, for the moment, and consider only price effects, we can use Clopper Almon's (INFORUM) model results to derive the effects of the "energy crisis" on rural employment.²

*The income aspect will be discussed under question 5(b).

¹ See Business Week, Jan. 19, 1974. Clopper Almon finds that a shortfall of 1.8 million barrels per day will cause no impact on employment. Anne P. Carter assumes a similar shortfall (12%) but estimates that 2.7 million workers will lose their jobs. The main source of difference between the two respective models is the assumption concerning the possibility of substitution between inputs primarily, fuel switching. Carter assumes no fuel switching; Almon allows the substitution of coal for oil.

² The INFORUM model assumes that crude imports were reduced by 40 percent, reflecting a cut-off of 1.5 million barrels per day and that refined petroleum imports were reduced by 18 percent or 0.5 million barrels per day. In fact, the 1974 price of crude petroleum was exogenously introduced at double its 1973 level. In determining the effects of the "energy crisis" on rural employment a few simplifying assumptions were made. One assumption is that average national production and labor relationships apply equally well in metropolitan as well as in nonmetropolitan areas of the United States. Another assumption is that the proportion of industrial requirements satisfied by nonmetropolitan areas is directly related to the proportion of employment located within the non-SMSA areas. Thus, it is assumed that any expansion or contraction of jobs due to the "energy crisis" in the nonmetropolitan area of the U.S. will occur in proportion to the 1967 distribution of manufacturing employment for manufacturing industries and according to the location of the industry of employed persons by metropolitan and nonmetropolitan residence in 1970 for other industries.

A doubling of the 1973 price of crude petroleum would result in a loss of 142,000 rural jobs in some industries and a gain of 134,000 rural jobs in other industries. This comes out as a net loss of about 8,000 jobs in nonmetropolitan areas.

Of the 29 industries that have 30 percent or more of their employment located in nonmetropolitan areas, only a few appear as significant losers or gainers (see attached table). Eleven industries lose jobs, nine gain, and nine show no change. The other nine industries appear to lose only about 3,000 jobs or less, apiece. Among the gainers, only one industry stands out—the apparel industry, with a gain of about 21,000 jobs. Three industries would gain 9,000 jobs each (agriculture, mining, and fabrics and yarn industry); one would gain 7,000 jobs (the knit fabric industry); and, the other four would show gains of 5,000 jobs or less apiece.

If we consider both the problem of increased costs of energy and shortages, we can glean some information from what a number of cities have been reporting in terms of energy related unemployment. Of several efforts to compile a list, the following industries appear at least once:

1. Adhesives
2. Air passenger travel
3. Appliances
4. Auto manufacture, assembly, and parts
5. Car sales
6. Construction
7. Light bulbs
8. Mobile homes
9. Plastics
10. Polyesters
11. Recreation activities
12. Recreation vehicles
13. Service stations
14. Soap
15. Textiles
16. Tires
17. Transport equipment
18. Trucking industry

About half of the above industries have significant proportions of their employment located in nonmetropolitan areas—household appliances, construction, plastics and synthetics, recreation vehicles and leisure-time products, textiles, and nonfood retailing. These and other industries have been affected by the energy crisis for various reasons.

Some were affected by fuel and raw material shortages; some by disproportionate increases in production costs; others by a decrease in effective demand. The latter would include such industries as ski resorts, automobile dealers, and other activities which are not impacted by the direct use of fuel but by changes in demand related to changing energy supplies.

If fuel shortages worsen in the coming months such industries as petrochemicals, fertilizer industry, leisure-time products, recreation and resort enterprises, and nonfood retailing again are likely to feel a squeeze.

With energy shortages, rural-based industries not only receive additional financial burdens but when a scarcity develops the small rural-based industries are the first ones to be denied supply. (ERS/USDA)

TABLE 1.—IMPACT OF INCREASED ENERGY COSTS ON RURAL EMPLOYMENT AND SELECTED ENERGY DATA

[Definition of ranks a through g: a—rank applies to the miscellaneous textile and floor covering industry as a whole; b—rank applies to the millwork and plywood and miscellaneous wood products industry as a whole; c—rank applies to the food and kindred products industry as a whole; d—3 industries are tied for rank; e—rank applies to the chemical industry as a whole; f—rank applies to the rubber industry as a whole; g—rank applies to the professional, scientific, and controlling instrument industry as a whole]

Industry listing by degree of rurality ¹	Potential net change in rural area jobs due to doubling of petroleum prices, 1973-74 (thousands of jobs) ²	Industry ranks in use of refined petroleum products, energy, and fuel purchased, by industry			
		Direct use of refined petroleum products (1970) ³	Direct requirements of refined petroleum products per worker (1970) ³	Dollar amount of energy and fuel purchased (1971) ⁴	Energy and fuel costs as a percent of value of shipments (1971) ⁴
1. Logging and lumber (78).....	-3	24	23	11	8
2. Agriculture (72).....	9	5	14		
3. Floor coverings (61).....	2	a 50	a 31	60	28
4. Mining (61).....	9	19	16		
5. Petroleum and gas (56).....	-19	21	15		
6. Fabrics and yarn (53).....	9	36	53	9	9
7. Trailers, cycles (53).....	2	68	64	68	72
8. Plywood, millwork, etc (48).....	-2	b 52	b 60	21	17
9. Wooden containers (48).....	0	b 52	b 60	74	21
10. Sugar (48).....	0	c 11	c 22	40	11
11. Footwear and other leather (43).....	-1	d 61	d 69	65	68
12. Knit fabric and apparel (39).....	7	57	62	36	30
13. Paper and prod. fx. containers (38).....	-2	16	17	4	4
14. Farm machinery (38).....	2	55	44	52	41
15. Canned and frozen foods (37).....	0	c 11	c 22	16	29
16. Plastics and synthetics (36).....	-1	12	4	8	5
17. Furniture (35).....	-2	53	68	25	39
18. Miscellaneous textiles (34).....	-1	a 50	a 31	53	16
19. Construction (new and old) (34).....	0	2	12		
20. Meat (34).....	0	c 11	c 20	14	71
21. Apparel (33).....	21	54	71	24	70
22. Household appliances (33).....	-1	56	51	46	53
23. Grain mill products (32).....	0	c 11	c 22	19	27
24. Agricultural chemicals (32).....	0	31	9	42	12
25. Railroads (31).....	5	10	6		
26. Stone and clay products (31).....	-3	17	18	3	3
27. Electric utilities (30).....	-2	8	5		
28. Natural gas, water, and sewer (30).....	0	20	11		
29. Leather and ind. leather products (30).....	0	d 61	d 69	70	13
30. Dairy (28).....	0	c 11	c 20	18	43
31. Trucking (27).....	-2	7	10		
32. Wholesale and retail trade (27).....	64	1	30		
33. Radio, TV sets, and phono (27).....	-2	64	54	67	73
34. Glue, ink, and fatty acid (26).....	0	e 3	e 1	26	10
35. Glass and glass products (24).....	-1	d 61	d 69	73	50
36. Tobacco (24).....	0	67	61	64	74
37. Finance and services (23).....	-46	4	38		
38. Nonferrous metals (23).....	-2	15	13	6	6
39. Plastic products (23).....	-11	47	50	13	14
40. Rubber products ex. tires (22).....	-1	f 46	f 48	38	15
41. Construction, mine, material handling equipment (22).....	-1	40	42	33	52
42. Railroad equipment (22).....	1	59	29	69	55
43. Communication (22).....	-1	14	26		
44. Plumbing and heating (22).....	-1	65	47	62	32
45. Electric appliances and motors (21).....	-1	41	33	37	20
46. Engines and turbines (21).....	0	45	24	54	56
47. Electronic components (21).....	0	49	55	28	26
48. Industrial chemicals (21).....	0	e 3	e 1	2	1
49. General industrial machinery (20).....	-1	28	28	29	33
50. Service industry machinery (20).....	-1	48	34	44	57
51. Batteries, X-ray equipment, etc (20).....	0	39	52	57	45
52. Tires and tubes (19).....	0	f 46	f 48	34	18
53. Household textiles and upholstery (19).....	-3	69	70	59	61
54. Newspapers (19).....	-1	37	56	48	64
55. Miscellaneous food products (19).....	0	c 11	c 20	12	25
56. Electric lighting and wiring (18).....	-1	29	21	50	37
57. Other transport (18).....	2	9	7		
58. Special industrial machinery (17).....	0	33	25	47	40

See footnotes at end of table.

TABLE 1.—IMPACT OF INCREASED ENERGY COSTS ON RURAL EMPLOYMENT AND SELECTED ENERGY DATA—Con.

[Definition of ranks a through g: a—rank applies to the miscellaneous textile and floor covering industry as a whole; b—rank applies to the millwork and plywood and miscellaneous wood products industry as a whole; c—rank applies to the food and kindred products industry as a whole; d—3 industries are tied for rank; e—rank applies to the chemical industry as a whole; f—rank applies to the rubber industry as a whole; g—rank applies to the professional, scientific, and controlling instrument industry as a whole]

Industry listing by degree of rurality ¹	Potential net change in rural area jobs due to doubling of petroleum prices, 1973-74 (thousands of jobs) ²	Industry ranks in use of refined petroleum products, energy, and fuel purchased, by industry			
		Direct use of refined petroleum products (1970) ³	Direct requirements of refined petroleum products per worker (1970) ³	Dollar amount of energy and fuel purchased (1971) ⁴	Energy and fuel costs as a percent of value of shipments (1971) ⁴
59. Beverages (16)-----	0	c 11	c 20	20	44
60. Transformers, switchgear, el. msr. (16)-----	-1	44	36	55	54
61. Surgical and medical instruments (16)-----	0	70	67	71	62
62. Miscellaneous manufacturing (16)-----	0	34	46	27	49
63. Miscellaneous machinery and shops (15)-----	-2	60	65	45	22
64. Petroleum refining (15)-----	-1	(⁵)	(⁵)	5	7
65. Iron and steel (15)-----	-3	13	20	1	2
66. Structural metal products (15)-----	-1	30	43	23	42
67. Paper containers (15)-----	0	27	19	31	31
68. Motor vehicles (14)-----	-11	23	35	7	69
69. Hardware, plating, wire products (14)-----	-2	26	32	10	19
70. Metalworking machinery (14)-----	-2	35	39	30	23
71. Ships and boats (14)-----	0	62	59	58	35
72. Stampings (14)-----	-2	38	45	22	24
73. Office and computing machinery (13)-----	-1	51	57	51	67
74. Engineering and scientific instruments (12)-----	0	g 58	g 58	72	36
75. Mechanical measuring devices (12)-----	0	g 58	g 58	66	51
76. Ordnance (12)-----	0	42	37	41	46
77. Bakery (10)-----	0	11	c 20	35	34
78. Drugs (10)-----	0	43	27	39	38
79. Printing and publishing (9)-----	-3	32	49	15	59
80. Candy (9)-----	0	c 11	c 20	61	48
81. Optical and photographic (8)-----	0	63	63	49	60
82. Aircraft (7)-----	1	25	40	17	58
83. Communication equipment (7)-----	0	66	66	32	65
84. Cleaning and toilet items (6)-----	0	22	8	43	66
85. Metal containers (6)-----	0	d 61	d 41	56	47
86. Paints and allied products (4)-----	0	18	3	63	63
87. Airlines (2)-----	0	6	2		

¹ The figures in parentheses refer to the proportion of employment located in nonmetropolitan areas in 1967 for the respective manufacturing industries; for other industries the percentage refers to the proportion of employed people in the respective industry residing in nonmetropolitan areas in 1970.

² See footnote No. 2.

³ Derived from Ronald E. Kutscher and Charles T. Bowman, "Industrial Use of Petroleum: Effect on Employment," Monthly Labor Review, March 1974, pp. 3-8.

⁴ Derived from data on the costs of purchased fuels and electric energy by industry as provided by economic stabilization program, Cost of Living Council, Dec. 26, 1974.

⁵ Represents primarily shipments between establishments in the refined petroleum products industry.

Answer. EDA has recently funded a number of energy-related State projects, and is expected to fund a few more in the near future. However we have not yet received information or hard data as a result of these projects. Summaries of these projects are attached. (EDA)

Title: Investigation of Economic and Employment Impacts of Energy Shortages in Colorado and Alternatives to Minimize Effects

Applicant: State of Colorado

Total estimated cost: \$89,350

Requested EDA funding-----	\$50,000
Recommended EDA funding (I&R)-----	50,000
Grantee share-----	39,350

Project purpose and description:

This study will provide the Office of the Governor with a mechanism to evaluate the potential economic and employment impacts of alternative energy supply policies available to the public and private sector.

Need or problem statement:

The project area is the State of Colorado. Manufacturing is the major contributor to the State's economy, followed by agriculture, tourism and mining.

Shortages of natural gas, electricity, and petroleum for heating fuel, gasoline, and other derivatives, are expected to have a serious effect on the economy of the State of Colorado. Industrial fuel use, along with gasoline supplies for tourists and commuters, is expected to be affected. The shortages are beginning to be felt now, and are expected to become more severe, with unemployment rising.

There is no statewide economic plan, but the results of this project are considered essential to the continuation and furtherance of the economic health of the State. In this case, the objective is as much to preserve economic strength and employment levels, as to provide for additional growth.

Scope of Work—An Economic analysis will be made of the energy requirements in Colorado including specifically the potential economic impacts of alternative energy policies and the resulting employment or unemployment effects.

Title: A Program To Assist Business and Industry in Coping With the Energy Crisis (Georgia)

Project No. 99-6-09359

Applicant: Georgia Tech Research Institute

Total estimated cost: \$179,960

Requested EDA	\$134, 970
Recommended EDA	134, 970
Grantee share (cash)	44, 990

Purpose and description:

This grant will fund a program to provide assistance to business and industry in coping with energy problems. A detailed analysis and systematic body of information on energy will be developed, covering the impact of the energy shortage on the economy of the State and potential alternative actions for dealing with energy problems. Specific technical assistance will be given to companies with energy problems, and patterns of common problems and alternative ameliorating actions will be identified and used to develop training programs applicable to business and industry both within the State and in other States.

Need and problem summary:

The energy crisis threatens substantial dislocations in the business and industrial community of Georgia, as in other States. Particularly vulnerable are the smaller companies and fragmented industries which lack the resources, the technical know-how and the access to information which are available to larger corporations for coping with such problems.

Scope of work:

The project staff will prepare detailed energy profiles for Georgia's major business sectors, assess the economic impact of the energy crisis as it affects Georgia, assemble a systematic and accurate body of information about energy use in Georgia business and industry, and provide the level of assistance in this field which business and industry

cannot generally provide for itself, including specific technical assistance to companies with energy problems.

Coordination:

Some studies and investigations on the energy problem in Georgia have been done, and reports prepared, by the Governor's Science Advisory Council and by the Energy Policy Council and its eight committees. These studies and reports produced some of the kinds of information which will be developed under this grant. It is expected that the team funded by this grant will consult with these bodies, as well as with other State and Federal groups and individuals who may be of assistance to the team in carrying out its responsibilities.

Title: Energy Audit and Management Economic Data Analysis Program (Maryland), Project No. 99-6-09370

Applicant: Maryland Department of Economic and Community Development

Total estimated cost: \$175,000

Requested EDA	\$125,000
Recommended EDA	125,000
Grantee Share (in-kind)	50,000

1. Problem

The present energy crisis threatens substantial dislocations in the business and industrial community of Maryland, as in other States. Of particular concern are the adverse effects on employment and personal incomes. The effects of the crisis in all their complexities permeate the entire economy and social fabric of the State. It is essential for the State to assemble the informational and analytical basis necessary for identifying and analyzing the impacts of the energy shortage and the implications of alternatives for dealing with the crisis, and for making policy decisions.

2. Solution

This grant will fund the augmentation of the Department of Economic and Community Development Research Division. The reinforced staff of the Research Division of the Department of Economic and Community Development, with the aid of appropriate consultant and computer services, will

1. develop the necessary central data base for collection, assimilation and analysis of data related to energy management and economic planning;

2. provide economic analysis and identification of alternatives for short-range and long-range adjustments in the supply and forms of energy;

3. develop and test appropriate econometric models for simulation and sensitivity analysis which can be applied under specific resource supply situations for development and evaluation of policy alternatives;

4. provide guidance on policy alternatives, for both government and the business and industrial community, calculated to minimize the adverse effects of the energy crisis.

Title: Energy Conservation Program, State of Michigan, Project No.
06-6-01188

Applicant: Michigan Department of Commerce

Total estimated cost: \$134,157

Requested EDA funding-----	\$60,500
Recommended EDA funding-----	60,500
Grantee share-----	73,657

Project purpose and description:

The energy crisis is leaving its footprint on businesses and industries of all types and sizes. Because of the financial burden it has imposed, many small industries are finding it difficult to maintain their level of productivity and profit. Large corporations usually employ heating engineers and other specialists in energy consumption who can and do take actions to reduce the amount of energy required for these industries' operations. This grant is to provide the technical information and assistance for small businesses who lack the in-house technical ability needed to implement energy conservation programs.

Project objectives

The project will provide both energy conserving technical information and a free technical analysis service for small commercial energy consuming systems. The purpose will be to initiate energy conservation efforts directed at both the areas of building heating and cooling systems and actual energy use in operations. The proper energy source for particular situations for certain industries will also be determined in an effort to eliminate waste.

Scope of work

1. Provide a pilot, specialized assistance program for energy conservation and necessary staff.
2. Evaluate, modify, and model the pilot program.
3. Assist small businesses in Michigan to establish energy conserving procedures to fit their own specific needs. Emphasis will be placed on decreasing the cost of conservation and sustaining profits.
4. Develop through the needs experienced by small businesses a "consumer guide" booklet to industrial energy conservation.

Title: Study of the Feasibility and Impact of Establishing Gasification and Electrical Generation Facilities in North Dakota Utilizing Lignite, Project No. 05-6-01476.

Applicant: State of North Dakota.

Total estimated cost: \$89,092.

Requested EDA funding-----	\$52,000
Recommended EDA funding (I&R)-----	52,000
Grantee share-----	37,092

Project purpose and description:

The primary purpose is to see that lignite development in North Dakota takes place in an orderly and beneficial fashion. Aimed at will be an optimal balance between agricultural, recreational, and industrial usages of western North Dakota.

Need or problem statement :

The State of North Dakota is facing major problems. Out-migration is very high. Median family income in North Dakota lies in the \$7,000 to \$8,000 range, approximately 80% of the national figure.

Agriculture dominates the economy. Ninety percent of the total land area is classified as farmland, crop or grazing, and income from agriculture accounts for approximately 75% of all money created by North Dakota enterprise. Industrial development has been slow and is quite limited in extent. Industry tends to be agriculturally oriented—varying from food products to equipment for the producing and processing of these products. Emphasis on agriculture and a failure to broaden the economic base of the state have resulted in steadily decreasing employment opportunities and steady migration to other states.

Lignite development offers an opportunity to reverse present population and economic trends in North Dakota. The state possesses the largest lignite reserves in the United States. While limited exploitation of these holdings has taken place since 1884, major interest in lignite development has appeared only during the last three or four years.

Seven western North Dakota counties will be directly and immediately affected by these developments. But the entire state will be affected by the influx of resources and population associated with this development.

Project structure and scope of work :

Project Objectives—The objectives of this project are to expand the amount and variety of employment opportunities in western North Dakota through the development of lignite resources; to simultaneously ensure that this development is orderly and that adverse effects on the existing agricultural and tourism economy, the environment, and on community services in the area are minimized.

Employment needs for lignite development are far in excess of the unemployed labor force within the area today and as a result, substantial in-migration and a consequent quickening of the economy is anticipated. The level of income associated with employment in the gasification industry more than doubles present median family income in the area.

Scope of Work

A. An analysis of the impact of various levels of lignite development upon area natural resources and physical infrastructure. Included will be a careful cataloging of the impact of such primary development upon the natural environment and ecology, taking into account such factors as air pollution, waste production, wildlife, esthetics and the admitted uncertainties of successfully reclaiming stripped land. Also examined will be the adequacy of the man-made physical environment, e.g., highway and road systems, utilities in the affected communities.

B. An assessment of the capability of local communities to cope with the population influx anticipated with major lignite development. Included will be an analysis of the capacity of existing social

service systems including educational facilities, fire protection and law enforcement.

C. An analysis of the economic impact of various levels of lignite development. Taking into account findings anticipated under the physical impact portion of study, conclusions will be reached regarding the impact of lignite development upon the present agricultural/tourism economy. With respect to specific economic impacts, an analysis will be made of (1) the existing commercial development in the area and, (2) the anticipated expansion required to cope with the population growth inevitable with lignite development.

Title: Economic Impact of the Energy Problem; Project No. 99-6-09374

Applicant: National Governors' Conference

Total estimated cost: \$129,783

EDA requested	\$97,337
EDA recommended	97,337
Grantee share (cash)	32,446

Purpose and description:

The purpose of this project is to aid the States in minimizing the adverse economic effects of the energy shortage, particularly the effects on growth and employment. It will enable the applicant to coordinate the work programs of State studies on the economic impact of the energy problem and to disseminate the results of these studies as well as the results of complementary studies being made or sponsored by the Federal Government.

To accomplish the purpose of this project, the National Governors' Conference will hire a senior, experienced economist to work with and guide the States' study groups. With the assistance of State senior staff, he will conduct meetings of representatives of several States at a time, and larger meetings as the State studies progress. He will provide guidance to the State study groups with the objectives of minimizing duplication of effort, assuring maximum coverage of the field, and producing the most useful results. He will be responsible for assembling, evaluating, collating and publishing in the most useful possible form the results of these studies for use by all States. Published materials will include methodologies and techniques for generating energy audit data bases, and for analysis, evaluation, and selection of alternative energy management policies and procedures.

Answer. No specific studies of rural-nonrural employment impact of the energy crisis have been made. (DOL)

Question 1(b). What has been the impact to date of the energy crisis on unemployment in rural areas in general and specifically on depressed rural areas such as Central Appalachia and EDA designated "Re-development Areas?"

Answer. There have been no studies made by the Labor Department evaluating the impact of the energy crisis on the specified regions. (DOL)

Question 1(c). What rural based industries have been or are threatened to be particularly hard hit by energy shortages?

Answer. There are only a few industries that one would typically classify as rural based. These would probably be agriculture and the

various extractive industries. These industries, in terms of employment, have not been adversely affected by the energy shortage. (DOL)

Question 2(a). Several reports have appeared in the media concerning industries that have postponed plans to locate new plants in non-metro areas because of the uncertainty over the availability of energy. Is any agency at the Federal level keeping tabs on the impact of energy shortages on industry plans to develop new or expanded operations in nonmetro areas?

Answer. The Rural Development Service has contacted agencies in several departments of the Federal Government about monitoring the impact of the energy shortage on industry plans to develop new or expanded operations in nonmetropolitan areas. Based on information from these contacts it appears that at this time there is no one agency that is currently monitoring this impact. The Rural Development Service stands ready to continue to assist in this regard. (RDS/USDA)

Question 3(a). The President has proposed a new Economic Adjustment Act, one objective of which is to identify and assist areas subject to impending structural changes in local economies. What will be the role of the FEO or the proposed Energy Research and Development Administration in formulating Federal policies and strategies to identify and deal with structural economic changes, particularly in rural areas?

Answer. The Federal Energy Administration will assist the Energy Research and Development Administration in every way possible through energy data and analysis.

It is not in the FEA's domain to deal specifically with structural economic promotion in rural areas. We of the FEA are attempting to insure adequate supplies of fuel for all sectors of the economy in order to maintain production and services throughout the country.

The Federal Energy Administration Act of 1974 states:

"The Congress hereby declares that the general welfare and the common defense and scarcity require positive and effective action to conserve scarce energy supplies, to insure fair and efficient distribution of, and the maintenance of fair and reasonable consumer prices for such supplies, to promote the expansion of readily usable energy sources, and to assist in developing policies and plans to meet the energy needs of the Nation. (FEA)"

Question 4(a). The Comprehensive Employment and Training Act of 1973 directed the Administration to study and issue a report on the impact of the energy crisis on manpower needs. This report is being prepared by the Department of Labor and is due to be released not later than March 31, 1974. Have FEO and the Department of Labor cooperated in the preparation of this report?

Answer. In the preparation of the final report by the Department of Labor regarding the impact of the energy crisis on manpower needs, the Federal Energy Administration did make substantial contributions. No joint committee was formed. However, first and second drafts were evaluated by the Federal Energy Administration and recommendations were made. The Department of Labor then made modifications deemed necessary from the suggestions of FEA. (FEA)

Answer. Yes, FEO provided valuable insight and assistance to the Department in its efforts to prepare the report. Unfortunately numerous studies being prepared under contract to FEO were not near completion by the end of March. (DOL)

Question 4(b). Does the report address energy-related manpower needs in rural and nonmetropolitan areas?

Answer. The report does not make a distinction between energy-related manpower needs in metropolitan vis-a-vis nonmetropolitan areas, but does deal with the total problem. (DOL).

Question 5(a). Much has been written about the impact of increased fuel costs on low-income urban residents. However, the impact of high fuel prices on low-income rural residents receives less attention. For example, because propane is used mainly in sparsely populated areas, it accounts for only a small portion of total U.S. energy consumption. When prices began to rise and consumers complained, federal officials were slow to react to what has been characterized as price gouging by propane dealers. While the FEO has taken action to roll back the price of propane the problem was virtually ignored until it got out of hand. What steps are being taken to identify and plan for other less visible but potentially severe energy related problems which affect rural residents?

Answer. As of June 1, 1974, rural residents should be receiving 100 percent of their current requirements in agricultural production. Further, the definition of agriculture production was broadened to include additional products and functions. As an example, local trucking of farm to market will be receiving 100 percent of current requirements.

In addition to this we have devised three other guarantees of securing adequate fuel for agriculture; upward reporting, state set-aside, and the coordination with the Agriculture Stabilization and Conservation Service of the Department of Agriculture.

Upward Reporting

In our new regulations we devised a system called upward reporting especially geared for agricultural needs. According to upward reporting the suppliers or the jobbers will report the needs of their top priority consumers, such as agricultural producers, upward through the chain of distribution to the original point of supply. Agricultural producers have first priority, then the remaining fuel will be distributed among consumers of less priority.

State Set-Aside

In addition to the aforementioned, there is also the state set-aside volume, or a percentage of a state's total supply. Originally the set-aside was used for hardships or emergencies. However, in the new regulations, the set-aside may also be directed through the regular distribution system to selected areas within the state warranting additional supplies.

Agriculture Stabilization and Conservation Service (Department of Agriculture)

FEA with the aforementioned service has been coordinating programs to assist persons or firms engaged in agriculture production in resolving disputes concerning volumes of petroleum products needed.

Consequently, by these provisions, we have tried to plan and insure that the agricultural sector of our Nation is adequately supplied with fuel. (FEA)

Answer. On the basis of the Department's experience during the past year, we believe that we have encountered to a considerable extent the kinds of emergency supply and price problems most likely to occur in rural areas under the stress of a tight supply position.

With regard to planning for these kinds of problems, it would be our judgment that the present authority delegated by the Congress to the Federal Energy Administration, and set forth in Mandatory Fuel Allocation Program regulations, is sufficiently broad to adequately deal with these generally isolated problems as they arise.

Should unforeseen emergency situations that are agriculture related occur in rural areas, the Department would receive early notification through its regularly scheduled county and State monitoring and reporting system, thus permitting early problem identification and appropriate emergency action. (ASCS/USDA)

Question 5(b). What effect will high fuel prices have on discretionary incomes of rural residents and how will distorted spending patterns affect rural economies in general?

Answer. There are various indications that the effects of energy-induced price increases on the cost of living are regressive.

By November, 1973, the cost of a 1960-1961 market basket of goods had increased about 56 percent. Over the same period, the cost of energy to consumers rose only 36 percent. However, the total energy share of an average nonmetropolitan household's budget rose from 13.0 percent to 14.2 percent of consumption expenditures. Metropolitan energy costs, as a percentage of consumption expenditures, rose from 11.5 percent to 12.5 percent by November, 1973.¹

Since energy intensive products comprise a larger proportion of the budgets of lower income families, the increases in energy costs have a relatively larger impact on lower income households.

Bruce M. Hannon reaches a similar conclusion—that a rise in the price of energy would be more difficult for the low budget family.² Such items as food, housing, and transportation comprise about 75 percent of the total family direct and indirect energy use at each income level. However, the same three categories (in 1970) required 58 percent of the low budget income and about 47 percent of the other, higher dollar budgets.

In terms of forecasting the impact of higher energy costs upon the economy, Anne P. Carter finds that a 100 percent increase in the cost of petroleum will increase the cost of living by 4 percent for the highest income group (more than \$20,000 per year) and by 6 percent for the lowest income group. With price increases on all energy, the cost of living increase may range from 7 percent for the highest income group to 12 percent for the lowest.³

¹ See Jim Mikesell, "The Energy Shortage and Living Costs of Nonmetropolitan Households," (unpublished manuscript) ERS, USDA, April 29, 1974.

² Bruce M. Hannon, "An Energy Standard of Value, *the Annals of the American Academy of Political and Social Science*, December 1973, p. 138.

³ See Anne P. Carter, "Applications of Input-Output Analysis to Energy Problems," *Science*, Vol. 184, April 19, 1974, pp. 325-329. Her input-output price computation does not allow for the possibility of fuel switching, i.e., the possibility of substituting cheap for more expensive fuels was not taken into account.

Bradley W. Perry obtained similar results.⁴ He examined the effects of two particular sets of fuel price increases on personal consumption expenditures. One set represented a "high oil" price (\$8.50/bbl for crude oil and \$0.28/Mcf for natural gas) or an estimate of the eventual 1974 situation; the other set represented a "high gas" price (\$5.20/bbl for crude oil and \$0.70/Mcf for natural gas) which would mean a reduction of the crude oil price to its June 1973 level and a deregulation of the wellhead price of natural gas.⁵

Using the two sets of prices, Perry determined the amount per capita income had to rise for a consumer to maintain the same level of personal consumption expenditures.⁶ The "high oil" case led to an overall consumer welfare decrease of 2.9 percent as compared with a 2.3 percent decrease under the "high gas" case.⁷

Under the "high oil" price, rural residents seem to fare less well than urban residents—the former experience a 4.0 percent decrease in real income, as compared with a 3.2 percent decrease for the latter. The lowest income group (less than \$1,000 annual income per year) and the highest income group (more than \$15,000 annual income) fare about equally well—a decrease in welfare of 2.8 percent and 2.9 percent, respectively. The middle income group (\$4,000–\$5,000 annual income), because of its relatively greater dependence on personal transportation, seems to be hit the hardest of all, with a decrease in welfare of 3.6 percent.

Under the "high gas" price, both rural residents and urban residents experienced smaller losses in welfare than under the "high oil" price—3.1 percent and 2.3 percent, respectively. The high income group is affected the least under "high gas" price (2.1 percent decrease in welfare); the middle income group is affected somewhat more (2.7 percent decrease in welfare) as a result of a smaller increase in transportation costs; and, the lowest income group is affected the most (a 3.1 percent decrease in welfare) due to increased food prices and home heating fuel and electricity costs.

The general relationships indicate that food dependency on energy declines with income; housing dependency on energy rises with income; and transportation dependency on energy peaks with the intermediate income level. The major differences which make the lowest income group worse off than the highest income group arise in the consumption of food and energy. The poor appear to be worse off in areas of inelastic demand—food, heating fuel, and gasoline. Faced with an increase in price they have to continue purchasing these items. The high income group, on the other hand, is relatively more affected by expenditures on such items as clothing, recreation, and private education.

⁴ See Bradley W. Perry, "The Welfare Consequences of Increased Energy Costs," (unpublished manuscript), March 1974. The work reported in this manuscript is part of the University of Virginia Project on Population, Resources and Environment.

⁵ Perry uses the University of Maryland Interindustry Forecasting Model of the American Economy developed by Clopper Almon and his associates to estimate the effects of fuel price increases. The Almon input-output model contains 185 industrial sectors with coefficients adjusted to reflect the economy as of 1971.

⁶ He defines net decrease in welfare as the amount of increased income necessary to purchase the same physical amounts.

⁷ His more conservative forecast of the impact of higher energy costs might be explained by his use of the Almon model which allows the possibility of substitutions between inputs. It also does not measure the full impact of the increase in prices since residential construction and governmental services are not included in personal consumption expenditures.

In comparing urban with rural residents, such items as energy, water, and transportation seem to account for much of the observed greater welfare loss of the rural resident. The importance of the food sector disappears—both groups consider food as a necessity and must continue to buy it despite price increases. Due to the need to use a car more and the need to use more fuel oil to heat their homes, the rural residents seem to suffer proportionately more than do the urban residents when the cost of fuel increases.

The major distortion in spending patterns for consumers in the nation as a whole is a transfer of some \$13 billion of after tax profits from the energy consumers to the energy producers. Some of these producers are foreign, so that a certain amount of income goes to the oil producing countries. But the biggest impact is on the domestic economy. In the short-run three effects are apparent.⁸ A consumer, if he buys fuel, will have to pay more for it. Second, the prices of goods dependent on energy are affected in an inflationary manner since fuel and petroleum products are used as inputs by producers of consumer goods. Faced with a rise in costs, producers will pass on some of the costs to the consumer (at least in the short-run). Third, higher product prices will lead to a decrease in real income which will eventually result in further reductions in the demand for goods and services.

Thus, on one hand there is a tendency for increased demand for the above products while at the same time there is a counter tendency, the income effect, which will have a tendency to lower demand and therefore prices of all goods and services.

Major changes in spending patterns that resulted from uncertain fuel supplies were in new auto sales and in industries which used the products of the petrochemical industry. Auto assembly is not concentrated in rural areas; therefore, the most immediate impact felt in rural areas was in auto sales. However, there are rural-based industries which may be hard hit by energy shortages. One candidate is the synthetic fiber manufacturing, weaving and clothing activities. These activities are located in the rural areas of the Southeast and will be adversely affected by the unavailability of petroleum-based raw materials. A continuation of high fuel prices will result in higher prices for clothing, especially clothing made from synthetic fabrics. High clothing prices coupled with lower real income will result in a decrease in the quantity of clothing marketed. This effect will eventually work its way back to the producing areas where unemployment will develop in the clothing-related industries.

What should be kept in mind is that not all rural residents or rural areas will be adversely affected by the energy crisis. Certain areas and their residents will benefit. Some will gain because of their location near new energy sources, others because of comparative advantages in terms of transportation and other costs. (ERS/USDA)

Question 6 (a) and (b). Former HUD Under Secretary, Floyd Hyde, has predicted that the energy crisis will cause migration from the suburbs back to the center city. Has there been any evidence to date which supports this prediction? Is there any evidence to indicate that residents of metropolitan suburbs are likely to migrate to smaller

⁸ In the long-run consumer tastes will change, substitution will occur in industry, and the pattern of investment will change.

cities and towns in nonmetro areas to avoid the side effects of energy shortages in metropolitan areas?

Answer. Although most conservation proposals and policies (use of mass transit, carpools, reduction of speed limits, etc.) favor relatively densely populated areas or clustered activities, there is no evidence to date that the energy crisis has initiated a migration from the suburbs back to the center city. Nor is there any evidence to indicate that residents of metropolitan suburbs are seriously considering the possibility of migrating to smaller cities and towns in nonmetropolitan areas to avoid the side effects of energy shortages in metropolitan areas. It seems, energy shortages have not been severe enough or persisted long enough to affect in a significant manner, the life-styles of metropolitan area residents. (ERS/USDA)

Question 6(c). What Federal policies can be formulated to promote population dispersal, balanced urban-rural growth and the conservation of energy?

Answer. Rational population dispersal, a corollary of balanced urban-metropolitan-rural growth, can best be achieved through sound land use planning and management. Coherent and efficient development of the infrastructure necessary to support the Nation's continued population growth is one of our most effective tools in constructing energy conservation opportunities in the face of increasing demand.

The unorganized proliferation of governmental entities formed to cope with disorganized settlement patterns has further contributed to a conflicting set of decisionmaking processes or no decisionmaking processes for both land use planning and management, as well as actual development. Consequently, opportunities for conserving energy have been largely lost.

The Federal Energy Administration continues to support legislation such as S. 268, the Land Use Policy and Planning Assistance Act, which seeks to establish intelligent land use policies, planning and management with respect to both Federal and non-Federal lands. Established policies and a procedural system for rationalizing land use planning and management nationally will: (1) permit data collection and analysis of land use and planned land use so as to facilitate planning and forecasting of energy needs and demands at the local, state and Federal levels; (2) provide opportunities for channeling development in such a way that energy conservation techniques may be utilized and maximized; and (3) help insure the supply of energy resources necessary to meet demonstrable demand based on conservation policies.

On a more general level, a national energy policy can be formulated to encourage balanced growth. Characteristics of such a policy would include:

(1) Wherever possible, favoring allocations of energy to support activities that result in desirable patterns of urbanization, resource development and economic growth;

(2) Strategic applications to help reverse undesirable trends in population migration and physical growth which reinforce disparities among states, regions and cities;

(3) Recognition that energy shortages intensify problems of poverty unemployment, the erosion of tax bases, and the adequacy of community support facilities and services. Particular care should be taken in

allocating energy resources so as not to aggravate these problems in areas where they are widespread and persistent;

(4) Utilization as a tool of the Federal government to revitalize existing communities and to encourage planned, large-scale regional projects; and,

(5) Providing the basis for improved coordination in the administration of governmental and corporate programs whose purposes are the encouragement of desirable patterns of economic growth, stabilization and the prudent use and development of natural resources and the protection of the physical environment. (FEA)

Answer. The energy shortage or any other one cause may or may not effect a change in the migration patterns from rural to urban areas. Some rural areas with energy resources will experience added growth due to increased demands for energy; others, may suffer declines due to increased cost of transportation and communication. On balance, the picture is not clear since the impact of energy shortages is not uniform nationwide but rather is unique to the assets and liabilities of each community and area and their response to the situation.

The tools provided by the Rural Development Act are responsive to a balanced growth and population dispersal policy. They should help to dampen the adverse effects of the energy shortage on rural development. However, without clear knowledge of the degree and duration of the shortage, it is hard to determine the impact of the shortage in terms of investment attitudes involving rural vs. urban considerations. One apparent need is a better planning capability that would enable rural communities to make the best of the energy situation, given their individual assets and liabilities, and to provide the impetus to reduce and perhaps on a regional level reverse the trends of migration to the large cities. (RDS/USDA)

Question 7(a) and (b). The 1969 Federal Coal Mine Health and Safety Act is expected to force the closing of more than 500 small coal mines by April 1, resulting in the loss of about 5 percent of the nation's current coal production. Some predict that these closings could result in a loss of \$100 million or more a year to the Appalachian regional economy. Has the FEO assessed the potential impact of closing these small mines? Will the loss of 5 percent of the nation's coal production have a significant effect on the energy situation?

Answer. The Interior Department's Mine Enforcement and Safety Administration estimated that the 1969 Federal Coal Mine Health and Safety Act would have forced the closing of more than 500 small coal mines by April 1, 1974. This has not been the case. To date, only 15 of the 500 mines not believed to be in compliance with the Act have closed, resulting in 1/10 of 1 percent of the daily coal production.

Of the 500 mines, some had recently obtained the required permissible machinery, and noncompliance use was granted under various waivers to other operators who could show recently signed purchase orders for the legally required machinery for delivery at a later date. An arrangement has been made with the Small Business Administration to help finance the purchase of this machinery. (FEA)

Answer. The 1969 Coal Mine Health and Safety Act provisions which could have closed as many as 500 mines for lack of permissible

equipment have been enforced since the March 30 deadline, and to date, only some 15 closure notices have been issued. Tonnage figures are not readily available, but the total would not approximate the 5 percent estimate, but would rather be in the neighborhood of .5 percent. With the major producers increasing their production in order to assist with the generation of additional energy, the closing of about 15 mines should have an insignificant effect on the energy situation. (DOI)

B. FEDERAL ALLOCATION PROGRAM

Question 1(a). Spot shortages of gasoline have occurred in widely scattered rural communities. Has any analysis been undertaken of the causes of gas shortages in rural areas?

Answer. Yes, FEA has analyzed the gasoline shortages of last winter in order to learn the causes. This analysis indicates that there are no unique causes peculiar to rural areas. There were shortages in areas that had grown more rapidly since the 1972 base period than the average. This appears to have been the primary, although not the only, cause. As a result, there were more shortages of greater intensity in urban areas than rural areas.

Shortages in some areas, both rural and urban, were caused when some of the marketers supplying the area had gone out of business since 1972, and the remaining marketers were not allowed additional supplies. Such problems have been resolved by amended base period allocations as well as liberalized allocations. (FEA)

Answer. The National Opinion Research Center (NORC) at the University of Chicago has been conducting a national probability sample survey (since April 1973) to evaluate public response to the energy crisis.¹

In the surveys conducted during the summer gas shortage (July 1973), they found that 21 percent of the respondents reported problems in obtaining gasoline in the previous month. By early winter (Nov. 23–Dec. 20), this percentage dropped to 16 percent indicating that only a small proportion of the population were experiencing difficulties. As expected, the major problems encountered during this period were (1) gas stations were not open as much, (2) gas stations had no gas at all, and (3) gas stations did not have the grade of gasoline desired.

The highest rates of difficulty in obtaining gasoline were reported by households in the \$8,000–\$15,000 annual income range and by those earning \$20,000 or more per year, with 21 percent in each group reporting difficulty in obtaining gasoline.²

A noticeable decrease in trouble with buying gasoline was reported by the \$15,000–\$19,999 income groups—only 8 percent. This might be attributed to the fact that this group included the highest percentage of people who had cut down driving.

Analysis by type of place of residence showed that only 5 percent of farm residents reported difficulty purchasing gasoline whereas 19 percent of the residents of towns and suburbs reported trouble buying

¹ For a summary of the results see: James R. Murray, *et. al.*, "Evaluation of Public Response to the Energy Crisis," *Science*, vol. 184, Apr. 19, 1974, pp. 237–263.

² One reason for the relations is that income level is correlated with the number of cars owned and, in turn, number of cars owned is positively related to problems purchasing gas.

gasoline. During this period persons residing in suburbs and rural non-farm areas showed high levels of expectation of future problems in obtaining gasoline.

They were not disappointed. In the 3-month interviewing period (Nov. 23–Feb. 28) the percentage of car-owning households that reported trouble getting gasoline in the past month jumped to 56 percent. The relation between getting gasoline and income class remained the same even when households were separated by residence—metropolitan or nonmetropolitan. The overall percentages were 39 percent and 32 percent, respectively.

Analysis of respondent attitude toward the assignment of priorities among fuel users showed that, next to heating homes, farming operations were valued the most. The population seemed to count on farmers to obtain necessary fuel so that food prices would not skyrocket. One should note that these data only indicate the occurrence of problems and not their severity.

The effect of the energy shortage on small business was the topic of a survey conducted by the National Foundation of Independent Business for the period January–March 1974.³ The results showed a total of 59 percent of all reporting firms and over 51 percent of the firms in Agriculture had been affected by shortages of materials and supplies. Forty-two percent of all firms indicated reduced sales volumes. Of these, 12 percent reported declines of 10 to 14 percent, while 20 percent said they expected a reduction of 5 to 15 percent in production and sales, and 8 percent expect a drop of 20 percent or more. (ERS/USDA)

Answer. Based upon the knowledge and experience we have gained during more than a year of modest to severe shortages, and operating under both voluntary and mandatory fuel allocation programs, it would appear that a formal study, unless conducted on an extremely broadbased sampling, would be of doubtful value in establishing more meaningful information on the causes of shortages than is already available. (ASCS/USDA)

Question 1(b). Is the major problem the inherent inflexibility of the nation's petroleum allocation-distribution system?

Answer. There was an initial, but not inherent, inflexibility caused by the Congressional stipulation that the year 1972 be used as the base period for allocations. This was a major problem. However, as FEA was able to learn from experience where inequities existed, base period volumes were adjusted accordingly. It was possible to reduce or eliminate the inequities and improve the flexibility of response to changing needs.

It was necessary to start at some point. Any point selected would have been arbitrary and would have contained inequities. Even though the best of regulated allocation is less flexible than the free marketplace, we believe that continued adjustments based on experience would enable FEA to regulate allocations with a reasonable degree of flexibility and response to need. (FEA)

Answer. In our judgment, inflexibility of the Mandatory Petroleum Allocation Program is not a major problem. We think it could reason-

³ See: "Statement of Frederick L. Williford," Director of Government Affairs, National Federation of Independent Business, before the Subcommittee on Rural Development, May 9, 1974.

ably be asserted that any major program designed to serve the basic needs of a broad range of people, of industries, and of geographic areas would, by its very nature, be somewhat inflexible.

The petroleum allocation program, however, as with other programs, has sufficient built-in flexibility to permit whatever action may be necessary to successfully deal with special problems as they arise. (ASCS/USDA)

Question 1(c). Have rural communities that in the past were served by a large number of independent service stations lost out under the allocation program because these independent stations have been forced to close?

Answer. Yes, this has been a problem because the remaining marketers were not allocated additional supplies. As a result, areas where this problem was experienced (not exclusively rural areas) were allocated a lesser percentage of base period volume. Now that adjustments to base period volume have been made, and allocation regulations and procedures have been made more flexible, such inequities have been greatly reduced, although probably not yet totally eliminated. Additionally, increased total gasoline allocations and the end of the Arabian oil embargo have helped reduce the shortage. Also, the states have been given additional flexibility to deal with isolated intrastate problems. (FEA)

Answer. Because of the duration and overall impact of the fuel shortage, a substantial number of service stations have closed, both in rural and urban areas. Independent service stations were particularly hard hit under the voluntary allocation program in effect in 1973, both in rural and urban areas. Many small volume franchised dealers served by major suppliers also went out of business in rural areas during this period.

However, we do not agree that the Mandatory Petroleum Allocation Program which became effective January 15, 1974, has, in itself, been responsible for the closing of independent service stations serving rural areas.

Actually, a reverse situation exists. Under the Mandatory Program, independent service station operators are assured a fuel allocation generally based upon their 1972 sales volume, or a generally-applied fraction thereof, the same as franchised dealers.

Question 1(d). Are those rural communities experiencing gasoline shortages more likely to be areas isolated from major transportation system—particularly highways?

Answer. Gasoline service stations on or near interstate highways have been more likely to have an adequate supply of gasoline than service stations that are distant from such facilities. In curtailing its consumption of automotive gasoline, the American public cut its long trip or intra-city driving much more drastically than local or even one-tank-radius driving. As a result, demand on or near interstate highways in general was reduced to a smaller percentage of base period consumption than was the case elsewhere. Again, adjustments to base period volume, increased allocations, and the end of the embargo have resolved this problem with occasional exceptions. (FEA)

Question 1(e). Are rural communities experiencing gas shortages usually those located farthest away from refineries and other petroleum distribution points?

Answer. No. The allocation pattern was based on the distribution pattern that existed during the 1972 base period. Distance from the refinery or distribution point was not a factor that our analysis was able to detect. (FEA)

Question 1(f). Have the states been using their emergency set-aside supply of gasoline to relieve shortages in rural areas where a widely dispersed population must travel long distances by car both to jobs and to the nearest service station?

Answer. As of June 1, 1974, state set-asides will no longer be limited to hardships and emergencies within a state. States will be given more flexibility in discerning their individual needs and the use of the set-asides. In fact, each prime supplier in a state must appoint a state representative who will facilitate distribution of the state set-aside.

In rural states, one will find that the set-asides will be used for citizens having to travel long distances. We at the FEA leave this to the discretion of the Governor's office, however. (FEA)

Question 2(a). The standby rationing plan announced by FEO entitles residents of smaller cities and nonmetro areas to a slightly higher monthly allocation of gasoline coupons on the assumption that residents of these areas will travel further to their jobs and have fewer transportation alternatives available (mass transit, car pools, etc.). Are any statistics available on the average distance the typical non-metropolitan resident employed off-farm travels to and from his home to his job? If so, how do these figures compare with the average metropolitan commuting mileage?

Answer. The inter-county commuting data for employed persons provide some evidence of a varying propensity to commute, i.e., propensity to cross county boundaries, by place of residence. The 1970 Census of Population indicates that 19.6 percent of the employed residents in metropolitan areas crossed county lines on their way to work (17.5 percent if the New York metropolitan area is removed) as compared with 17.6 percent in nonmetropolitan areas.*

The latter figure obscures that fact that people residing in open country have substantially different propensities to cross county lines than do people residing in towns and cities of 2,500 to 50,000 residents. For example, in the open country 21.6 percent of the employed residents crossed county lines while the more self-contained small towns and cities had a rate of only 12.6 percent. (ERS/USDA)

Answer. Attached is a table from the Nationwide Personal Transportation Study, "Home to Work Trips and Travel," Report #8, August 1973. This table provides statistics on the lengths of work trips for residents of areas of various population sizes. It suggests that the longest automobile work trips are for citizens of cities over a million and that the second longest trips are for residents of unincorporated areas. It should be noted that these are automobile trips only and that the omission of transit trips may have some effect on the numbers for cities over a million, but it is not clear what the nature of that effect would be. (DOT)

*U.S. Bureau of the Census, *Census of Population: 1970. General Social and Economic Characteristics, Final Report PC(1)-C1, United States Summary, table 109, page 415.*

PERCENT OF HOME-TO-WORK AUTOMOBILE TRIPS BY TRIP LENGTH AND PLACE OF RESIDENCE

Home-to-work trip length	Place of residence									
	Unincorporated areas					Incorporated places				
	Under 5,000	5,000 to 24,999	25,000 to 49,999	50,000 to 99,999	100,000 to 999,999	1,000,000 and over	All incorporated places	1,000,000 and over	All areas and places	
Miles:										
Less than 1/2	3.3	6.4	4.6	4.1	4.0	5.6	6.6	5.6	5.5	
Less than 1	7.7	16.5	14.4	12.3	9.1	9.3	13.5	11.5	11.5	
Less than 2	9.6	12.9	12.1	12.3	8.9	8.0	10.7	10.3	10.3	
Less than 3	7.7	8.1	14.3	15.9	13.1	6.2	10.6	9.7	9.7	
Less than 4	5.8	5.0	9.5	9.1	8.5	5.5	6.6	6.4	6.4	
Less than 5	8.0	7.7	8.5	9.4	13.3	9.3	9.2	8.8	8.8	
5 and less	42.1	56.6	63.4	63.1	56.9	43.9	57.2	52.2	52.2	
6 to 10	22.7	17.6	14.4	19.5	23.4	26.2	19.3	20.4	20.4	
11 to 15	13.5	10.9	10.3	7.3	9.2	10.3	9.8	11.1	11.1	
16 to 20	8.6	7.2	3.3	2.4	6.1	7.1	6.0	6.8	6.8	
21 to 30	7.9	4.4	5.6	3.7	2.4	8.5	4.6	5.8	5.8	
31 to 40	3.4	1.7	1.7	1.9	.7	1.9	1.5	2.1	2.1	
41 to 50	1.1	.8	.2	1.1	.5	.7	.8	.9	.9	
51 to 99	.5	.5	.6	.3	.4	.5	.5	.5	.5	
100 and more	.2	.3	.5	.7	.4	.9	.3	.2	.2	
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
Total number of trips (thousands)	9,438,116	5,995,811	1,807,190	2,130,909	4,536,085	1,813,830	18,383,899	27,822,015	27,822,015	
Distribution of trips	33.9	21.6	6.5	7.7	16.3	6.5	66.1	100.0	100.0	
Average trip length (miles)	11.0	8.2	8.6	8.0	7.8	13.2	8.6	9.4	9.4	

Source: Data based on unpublished table T-4 from the Nationwide Personnel Transportation Study conducted by the Bureau of the Census for the Federal Highway Administration, 1969-70.

Question 2(b). Does FEO still plan to study the impact of coupon rationing on business and industry now that the Arab embargo has been lifted? If so, will the study specifically consider the effect of rationing on rural and nonmetro areas?

Answer. We are continuing to review many alternatives for distribution of coupons to rural and nonmetropolitan areas. The transit factor, as described in the January 16, 1974 Regulations, will not be used as a method of distribution because of the many difficulties we found in this method. (FEA)

Question 3(a). Some reports from rural areas indicate that local distributors of propane and butane are reluctant to deliver to rural customers who need only small quantities of fuel each month for home heating and agricultural purposes. The dealers argue that high transportation costs make it uneconomical to deliver small quantities of fuel to scattered and isolated rural residents. What action can be taken to remedy this problem (reluctance of distributors to deliver small quantities of propane and butane to rural customers) if, in fact, it exists?

Answer. In view of present propane and butane supplies, prices, and profit margins, we would doubt that many distributors would refuse to make rural deliveries even though the volume might be small. This would seem to be particularly true in most rural areas where distributor-customer relationships are well established.

However, in the event distributors refuse to make such deliveries, we know of no provision in the mandatory allocation program regulations that would require such delivery, particularly when it is uneconomic to do so. (ASCS/USDA)

Question 4(a). FEA has announced plans to equalize the distribution of gasoline among the states, aiming for a speed of no more than 5 percent above or below the national average (allocation fraction) in any individual state's supply. What will be the impact of such an equalization program on predominantly rural states where residents have fewer transit options other than private automobiles?

Answer. Predominantly rural states traditionally have not grown as rapidly as highly urbanized states in this country. Under the 5 percent equalization plan, regardless of how much population a state has lost, it can receive no less than 5 percent below the nation allocation fraction. This would tend to make gasoline more readily available in rural states as opposed to urban centers.

However, if some small stations have closed down in isolated rural areas within states, the allocation to that particular station is not absorbed by the remaining stations. The state set-aside can be used in such cases to offset possible shortages until adjustments can be made. (FEA)

Question 4(b). Will such an equalization policy hinder less populated states and underdeveloped areas in attempts to attract new businesses, industry and people to upgrade income levels and services and reduce unemployment and underemployment?

Answer. No. Adjustments to base period volume to allow for growth in each area are made for each supplier *before* the national allocation fraction is figured each month. Thus, unusual growth is accounted for.

Regions within a state should not experience shortages on a urban/rural basis because adjusted base period volumes are made for each

supplier instead of each state as a whole to allow for population growth and shifts in regions within a state. (FEA)

Question 5(a). Governor Dale Bumpers of Arkansas has said that his and other states that depend heavily on tourism are not getting their fair share of gasoline, partly because the allocation formula measures growth in terms of increased auto registrations and does not count for the heavy drain on gas pumps by out of state cars. Does the FEA plan to allocate additional supplies of gasoline to resort and tourist areas?

Answer. The base period volume of gasoline allocated to the state of Arkansas already includes a proportion of gasoline to meet the high priority requirements for tourism. If tourism demand stress the available supply of gasoline, the state set-aside is available for supplemental emergency allocations.

The Federal Energy Administration has recently announced that the utilization of the state set-aside is left to the discretion of the states.

Question 6(a). The FEA regulations require that after meeting certain priority needs, oil companies must allocate refined petroleum products proportionately among the states in order to spread gasoline supplies equally around the country. Does such a policy penalize those states that have encouraged construction of refineries, power plants and storage facilities by favoring states such as Delaware, Maine and New Hampshire that have resisted efforts to construct new refineries and other facilities such as deep-water ports?

Answer. The Federal Energy Administration regulations neither favors those states that have encouraged construction of refineries, power plants, and storage facilities nor does it penalize those states that have resisted efforts to construct new refineries and other facilities. The program establishes provisions which provide for all suppliers to distribute available supplies on a pro-rata basis among all classifications of users regardless of their location and based on their allocation level.

The FEA regulations may require a supplier to sell motor gasoline to other suppliers or wholesale purchasers in order to alleviate imbalances, order the transfer of motor gasoline from one area to another, reassign wholesale purchasers, or make other adjustments to achieve a more equitable distribution of motor gasoline.

The end result of the FEA's reallocating gasoline among states is that each state will receive an equitable amount of the total gasoline available in the supply system. However, there could be a slight difference in the delivered price to different states which could result because of the cost associated with the transportation costs of the fuel. (FEA)

Answer. There is no simple answer to this question. Presumably a state which denies construction of a refinery or power plant also denies itself the economic benefits of facility construction and operation, and also pays more for the energy it needs to import from other states. This economic balance, however, only exists as long as there are adequate numbers of acceptable sites overall and energy prices are set by supply and demand.

When there is a continuing inadequacy of total site quantities, and energy prices are controlled to match costs but not the supply and de-

mand equation, as with regulated electricity prices, then even allocation of energy supplies at fixed prices may favor those states which have rejected energy facilities, in that they may not be paying their proper share of the facility disbenefit costs. That is, a state should pay extra for its energy to avoid having a facility that no other state wants.

However, in a short-term energy shortage situation the pre-shortage pattern of facility locations and energy prices presumably would approximate the economic balance for a while, with the imbalance increasing as the shortage continues. (FPC)

Answer. This policy is intended to be nondiscriminatory—neither penalizing nor favoring any State. The east coast was hit more severely by the recent embargo because it was highly dependent on imports of crude and products defined from non-U.S. crude. The locations of refineries, pipelines, and bulk terminals have an impact on the distribution of supplies, and those States with refineries, especially those in the southwest, received the benefits of better distribution systems. (DOI)

Question 6(b). Does this policy also discriminate against states that have permitted offshore oil and gas exploration as opposed to states that have resisted offshore exploration?

Answer. The Federal Energy Administration Regulations are concerned with the problems of the entire Nation in dealing with the inadequate supplies of crude oil and refined petroleum products. The rules are intended to be non-discriminatory as they applied to sellers as well as to end-users no matter what region or state they are located in.

In keeping with mandate that has been given the FEA to assess the adequacy of energy resources to meet demands in the immediate and longer range future for all sectors of the economy, it is essential that "new" oil and gas exploration be given a high priority.

If and when new sources of crude oil or natural gas become available, all states and regions will benefit. They will be distributed fairly and equitably and in as an efficient manner so as to minimize hardship and inequities while assuring that the priority needs of the Nation are met. (FEA)

Answer. These regulations are intended to be nondiscriminatory—to neither discriminate against States which have permitted offshore hydrocarbon activity nor to especially favor them. Since several years are required to explore and develop offshore petroleum and gas resources, one must look back several years to see whether the actions of particular States have affected the current availability of domestic hydrocarbon. (DOI)

Question 7(a). The FEO Administrator promised the state of New Hampshire that if the state had an oil refinery now, the price of fuel would be less and greater supplies of fuel would be available to residents of the state. Proponents of building a new refinery in New Hampshire argued that the facility would promote economic development in the region. However, opponents argued that under the federal allocation program, gasoline refined in New Hampshire would have to be distributed equally across the nation and thus could not be used

exclusively for local or regional consumption. How would refined petroleum products from new refineries be allocated geographically under current FEO regulations?

Answer. There are two basic points in the preceding that require an explanation. First, the fuel price would be less because the cost of transporting the fuel into New Hampshire would be eliminated. Second, if the total national supply were increased along with the total national capacity by building a refinery, then this new amount would be distributed equally across the country. The gasoline or refined petroleum products might or might not be used exclusively for local or regional consumption. This depends on the total national supply of gasoline and refined products.

As stated in the current regulations, a supplier who was not a supplier prior to January 15, 1974, shall be considered to have no supply obligation and shall not allocate supplies to any purchaser without Federal Energy Administration action. The new supplier would contact either his state, regional, or national Federal Energy Administration office depending upon what his specific petroleum products are. The agency would then assign him customers in his state, region, or nation. These new customers would be given the current allocation level for the particular product or be brought up to the current allocation level if not receiving it already. If the national allocation supply was already met, he would be assigned an excess.

The major point is that all customers, regardless of their locale, should receive their equitable supply. Thus the Federal Energy Administration's function is to monitor the distribution of products so that no region, state, or area will neither suffer from inequities or profit from them. (FEA)

C. TRANSPORTATION

Question 1(a). Some states are reporting that the shortage of gasoline and the resulting decrease in automobile travel is reducing traffic and collections on toll roads and reducing collections of state gasoline taxes. As a result, some states have cut back on highway construction and maintenance. The impact of reduced highway construction could have a severe effect on rural development. What has been the impact of gasoline shortages on the federal highway trust fund?

Answer. The recovery of travel volumes in the last month or two has reduced the gasoline shortage impact on the Federal Highway Trust Fund to a minimal level. Receipts are now approximating those of last year. (DOT)

Answer. With regard to the premise that state gasoline tax collections have been reduced, see the attached Information Bulletin released by the Advisory Commission on Intergovernmental Relations on April 17, 1974. (ACIR)

INFORMATION BULLETIN

ADVISORY COMMISSION ON INTERGOVERNMENTAL RELATIONS,
Washington, D.C., April 17, 1974.

Bulletin No. 74-3

Energy Crisis: Impact on State Revenues Seen Waning

In brief

Spring Federal Energy Office gas allocations permit a warmer—but not sunny—picture of State government revenues this calendar year. Based on an initial FEO press release, ACIR had predicted a gloomy \$2.2 billion loss in gas tax revenues for 1974 if the February situation had prevailed throughout the year. But March and April allocations and the lifting of the embargo indicate an estimated loss of half a billion dollars. In addition, new FEO procedures have substantially reduced the allocation disparities among the States.

The staff of the Advisory Commission on Intergovernmental Relations is monitoring the impact of the energy crisis on State and local revenues as part of a larger, long-range project to determine the interdependence of all fiscal systems in this Nation. In early March, ACIR staff took the initial February allocation figures—which showed a 27 percent shortfall in State revenues from gas taxes—and calculated the loss for the calendar year, should those conditions continue. (For the methodology used in calculating ACIR estimates, see the footnotes at the end of Table 2, attached.)

Conditions change

The March and April allocations announced by FEO showed those conditions were not continuing. ACIR staff projections therefore take on a brighter hue. Tentative estimates for the first half of calendar 1974 suggest an actual revenue loss of less than \$400 million. (See Table 1.) Depending on the level of Arab oil production, the tax shortfall for the second half of the year is likely to range between \$90 million and \$210 million. That would mean a total shortfall of up to \$609 million, which would be less than 8 percent of expected gas tax revenues in calendar 1974 (gas tax generally amounts to 11 percent of total State tax revenues).

The median State gasoline tax rate is 8 cents per gallon; the Federal tax rate is 4 cents per gallon; therefore, Federal tax revenues can be expected to fall by approximately half the amount of the decline in State gasoline tax revenues.

Here is what the annual shortfall would look like, if the conditions in each of the months since February would have prevailed throughout the year:

	Estimated annualized revenue loss (millions)	Estimated shortfall (percent)
February initial.....	\$2,200	26.5
February revised.....	1,500	17.8
February final.....	1,200	13.5
March initial.....	850	10.0
March final.....	800	9.3
April initial.....	700	8.2

Reasons for improvement

Several factors are responsible for this sharp improvement in gasoline tax revenues:

More and better information on oil stocks has been accumulated;
FEO has gained experience in allocating available gasoline supplies;
"Leakage" in the Arab embargo was greater than anticipated; and
The embargo finally, was lifted.

Interstate disparities

The April allocations indicate FEO has been able to reduce significantly the interstate disparities which plagued the initial allocations;

	High State allocation	Low State allocation	Range
February.....	118.1	62.9	55.2
March.....	108.5	85.0	23.5
April (without Alaska).....	106.6	90.0	16.6

(Alaska is excluded from the calculation because geographic isolation accompanied by transportation difficulties created by extreme weather conditions, rapidly changing demand conditions and a small initial base from which allocations are made, make any attempt at reallocations in Alaska difficult and only marginally effective in reducing interstate disparities.)

A better picture of the reduction in interstate disparities can be shown by analyzing the inter-quartile range, which is less sensitive to extreme cases like Alaska. This procedure divides the States into four equal groups and compares the groups.

	Interquartile range	Weighted quartile deviation
February.....	11.4	0.137
March.....	11.3	.124
April.....	3.2	.035

The inter-quartile range is computed by subtracting the first quartile figures from the third quartile figures. To achieve a weighted quartile deviation, the inter-quartile range is then divided by the median. Here is the data for computing the inter-quartile range.

	3d quartile	1st quartile	Median
February.....	91.4	80.0	83.3
March.....	96.3	85.0	99.9
April.....	93.6	90.4	91.0

Interstate disparities in gasoline allocations are caused by several factors which make their complete elimination extremely difficult.

Allocations of gasoline apply to suppliers, wholesalers and final users of gasoline rather than to States;

Suppliers who had different quantities of gasoline available for sale were required to treat their retail stations equally rather than match changing demands; thus initial State allocations depended upon the mix of suppliers in a given State;

Allocations initially did not take into account the closing of service stations or the changing of gasoline distribution patterns which occurred in 1973 and 1974;

The Emergency Petroleum Act of 1973 allowed agricultural users 100 percent of their current requirements so States with a large agricultural sector will receive relatively greater supplies;

Monthly gallonage figures fluctuate significantly from month-to-month and year-to-year depending on such things as reporting dates, tax payment requirements, the effects of unusual weather, and holiday schedules; completely eliminating these seemingly random fluctuations is extremely difficult.

FEO attempted on a temporary basis to offset these interstate disparities by making supplementary supplies available in late February and in mid-March. April's initial allocations now adjust for many of these disparity causing factors.

ESTIMATED STATE GASOLINE TAX REVENUE LOSS, CALENDAR YEAR 1974

[Dollar amounts in millions]

Period	Shortfall ¹ (percent)	Revenue loss		Source
		Current period	Cumulative	
January.....	10.0	\$72.1	\$72.1	API/ACIR
February.....	13.5	87.2	159.3	FEO/ACIR/FHWA
March.....	9.3	73.3	232.6	FEO
April.....	8.2	55.9	288.5	FEO
May.....	² 6.0	43.3	331.8	ACIR
June.....	² 6.0	41.0	373.7	ACIR
July-December.....	5.0	214.1	609.1	ACIR
Varying.....	4.0	171.3	545.0	ACIR
Shortfall.....	3.0	128.5	502.2	ACIR
Assumptions.....	2.0	85.6	459.3	ACIR

¹ The percentage shortfall is calculated by dividing the estimated number of gallons of gasoline sold by the projected number of gallons which would have been sold (a) had there been no oil embargo, (b) had fuel prices remained at their pre-embargo levels and (c) without the adoption of conservation practices. See the footnote in table 2 for more details on the calculations.

² This shortfall may vary depending upon the level of production decided upon by the Arab countries and the time required to refine and distribute this increased flow of foreign crude oil. The latest estimates from FEO indicate the shortfall for May will be 5 percent while the shortfall for June will be higher, probably around 7 percent. Because of the tentative nature of these numbers, an average of 6 percent seems to be the most reliable estimate.

Source: ACIR staff compilations based on data from the American Petroleum Institute, the Federal Energy Office and the Federal Highway Administration.

TABLE 2.—ESTIMATED MONTHLY STATE GASOLINE TAX REVENUE LOSSES DUE TO THE ENERGY CRISIS WITH VARYING ALLOCATIONS, BY REGION AND STATE

[Dollar amounts in millions]

State and region	ACIR-FEO estimates for February 1974 ¹		Final FEO estimates for March 1974 ²		Initial FEO estimates for April 1974 ²	
	Allocation (percent)	Revenue loss	Allocation (percent)	Revenue loss	Allocation (percent)	Revenue loss
United States.....	86.5	\$87.24	90.7	\$73.28	91.8	\$55.91
New England:						
Maine.....	100.3	(³)	92.3	.30	101.1	(³)
New Hampshire.....	62.9	1.09	85.0	.47	90.1	.28
Vermont.....	72.4	.49	85.4	.28	90.4	.17
Massachusetts.....	97.1	.41	92.1	1.22	90.0	1.46
Rhode Island.....	81.5	.54	93.3	.18	90.0	.31
Connecticut.....	80.4	2.14	92.0	.93	90.0	1.17
Mideast:						
New York.....	97.0	1.12	88.4	4.93	91.3	3.60
New Jersey.....	83.4	3.71	95.3	.98	94.2	1.28
Pennsylvania.....	87.4	3.96	85.0	4.95	93.9	1.93
Delaware.....	97.8	.05	98.8	.03	101.5	(³)
Maryland.....	82.8	2.31	85.0	2.26	90.2	1.42
District of Columbia.....	98.5	.02	98.0	.03	105.9	(³)
Great Lakes:						
Michigan.....	80.8	6.34	85.8	4.99	90.3	3.48
Ohio.....	79.4	5.82	88.8	3.22	90.4	3.06
Indiana.....	87.0	2.23	85.0	2.86	97.4	.45
Illinois.....	88.6	3.46	90.9	2.92	91.0	2.76
Wisconsin.....	82.5	2.06	88.4	1.45	90.9	1.08
Plains:						
Minnesota.....	104.1	(³)	101.4	(³)	96.8	.40
Iowa.....	75.8	2.32	88.8	1.05	93.1	.69
Missouri.....	82.2	2.61	93.0	1.04	91.0	1.51
North Dakota.....	91.4	.16	96.7	.08	93.6	.14
South Dakota.....	80.9	.44	101.9	(³)	93.3	.16
Nebraska.....	76.3	1.34	85.0	1.03	92.5	.49
Kansas.....	84.8	1.36	108.5	(³)	91.8	.69
Southeast:						
Virginia.....	82.7	3.05	85.0	3.07	90.4	1.91
West Virginia.....	78.5	1.02	105.8	(³)	90.3	.64
Kentucky.....	87.8	1.43	85.0	2.04	91.0	1.19
Tennessee.....	97.7	.28	96.3	.47	91.3	1.16
North Carolina.....	80.0	4.17	85.0	3.21	90.5	2.26
South Carolina.....	86.0	1.30	85.0	1.58	90.5	.96
Georgia.....	81.5	3.12	91.4	1.68	90.4	1.77
Florida.....	87.6	3.67	85.1	4.91	90.3	2.80
Alabama.....	77.0	1.47	85.0	1.72	90.5	1.19
Mississippi.....	87.8	1.00	89.5	.96	91.1	.82
Louisiana.....	118.1	(³)	85.0	2.00	96.8	.40
Arkansas.....	89.1	.84	92.4	.64	91.6	.68
Southwest:						
Oklahoma.....	93.8	.53	100.0	(³)	91.0	.77
Texas.....	91.0	2.66	104.4	(³)	94.1	1.81
New Mexico.....	85.5	.57	94.0	.25	90.2	.43
Arizona.....	80.5	1.37	85.0	1.30	90.2	.73
Rocky Mountain:						
Montana.....	79.9	.48	85.7	.38	91.8	.23
Idaho.....	91.7	.24	85.0	.58	91.8	.29
Wyoming.....	114.1	(³)	104.8	(³)	100.0	(³)
Colorado.....	94.7	.41	92.9	.59	90.5	.78
Utah.....	67.7	1.18	89.0	.41	90.2	.35
Far West:						
Washington.....	81.6	2.28	90.9	1.17	90.5	1.21
Oregon.....	74.4	1.79	85.0	1.09	90.7	.68
Nevada.....	75.9	.41	85.0	.29	90.4	.19
California.....	83.2	9.57	85.0	9.74	90.2	6.09
Alaska.....	77.1	.20	104.6	(³)	121.7	(³)
Hawaii.....	80.6	.22	102.0	(³)	106.6	(³)

¹ ACIR demand estimates for February 1974 are used because FEO estimates are unavailable. The allocation percentage is the actual gross gallons of gasoline reportedly allocated to the State by FEO divided by the adjusted gross gallons of gasoline consumed in the State during February 1973, increased by the rate of growth of motor vehicles for the year 1973. Federal Highway Administration gallonage figures for 1972 and 1973 were used in ACIR's calculations. Revenue losses were estimated by multiplying the State tax rate times the difference between estimated demand and the allocated supply for February 1974.

² Allocation percentages are based on actual gross gallons of gasoline allocated to the State by FEO divided by FEO demand estimates for each month—monthly 1972 consumption increased by 2 year of growth of adjusted motor vehicles registration. Revenue losses were estimated by multiplying the State tax rate times the difference between estimated demand and the allocated supply for each month.

³ Allocations are over 100 percent so there is no revenue loss.

Source: ACIR staff compilations based on data from the Federal Energy Office and the Federal Highway Administration.

Question 1(b). What funding or program alternatives are available to the states for investments in rural transportation systems?

Answer. Funds available to the States for rural transportation investment are in the highway program, primarily in the funds for the Federal-aid primary and secondary systems, plus the economic growth center program and the public transportation demonstration program. DOT's budget currently provides \$647 million for total rural FHWA obligations in FY 1974 and \$675 million for FY 1975. This does not include the Interstate system, (DOT)

Question 1(c). Will federal funds other than highway trust funds be made available for highway construction under the President's proposed Unified Transportation Assistance Program?

Answer. The proposed Unified Transportation Assistance Program provides the FY 1978-80 urban highway mass transit construction and operating funds will be provided from the general fund rather than the highway trust fund. (DOT)

Question 1(d). Will the diversion of highway trust funds to support mass transit systems mean that fewer federal dollars will be available for highway construction in rural areas?

Answer. The provision of flexibility for investment in transit in the 1973 Highway Act simply affects the eligible uses of funds for the urban highway program and does not affect funding levels for rural highway construction. (DOT)

Question 1(e). What progress has been made in the growth center highway demonstration program authorized under the Federal Aid Highway Act?

Answer. Attached is a report on the growth center demonstration program authorized by the 1970 Highway Act. (DOT)

THE ECONOMIC GROWTH CENTER DEVELOPMENT HIGHWAY DEMONSTRATION PROGRAM

One hundred and fifteen small cities and towns in 50 States and Puerto Rico were designated as Economic Growth Centers eligible to participate in the 2-year highway demonstration program authorized by the Federal-Aid Highway Act of 1970. Highway projects selected for funding under this program had to be on the Federal-aid primary system in order to share in an allocation of \$50 million each for fiscal years 1972 and 1973. The funds have been used as "add-ons" or "sweeteners" to normal Federal-aid primary allocations in amounts not to exceed 20 percent of the cost of any one project.

Because a primary purpose of the program was to obtain development information, an effort was made to select centers in as many economic and geographic settings as possible. Table I lists the centers by State and FHWA region.

The average population size of the centers is 22,435, with a range from 1,140 in Palmer, Alaska, to 76,215, in Pittsfield-North Adams, Massachusetts. Table II shows the 1970 size distribution of the centers.

Summary statistics for the entire program indicate that 83 of the centers experienced population growth over the past decade, with 58 percent of these having population increases greater than the national average. In 5 of the 9 census divisions in the U.S., the weighted average

population growth rate of the FHWA centers was greater than that of the division. Fifty-four percent of the centers grew faster than the State Economic Area in which they were located. Over the 1963-67 census period, retail sales growth in 56 percent of the centers, and wholesale sales growth in 46 percent of the centers, was greater than the State average. Forty-nine of the centers had an increase in the number of manufacturing establishments over the period and the weighted average growth rate of value added in manufacturing for all centers was 47.7 percent. This latter figure compares to a national growth rate of 34.6 percent.

TABLE I.—GROWTH CENTERS

Region 1

Connecticut—Oxford, Stonington
 Maine—Bangor-Brewer
 Massachusetts—Pittsfield-North Adams, Plymouth
 New Hampshire—Berlin, Claremont-Newport, Keene
 Rhode Island—Westerly, Newport-Middleton, Woonsocket
 Vermont—Bennington
 New Jersey*—Millville
 New York—Ithaca-Cortland, Little Falls, Ogdensburg
 Puerto Rico—Guayama, Aguadilla, San German

Region 3

Delaware*—Dover
 Maryland—Garrett County
 Pennsylvania—New Castle, Central Monogahela Valley, Ebensburg-Hasting
 Virginia—Richlands-Tazewell, Wise
 West Virginia—Huntington, Parkersburg

Region 4

Alabama—Golden Triangle, Louisville, Aberdeen-Amory
 Florida—Freeport-Blountstown-Panama City
 Georgia—Douglas, Carrollton, Dalton
 Kentucky—Corbin-Barbourville, Campbellsville-Lebanon
 Mississippi—Golden Triangle, Louisville, Aberdeen-Armory
 North Carolina—Wilmington, New Bern, Rocky Mount
 South Carolina—Florence-Kingstree
 Tennessee—Oneida, Erin

Region 5

Illinois—Mount Vernon, Harrisburg, Carbondale
 Indiana—Elkhart-Goshen, Columbus
 Michigan—Marquette, Big Rapids, Gaylord
 Minnesota—Little Falls, Hutchinson, Iron Range Urban Complex
 Ohio*—Woodsfield-Barnesville, Cambridge
 Wisconsin—Eau Claire, Stevens Point, Wausau

*Indicates that as of Feb. 28, 1974, no program activity was underway in this State.

Region 6

Arkansas—Searcy, Fayetteville-Springdale, Pine Bluff
 Louisiana*—Jonesboro-Hodge (Jackson Parish)
 New Mexico—Shiprock, Santa Fe
 Oklahoma*—McAlester, Muskogee, Shawnee
 Texas—Killeen, Sherman

Region 7

Iowa—Centerville, Webster City
 Kansas—Garden City, Lawrence, Hutchinson
 Missouri—Poplar Bluff, Jefferson City, Sedalia
 Nebraska—Scottsbluff-Gering, Norfolk, Grand Island-Kearney-Hastings

Region 8

Colorado—Durango, Steamboat Springs-Craig, Gunnison-Montrose
 Montana—Helena, Missoula, Kalispell
 North Dakota—Bismarck
 South Dakota—Brookings, Yankton
 Utah—Logan, Price, Moab
 Wyoming—Casper, Lovell

Region 9

Arizona—Show Low, Payson
 California—Santa Rosa, Santa Cruz, Lake Isabella
 Hawaii—Princeville
 Nevada—Reno-Stead

Region 10

Alaska—Juneau, Fairbanks, Palmer
 Idaho—Lewiston, Coeur d'Alene, Idaho Falls Area
 Oregon—Coos Bay, Ontario
 Washington—Walla Walla County, Chelan County

TABLE II.—POPULATION SIZE DISTRIBUTION OF FHWA APPROVED GROWTH CENTERS

Census division and Puerto Rico	Thousands—								Total
	0 to 10	10 to 20	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80	
New England.....	2	4	2	0	2	0	1	1	12
Middle Atlantic.....	2	1	2	1	1	0	0	0	7
East-northcentral.....	3	3	4	1	1	0	1	0	13
West-northcentral.....	4	5	2	3	2	0	0	1	17
South Atlantic.....	2	5	2	2	2	0	0	1	14
East-southcentral.....	4	4	0	1	1	0	0	0	10
West-southcentral.....	2	1	2	2	1	1	0	0	9
Mountain.....	7	4	4	2	1	0	0	1	19
Pacific.....	5	2	1	1	0	1	0	0	10
Puerto Rico.....	0	1	2	0	0	0	0	0	3
Total.....	31	30	21	13	11	2	2	4	¹ 114

¹ Excludes new town of Princeville, Hawaii.

A further indication of the diversity and strength of the centers is the fact that one of the centers is a new town, two are major service, trade, and employment centers for large Indian Reservations, five are

*Indicates that as of Feb. 28, 1974, no program activity was underway in this State.

State capitals, 71 are county seats, seven are major recreation centers, 22 are cities already designated as growth centers by the Economic Development Administration, 19 are growth areas designated by the Appalachian Regional Commission, and 17 are recognized as growth areas by Title V Regional Commissions.

As of February 28, 1974, \$66.8 million out of the total program allocation had been obligated. Construction projects had been authorized in 79 centers and 58 centers had construction projects underway. It is expected that approximately 98 separate growth center highway projects will be completed within the next 2 years. Five States, with a total program allocation of \$8.6 million had not obligated any growth center funds as of February 28, 1974. Because the new Economic Growth Center program authorized by the Federal-Aid Highway Act of 1973 will provide financing of growth center projects on a 70-30 sharing basis, it is unlikely that these 20 percent add-on funds will be utilized by the States to which they were allocated. Funds not utilized will become available for redeployment by the Secretary for use in other States.

The States are presently performing "before" studies to establish the economic base of each center and to provide a benchmark for future program evaluation. Forty-five such studies had been accepted as of February 28, 1974. Hopefully, the evaluation phase of the program will provide much useful information to those concerned with planning transportation systems. The determination of the types of economic settings in which highway investments can provide a necessary catalyst to social and economic development will add to our knowledge and will assist in future highway planning and evaluation efforts. (DOT)

Question 2(a). Critics of DOT's plan to restructure the northeast and midwest rail systems by allowing abandonment of thousands of miles of track claim that alternative transportation would have to be provided primarily by motor freight further exacerbating fuel shortages. Has the FEO made any policy recommendations or inputs to DOT concerning the fuel implications of rail line abandonments?

Answer. As of this time the FEA-Office of Operations and Compliance has not made any policy recommendations to the Department of Transportation concerning the fuel implications of rail line abandonments. The two major reasons for this are (1) the necessary research has not been done in the area concerning this issue. (2) They were not invited by DOT to make an input. However, depending on the time frame, FEA would like to contribute policy recommendations. (FEA)

Answer. DOT's recommendations for the restructuring of rail service in the Northeast define 25 percent of existing trackage as potentially excess. These tracks carry approximately 4 percent of total rail traffic in the area. DOT expects that a significant fraction of the potentially excess branch lines will be found to be viable. Thus, the abandonments contemplated by DOT's restructuring recommendations would affect less than 4 percent of the rail freight traffic in the area. The service directly affected is light-density collection and distribution. This involves a locomotive traveling considerable distances to collect or distribute a small number of freight cars and is not an efficient use of energy when compared to the use of trucks for the same

type of service. Where rail collection and distribution service is not viable, DOT would prefer to see this function carried out by trucks which would transport freight to a point where it could be handled by rail for the line-haul portion of the trip. DOT is deeply interested in the problems posed for rural areas by branch line abandonments, and we plan to give this area very close study in the future to determine if remedial Federal action is appropriate. (DOT)

Question 3(a). Advocates of water resources development argue that the future development of renewable water resources is a central factor in the supply of energy. Can water transportation provide a substitute for rail and highway transportation serving rural areas?

Answer. DOT is of the opinion that there are very few economic opportunities for inland water transportation that have not already been exploited. This mode, then, cannot be looked to as a potential substitute for rail and highway transportation serving rural areas. (DOT)

Question 3(b). Would federal policies which restrict development of water resources have an adverse effect on the availability of adequate energy supplies at the lowest possible cost?

Answer. Limitations provided by federal policies do restrict the development of hydroelectric power resources. Legislation, such as the Wild and Scenic Rivers Act, PL 90-542, and other enactments, has precluded the possible development of approximately 7,000 megawatts of conventional hydroelectric capacity. Also, PL 90-542 has placed a moratorium on the possible development of about 6,500 megawatts of conventional hydroelectric capacity, pending studies of the river reaches in which the project sites are located as possible additions to the national wild and scenic rivers system. To the extent that these potential projects would otherwise be developed, equivalent capacity and generation would need to be provided from alternative power sources at possibly higher cost. (FPC)

Answer. Where supplies of water are limited the development of energy resources could be adversely affected, since water will be required for the production of oil from oil shale and for the gasification, liquefaction, or conversion to electric power of the major coalbeds of the west. Also, at this time one low cost method of transporting coal from this region to the major markets of the west coast, the southwest or the midwest appears to be in a slurry which would be about one-half water. However, substantially less water should be required for coal slurry pipelines than for the gasification of the same amount of coal near the mine. Of course, the coal could be carried by rail instead of by pipeline. Looking ahead, the lack of availability of water could limit the degree of the development of the oil shale reserves of Colorado, Utah, and Wyoming and could determine the mode of development and transportation of western coal reserves. Hydropower, on the other hand, is likely to remain a relatively minor source of energy for the United States, so Federal policies with respect to the development of hydropower should not have a major impact on the national availability of energy.

Federal water resource development policy will take into account the energy requirements of the country as well as other needs. (DOI)

Question 3(c). Can construction of new hydroelectric power projects help to ease energy shortages in nonmetropolitan areas and to promote economic development in these areas?

Answer. By utilizing a renewable resource, new hydroelectric power projects can ease energy shortages by reducing the requirements for fuels. With extensive transmission networks, the effects can be widespread and may include nonmetropolitan areas. Normally, the economy of scale favors the development of projects sites with the larger hydroelectric potential. However, there are a number of sites with smaller potential that might well be suited for development to supply the power needs of more isolated nonmetropolitan areas. For example, potential hydroelectric projects with capacities of 25 megawatts or less are widely scattered across the country and, if found to be feasible, could provide several thousand megawatts of capacity. (FPC)

Answer. Construction of new hydro plants can help improve service reliability. However, such plants need to be interconnected with regional transmission grids of utilities. It will increase energy availability in both areas with less dependence on fossil fuels with a more environmentally acceptable power producing project. Such plants, if constructed by the Federal government under Section 5 of the Flood Control Act with preferences given to municipal cooperatives and State and Federal agencies, could improve low cost power and energy availability in small urban and rural areas. However, due to the limited number of sites available the potential for hydro power will not constitute a major portion of future power development. Construction of plants will promote economic development in these areas: (1) Short-term—increase employment during construction period; (2) Long-term—the employment of permanent people needed for operations and maintenance and recreational purposes. (REA/USDA)

Question 4(a). Some have predicted a slowdown in postal service as a result of the energy shortage. Has the FEO received any indication that the allocation program is adversely effecting postal service? If so, are fuel shortages having an adverse effect on rural mail service?

Answer. Up to this time the Office of Operation and Compliance within FEA has not heard a single complaint from the allocation program adversely affecting the Postal Service. However, the Postal Service claims that if they are not given priority status their service will have to be cut. It seems that due to shortages in rural areas the Postal Service is having to compensate their deliverers for extra time and money it is costing them to go off their normal route to obtain fuel. However, they are able to get fuel sometimes with an extra effort required. In the establishment of priorities certain distinctions had to be made, resulting in the exclusion of numerous activities from the highest priority list. However, mail hauling by truck should receive 100 percent of current demand subject to an allocation faction. (FEA)

D. INSTITUTIONAL ROLES

Question 1(a). Several federal agencies have programs related to energy and rural development programs. What are agencies such as the Rural Electrification Administration, the Tennessee Valley Au-

thority, and USDA's Economic Research Service doing to ease the impact of energy shortages on rural development?

Answer. Attached is a paper prepared for the Appalachian Regional Commission May 1974 meeting, the early pages of which detail the evolution of Commission activities related to energy issues. At present, there is a considerable research effort underway to provide the factual basis for regional energy policy decisions. The Appalachian Regional Commission has directed the staff to pursue regional energy research as it relates to regional development. We are attempting to discover and characterize past, current and future critical paths along which supplies of fuel and electricity come to or are produced in the Region, thence pass on to fulfill the demands comprising Appalachian and Appalachian supply-dependent markets. This means that we must know details about the nature of the market and the second order dependencies stemming from particular fuel use patterns as well as details about the type, volume, origin, movement and destination of anticipated fuel and energy supplies. (ARC)

Answer. REA under its new insured and guaranteed loan program is in a much better position to help finance the distribution, transmission and generation facilities necessary to assure adequate power and energy supplies in rural areas. Under the loan guarantee program REA has made an insured loan and a loan guarantee for construction of a 400 MW mine mouth lignite fired plant at Underwood, North Dakota, together with related transmission lines to deliver power in the rural areas of Minnesota, the amount of the loan and guarantee being \$539,600,000. Under this program REA also plans to loan for construction of a 760 MW mine mouth coal fired unit in Colorado and a 360 MW coal fired plant in Mississippi but this is dependent on coal being obtained from a new coal field in the rural areas of Southeastern Kentucky.

Altogether such loan guarantees amount close to \$1 billion for almost 2,000 MW of coal fired capacities. REA sees an increasing need for financial assistance for new generation and transmission facilities dependent on coal and nuclear fuels to meet the increasing rural area electric energy needs and become less dependent on the more critical fuels, and is prepared to make such loans which meet Act qualifications subject to any Congressional limitations. REA is also urging conservation and efficient use of power to borrowers and its members, and to cooperatives with other power supplies for more efficient use of resources. REA policies urge borrowers to continually advance their engineering system planning to provide the best reliable servicing to permit maximum and efficient use of energy resources. (REA/USDA)

COAL AND ENERGY ISSUES DISCUSSION PAPER FOR APPALACHIAN REGIONAL
COMMISSION MEETING, MAY 1974

Beginning with the first official report leading to the creation of the Appalachian Regional Commission, concern has been evident for the Region's coal resources, those who mine the coal; the techniques used to extract it; the interactions between coal production and the pace and character of regional development; and the environmental repercussions of coal mining, both directly and as an aspect of the environmental degradation affecting the development of the Region.

As the Commission's program developed, these concerns have elaborated and broadened, as evidenced by the range of projects completed and now underway. This process is continuing and probably should be accelerated and broadened in response to the short- and long-term impacts of emerging national energy policies.

Since this paper will suggest an accelerated effort on coal and energy-related matters, a review of past and current ARC activities is appropriate.

The President's Appalachian Regional Commission recognized that coal is the Region's "number one material resource, capable of economic production as well as further development" (page 42-PARC Report), and anticipated that its production might double by 1980. (At that time the Region was producing 350-million tons annually; the current estimate is 400-million tons.) The President's Commission set the stage for explorations into the environmental, manpower and health aspects of the industry and for recommendations that changes occur in performance. It was noted that impacts from increased production might only be significant through the creation of more jobs if the expansion of coal production were in underground mining. Also recognized were "the after-effects of unwise mining practices," the pollution of streams, burning mine waste banks and surface subsidence, and that present practice "disturbs or destroys renewable surface resources." Appalachia, the Report continued, "is finding that in the mining of its mineral resources much greater care should be taken to preserve and restore its land, water, forests, and fish and wildlife resources." Similarly, the Report noted the need for increased efforts in health and vocational rehabilitation activities because mining, in particular, has left its scars upon the people of the Region (page 50-PARC Report).

Initial programs affecting coal under the Appalachian Regional Development Act of 1965 focused primarily on the environmental impacts from mining. The existing authority of the Secretary of Interior to engage in reclamation activities was substantially expanded in scope and in funds. They were directed toward the reclamation of surface mines, subsidence control, and mine fire extinguishment in the Region. In addition, the Secretary of Interior was directed to undertake a national study of strip and surface mining in order to provide recommendations concerning the effectiveness of state and local control in regulating the industry, public interest and public benefits resulting from reclamation activities, and the policy basis under which the Federal program for the reclamation and rehabilitation of strip and surface mined areas in the United States could be conducted.

In 1967, the Congress directed the Commission to undertake a study of the impacts of acid mine drainage from coal mines in the Region and to recommend a program concerning the policies and priorities for abating and controlling such pollution.

The 1969 amendments to the Appalachian Act significantly expanded the mine area restoration program into a comprehensive approach for abating all types of mining impacts from abandoned mines. The Act was also specifically amended to require that funds be spent on the human resource problems associated with coal mining.

The Demonstration Health Program was amended to require that special emphasis be given to programs and research for the early detection, diagnosis, and treatment of occupational diseases arising from coal mining, such as black lung. Similarly, under the Commission's research and demonstration program and manpower development program, Congress directed that there should be increased emphasis upon projects for training, retraining and rehabilitating coal miners, particularly those in rural areas of Appalachia.

Subsequently, the Commission participated in supporting the first international conference on pneumoconiosis in Lexington, Kentucky (Spindletop, 1969). The Commission also funded the design of a manpower demonstration project which would utilize combinations of innovative methods for recruiting, training and placing rural unemployed and underemployed persons in jobs in the coal mining industry. The Commission also initiated, with the Commonwealth of Kentucky, a three-year research program for the development of improved mining practices and control techniques for surface mining in order to minimize adverse environmental effects. The summary report on mining practices was recently forwarded to the States.

These latter two efforts clearly indicated, though, that the cost of undertaking programs in the health, manpower, and environmental fields would be quite high. For instance, the cost per trainee of the ongoing manpower programs to train coal miners ranged from \$2,000 to \$6,000 per man. Similarly, a full demonstration to improve surface mining techniques would cost far more than the ongoing three-year Kentucky program. In addition, the Commission staff identified almost \$44 million per year that was being expended by the Bureau of Mines, Department of HEW, and Department of Labor on coal manpower health and safety questions and programs.

In trying to meet the question of where ARC might best use its funds, it then became apparent that: (a) Commission resources were insufficient to play a major leadership role, but sufficient to play a significant role if well-placed and directed; and (b) that in order to determine where to place ARC funds to gain that effectiveness, it was necessary to undertake initially a broad assessment of some aspects of coal-related programs. However, it was understood that the Commission's effort would in fact augment other investigations, research, and demonstrations supported by Federal and state agencies rather than being totally comprehensive in scope. In structuring this program, three major topical areas were identified:

1. Public policy and its impact on the Region's fuel industry;
2. Manpower dimensions of the coal industry; and
3. Health and safety aspects of the coal industry.

Given these guidelines, the Commission was faced with how to use its limited resources to make its most significant contribution. Federal attention to the health and manpower aspects of the coal industry rapidly accelerated in 1969 with the passage and implementation of the Federal Coal Mine Health and Safety Act which gave major additional responsibilities, authorities and funds to the Departments of Interior, HEW, and Labor. In addition, the FCMHSA also imposed a number of requirements on the states as well as offering states the funds to undertake other activities, such as health and safety training of coal miners.

As the activities of the Federal agencies got underway, the Commission subsequently identified several areas of concern in which additional effort would be useful to the states as well as to Federal agencies.

First, there was no overview of the relative strength of Appalachian coal in the energy market of the current decade, and what the combined impacts would be of a number of different Federal and state regulatory actions. This effort was focused on the effects of diverse public policies on the coal industry.

Second, a cluster of studies pertaining to the largely state-provided health and safety programs which concern coal miners could be useful. These ranged from assessing the adequacy of specific state compensation programs in meeting Federal standards, to identifying efficient ways of reaching the mining population through mass media, to the identification of potential areas of interstate cooperation in order to increase the efficiency of government programs.

Third, a balanced appraisal of the factors at work in determining the supply of manpower to the coal industry was lacking. Three areas of concern were identified: (1) the demand for and availability of miners; (2) the institutional aspects which attract workers to the industry and help determine the length of time workers choose to remain in the coal industry; and (3) factors in the institutional relationships of the worker with the company, and secondarily, with the union.

Major emphasis was given to the concerns of economic impact of public policy. In general terms, particularly in the context of the presently much discussed "energy crisis," the answers to impact questions depend significantly on a judgment of the Appalachian coal industry's competitive position and its ability to deliver the physical quantities of fuel that the nation may request. Informed decisions that consider the wider implications of likely responses to public and private acts require an authoritative analytical base as possible. The 1973 report to the Commission by Charles River Associates was designed with that purpose in mind.

This study devised a system that enables the staff to estimate output and employment by type of mine (deep or surface), by size of mine (measured in output), and by coal-producing area. Using 1980 as a target year for projection purposes, the report estimates the impact of a series of alternative policies (and combinations of policies) on output and employment.

Among the policies whose impacts have been estimated are those that affect the cost and availability of other fuels, those that affect fuel transportation costs, those that affect the air quality standards that may govern users of coal, those that affect the costs of reclaiming mined areas, those that affect the cost of the mining industry for labor or through changes in tax laws, and those that affect the method of coal extraction permitted. For example, by the method devised in the Charles River research, it is possible to ascertain the probable effect on output and employment of a change in the law that requires additional manpower for health and safety purposes. As another example, it is possible to develop an estimate of the effect on the industry of a change in air quality standards.

Some of the policies whose implications that can be ascertained may be outside the range of ARC's effective influence. However, as policy

changes are made, the technique developed will enable the Commission to anticipate their effects, particularly as these changes operate in tandem with ARC policy and either mitigate or enhance the expected effect of ARC policy alone. In this way, the work done for ARC by Charles River Associates is a fundamental element in the coal policy research that has been conducted in the last two years.

At the present time, the Commission is updating various sets of assumptions used in the Charles River Report, such as those related to the price of oil. We also are acquiring a computer program for the model used by the consultants. This model, to be available in 60 days, will allow further analysis of coal's role as prices and availability of various fuels change relative to the forces that influence the energy market.

The manpower implications of various predictions of future coal markets are also being updated by the Commission staff. Various estimates of future coal demand and production levels will be evaluated as to their implied manpower needs by type of mining, skill levels and sub-areas of the coal-producing Appalachian States. Preliminary figures will be available in about one month.

Commission research is also being conducted to provide insight into the sources, movements, and destinations of various fuels used in the Appalachian Region and various fuels and energy originating from Appalachia but used by consumers outside of the Region. The economic activity linkages and their energy dependencies will also be defined in a preliminary way reaching towards developing a better understanding as to what energy shortages, and adjustments to those shortages could do the development of the Appalachian States. Energy professionals from each of the 13 Appalachian States are providing guidance to this effort.

Although Appalachia is, and will continue to be, a major producer of energy, none of the research completed or underway fully anticipates two vital interrelated issues:

1. With rising coal production in the Region, can and how should Appalachia achieve long-term, self-sustaining development and avoid the legacy of exploitation?

2. What would be the long-term implications of a national energy policy that would shift emphasis from Appalachian coal?

Take, for example, a recent discrete action at the Federal level by the Cost of Living Council that impacts upon the coal industry in general and substantially on producers in four Appalachian States.

The Cost of Living Council announced in March 1974 that it had exempted price and wage controls relating to the coal industry and prices, and had "worked out several significant commitments in exchange for decontrol which would materially increase domestic supply of coal, encourage a positive collective bargaining climate for the industry, ensure bidding on government contracts, and alleviate transportation bottlenecks which might otherwise prevent increases in production from reaching coal users."

The action is expected to affect about 150,000 employees, and the total expected 1974 over 1973 increase in coal production of 60-million tons. The 15 largest bituminous coal producers representing 50 percent of total coal sales will produce 43 million additional tons by April 1975. Price and wage exemptions alone will generate a minimum of

12.8-million tons from 10 of the 15 largest companies over what they had planned to mine without the benefit of exemption. This additional production generated by the exemption will be produced largely from Eastern coal-producing areas. West Virginia, Pennsylvania, Virginia, and Eastern Kentucky will be the source of 60 percent of this short-range increase (50 percent from underground mines and 10 percent from surface mines).

Cost of Living Council's action was taken without the benefit of a national energy policy. However, current discussions are laying the groundwork for the consideration of a national policy towards all energy development and use.

The national attempt to formulate the development of a position of national independence of energy needs is now underway in Project Independence Blueprint. The formulation of a national policy, however, should recognize and consider the needs of current economic and regional interests and development investment policies.

Take, for example, the possibility that national policy might favor a westward shift of coal production. Should such a hypothetical event occur, it seems reasonable to associate with it an upward movement in the relative cost of energy in the East. This, in turn, would result in a situation where producers in Appalachian States that use significant amounts of energy in their production or feedstocks will have relatively higher costs than their Western competitors and will be at a competitive disadvantage and/or have higher product prices. This, in turn, will lead to a shift in consumer purchases that may well result ultimately in an increased share of expenditures going for heat, fuel, transportation, shelter and other items with a large energy component in the product or service.

Moreover, the "favored" status of the West's relative lower energy costs might cause a shift in economic activities away from the East, with a resulting reduction in tax bases, and employment. As people migrate in response to changed job availability and rising relative unemployment, transfer payment burdens might rise along with per capita costs for providing government and private services. This too would have competitively adverse effects on industrial activity, jobs, income and Eastern economic development. These possibilities must strongly suggest the urgency of not only recognizing mutual regional interests but that joint actions should be taken to secure those interests.

It is proposed that the Commission can play a singular role in helping to secure the Region's future by anticipating actions that will be both supportive of regional coal production and in moving the Region to become more developmentally self-reliant and environmentally sound.

The Commission should immediately look at the implications of developing and placing facilities that could utilize coal-processing technology in the Appalachian Region. From the regional development point of view the implications of those sitings should be considered from several perspectives. First, where are these locations likely to occur. Second, do these locations lend themselves to the development of satellite industrial complexes to use coal-processing products. Third, are the necessary infrastructure investments such as housing, water supply, community services and roads being planned and provided for in concert with the stimulation of a coal-processing industry.

In short, how can Appalachia use the trend toward, greater national reliance on coal resources to promote its own well-being.

Question 1(b). Does the FEA routinely coordinate its activities and programs with agencies concerned with rural development as well as with the Economic Development Administration, the Appalachian Regional Commission and the other federal-state regional development commissions?

Answer. The Federal Energy Administration is in constant consultation with the Agricultural Stabilization and Conservation Service, under the Department of Agriculture. Through this agency, liaisons with other governmental agencies are established as problems arise and as policy is formulated.

For instance, consultations with the ASCS resulted in our expanded "upward reporting" system to insure agriculture of 100 percent of its fuel needs. The REA has helped in the formulation of FEA policies dealing with public utilities. (FEA)

Answer. ARC has been able to participate in national policy discussions and formulation and bring to them knowledge of the potentials, aspirations and impacts of energy policy as seen from a multistate point of view. We have participated in this way with FEA, D/I, OCR, and BOM, EPA, CEQ, NSF, AEC, other regional commissions, and Congressional Committees. In these contacts, ARC has been able to present research results, research and information needs, policy evaluation and policy alternatives.

A significant part of ORC's ability to participate in this way stems from the active participation of member States who collectively set priorities and establish regional policy. The recognition of the role energy plays in regional development led the States to support and encourage the evolution of ARC policy.

The Commission provided a mechanism for the interaction of State Governors' energy offices in recent months and their activities are receiving ARC support. In addition, the Commission established an Energy Policy Task Force of representatives of the States to recommend coordinated regional approaches. (ARC)

Answer. As states are forced to decide how their limited resources are to be developed, the conservation issue will become more acute. Pressure for development of natural resources will increase as energy costs rise. Currently, at least 24 states have an energy conservation plan in effect. At least six states (Maryland, Maine, Florida, Vermont, Pennsylvania, and California) have passed comprehensive legislation to deal with not only the current crisis, but also to develop contingency plans. Connecticut is committed to developing solid waste into fuel by 1976 as part of a 20-year plan costing \$295 M. It will be the first state-owned agency to produce and sell heating oil, synthetic gas and dry fuels. (ACIR)

Question 2(a). Many states have established special offices for energy planning or energy task forces.

Are state energy agencies coordinating their programs and policies with state development agencies and state planning offices?

Answer. The recently acquired state responsibilities with regard to the Administration of set-aside programs for specified petroleum

products and the concomitant increased significance of state energy policy have resulted in forms of organizations and designations of responsibility as varied as the administrative structures of the 50 states.

Although each of the states has designated an "energy representative" or "contract," the establishment of independent energy offices is not currently a fact in most. Frequently, energy policy responsibilities and "allocation" responsibilities are separated organizationally. "Allocation" or operating functions are lodged in departments of commerce, natural resources, taxation, planning, economic development, etc. Policy formulation, on the other hand, is commonly vested in advisory boards or committees. These bodies are usually comprised of the state department heads who have an impact on and/or are impacted by energy policy. It is in these policy-making groups that coordination of state-level departmental policy (including that of development and planning agencies, among others) is accomplished. Further, interdepartmental policy formulation helps to ensure consistent planning and execution at the program level in areas affecting energy use and conservation. It is not clear, at this time, exactly what the final configuration of state organizations responsible for energy planning, policy and programming will be. As practical experience accumulates at both the Federal and state levels, and as legislative decisions are reached at the Federal level concerning organizational funding support to the states, institutional arrangements should begin to form some sort of pattern. At that time, opportunities and requirements for interdepartmental coordination in policy and planning should become more readily identifiable. (FEA)

Answer. As of April 15, 1974, at least 15 State Legislatures passed legislation granting special authority to the Governor. Some form of legislative oversight is required in all but three states. It has been estimated that approximately one-third of the states have significant energy resources located within the state, mainly the Gulf and Western States.

Question 2(b). Do the Federal Regional Councils have a role in coordinating FEA programs and policies with other federal agencies and the states on a regional basis?

Answer. The relationship between Federal Regional Councils and the Federal Energy Administration is still in the development stage. As FEA, rather than FEO, the Administration will be an ad hoc member of the Councils. To date, FEA regional offices have been represented at Council meetings and have participated in energy-related task forces.

Because FEA, to date, has concentrated its activity most heavily in the area of allocation, its role vis-a-vis the Council has been one of keeping members informed of FEA activity and being informed of member activity related to energy issues. In the future, as it moves more significantly into planning and energy conservation, FEA will participate more substantially in coordinating programs and policies with other federal agencies and, through the Councils, with the states. (FEA)

II. THE POTENTIAL IMPLICATIONS OF THE ENERGY CRISIS ON RURAL ECONOMIC DEVELOPMENT AND BALANCED URBAN-RURAL GROWTH

A. ECONOMIC DEVELOPMENT

Question 1(a). Most federal programs for regional economic development have adopted a growth center strategy for nonmetro areas, focusing investments on larger urban centers in order to provide jobs and services for residents of surrounding rural hinterlands. What are the potential implications of prolonged energy shortages on the growth center strategy? What alternative development strategies should be considered.

Answer. The growth center strategy is the policy recognition of economic reality. With a prolonged energy shortage and significantly higher fuel prices there would develop a change in the "growth centers" themselves. That is to say, positive growth would tend to occur in different places in response to the higher fuel prices and in response to higher transport costs generally. Therefore, good policy would require reexamination of those centers which have been so designated.

One of the most important dimensions of a growth center is its younger population. They provide the basis for population growth. For the most part, they are attracted by the opportunity and excitement of a dynamic urban place where people are getting more education, producing more per worker and earning higher incomes.

Because of its attraction to people, such a place is likely to be a growth center, even though the surrounding area may be laggard. The growth center provides a connection or linkage between economically disadvantaged people of the environs on one hand and the national economy on the other.

Often it's a place near home that ambitious, trained young people are likely to stop at first in their search for opportunity. Because of this, it is also the most likely choice for new development in an area.

In the context of the Economic Development Act, a growth center is typically an urban place of less than 250,000 population which acts as the vital heart of its development district. Usually, an economic development region will have 15 to 20 districts, each with its own growth center. Obviously many cities and towns will not qualify as growth centers, although many smaller places have the potential to function as the center of growth for a commuting and trade area.

What characteristics make it possible to select one urban place, from among several candidates, as a focal point for development planning? Where among a system of cities in the United States does a growth center fit?

We can speculate that with short energy supplies and higher prices there will be more growth centers, they will be closer together and initially they will probably be smaller centers and the districts which they will serve will also be smaller. There might also be a tendency for local self sufficiency; of course, economies of size will, as always influence the service of a larger area but high transport costs will tend to shrink the market areas.

How about the current growth centers? What is likely to happen to them? Will they still be growth centers?

With dramatically higher transport costs, current growth centers are going to gain some economic functions and lose some too. They

will probably lose some functions to the smaller centers in their districts that they currently supply, as described above. However, they will likely gain functions that were heretofore supplied by regional metropolitan areas and perhaps even from national metropolitan centers. Some centers may lose more than they gain. It will depend on the economies of agglomeration that exist in some of the current growth centers (economies of agglomeration are not likely to exist in the smallest centers) as contrasted with transport costs and balance of trade considerations (ERS/USDA)

Answer. The growth center strategy is based on the idea of growth of functional relationships between the center and the hinterland. These relationships are two-way relationships, i.e., movement of labor (commuting) from areas around the growth center to the growth center for employment, shopping and cultural activities and the movement of goods and services from the growth center to the hinterland. To the extent that such movements entail energy consumption for transportation, such movements will be reduced and thereby the relationships between growth center and hinterland will weaken and the growth will slow down. (ARC)

Question 2(a). Since available energy supplies are essential to regional and area development, some have advocated that a national development policy be formulated based on a federally-supported intergovernmental policymaking structure which would negotiate policies and decisions involving energy, the environment and other policy areas related to development. Under such a system, multi-state regional development commissions and substate planning and development districts would play a key role in planning and managing energy supplies and demand to support regional and area development. What are the relationships between a national development policy and a national energy policy?

Answer. A national energy policy and a national development policy are very closely related.

Two of the functions given to the Federal Energy Administration are: (1) to develop effective arrangements for the participation of state and local governments in the resolution of energy problems, and (2) to develop plans and programs for dealing with energy production shortages. These being the responsibilities, it is clear that the FEA must work closely with the existing agencies and offices that deal expressly with the development of energy sources.

The Atomic Energy Commission, HUD, EPA, and the Department of Interior also have a vested interest since they too have similar responsibilities. There are also a number of proposed bills currently in both Houses of Congress that deal with the same subject. Most notable among them are (1) the National Land Use Policy Act, (2) the Power Plant Siting Act, (3) the amendments to the Clean Air Act, and (4) the Solid Waste Act, (5) Energy Resource and Development Administration, and (6) the Federal Energy and Natural Resources Administration.

It is apparent that all these agencies, offices, and proposed legislation have to deal with both energy and development. One cannot be divorced from the other (FEA)

Answer. The effect of energy policy is wide-ranging and requires rethinking and integration of policies that are narrowly "energy" in

orientation. This includes transportation policy, the support of existing surface transport systems and particularly the recommendations on severely contracting rail service. In this area, ARC is studying the implications of the proposed program for the northeast railroad system, focusing on the effects on overall economic development and energy use, and energy supply.

ARC's experience is that the location of industry and population can be influenced by public policy. The same can be expected from energy policy. If the Federal program focuses on particular sources of energy or on a particular scale of energy generation system, we can generally anticipate the likely social restructuring to follow. Energy availability affects growth center strategies. (ARC)

Answer. The concerns caused by the energy crisis will have a direct effect on growth and development and therefore there should be correlation between a national development policy and a national energy policy. Some of the predicted effects of the fuel and energy shortages on rural areas that have been expressed by participants in various conferences are listed below:

(1) Economic sectors such as resorts, second homes, recreational facilities and vehicles, recreational tours, highway shopping centers, and restaurants and motels are expected to be adversely affected by a petroleum shortage.

(2) Agriculture will feel the effect of shortages, for example, through the availability and higher costs for fertilizers.

(3) Transportation in rural areas will be also affected. Rural residents will have fewer transportation alternatives available to them for both people and products:

(a) Numerous small and widely dispersed markets for wholesale deliveries could hurt rural businesses if trucking services were reduced due to energy shortages and higher costs.

(b) Reduction in rail services could exacerbate this situation (if it develops).

(c) Gasoline shortages affecting worker transportation could inhibit industrial developments since mass transportation is not a viable option at present.

(d) Supply and consumer distances, combined with energy shortages could be a consideration in investment attitudes and decisions and may favor urban vs. rural plant expansion especially where trucking is the primary means of transportation.

(4) Environmental laws could affect the development of certain rural areas. For example, air quality standards may tend to prohibit certain industry from moving into rural areas under current interpretations of the law.

(5) Unemployment will affect both rural and urban areas, some areas more severely than others, and ameliorative measures should be considered. (RDS/USDA)

Question 2(b). Could multistate regional commissions provide a decisionmaking structure for federal-state cooperation in solving common regional problems such as energy supply and demand?

Answer. A vast number of multistate commissions, interstate councils, and intrastate regional councils are already in existence. They are constituted to deal not only with development and development-related

issues, policies and programs, but also with a wide range of common problems which may vary from region to region. The origin of these types of organizations is largely attributable to the recognition of common problems which could only be handled without regard to political boundaries.

The success of such organizations is dependent upon several factors: (1) the degree to which each member recognizes the importance of a common problem; (2) the degree to which each member recognizes the validity of multijurisdictional approaches to solutions; (3) the degree to which each member is willing to sacrifice a portion of its autonomy in order to reach mutually beneficial solutions; and (4) the degree of commitment each member evidences in using its legal and persuasive powers within its jurisdiction, as well as among other member jurisdictions. Therefore, the potential for the success of regional organizations is limited if such a structure is imposed from outside rather than formed in recognition of and with a commitment to the need for common solutions to common problems.

Existing regional organizations have and will continue to deal with energy supply and demand issues to the extent that they are mutually affected. Since their geographic coverage is quite extensive, the federal government may wish to extend its support to existing bodies in order that their ability to deal more effectively with energy issues and related development issues may increase.

Federal support for existing groups, coupled with the increased significance of energy supply as a development determinant, may prove sufficient to encourage the formation of regional organizations where they do not currently exist. Further, the spontaneous formation of these organizations, rather than a system of imposed structure, will increase their potential for successful and continuing operation. (FEA)

Answer. As you are aware, it is difficult to separate the impacts of an event, such as increasing prices and below-normal supplies of energy, into its unique effects on one part of society. This is particularly true in an advanced industrial society like the United States and of a Region such as Appalachia. Moreover, the fundamental conception of the Appalachian Regional Development Program is the increasing integration of rural and urban areas to further the progress of both. Consequently, though this response to the request of April 19 will dwell on the rural parts of Appalachia, it cannot avoid references to more general impacts.

Among Appalachia's unique rural characteristics is the well-known fact that some of its largely rural subregions are major energy providers to which the nation is looking for relief from its present energy predicament. Therefore, the impact of recent events has to be assessed from both a consumer and a producer point of view. Also, these energy production areas need special attention to enable them to achieve maximum energy production, industrial diversification, and other programs that will reduce their reliance on a dominant source of income and help assure a wide range of opportunities for their citizens of all ages.

Increasingly, ARC plans to have the capability to ascertain the differential impacts on parts of the Region and to anticipate developments that call for either assistance to those adversely affected by

energy supply inadequacies or to assist geographic or functional areas upon which increasing demands are being made, producing potential bottlenecks in production. As Appalachia is called upon to be the site for coal and water energy producing investments, all agencies will need more refined information on input availabilities, including the use and control of water for the processing, production and distribution of energy as well as meeting other developmental needs. Studies now underway are designed with these needs in mind.

A regional point of view is essential for the clarification and implementation of national policy and ARC is attempting to participate in this process through joint work with Project Independent Blueprint. One of the sub-groups with which ARC has been involved focuses on the manpower aspects of the problem and ARC has provided a comprehensive regional analysis of coal manpower availability and a procedure for estimating future requirements by location, type and size of mine.

As national energy policies are developed, they frequently require implementation at the State level and always have different effects in different areas. For example, use of national averages for allocation purposes ignores significant interregional variation in energy usage. In terms of total net energy consumption, State per capita energy consumption ranges from a high of 898 million BTU's per capita to a low of 171 BTU's for Vermont. Similar statistics on gasoline consumption on a per capita basis are 710.6 gallons per capita for Wyoming compared to 410.6 for Vermont.

Such wide variation in energy utilization rates suggests that formation of a national-regional energy policy is required to adequately address the problems raised by the energy crisis. The uncritical use of such rules of thumb as national average consumption will create unnecessarily severe hardships for particular states and areas whose energy patterns deviate significantly from that of the nation as a whole. The appropriate allocation of available energy is a reflection of basic policy decisions that can only be properly made when differential costs and benefits are assessed. This includes recognition of the special situation of rural areas, energy production areas, etc. It should also take into account the interests and aspirations of the people of different areas. ARC is working with its member States to perfect their capability to administer energy programs and to assess the impact of national policies.

As demonstrated in the preceding paragraphs, national policy and programs are endangered if the institutions, geographic regions and economic components of the nation are unable to respond sufficiently and quickly enough to meet the demands of national objectives. Information, analysis and recommendations that are gross in nature do not guide regional and subregional decisionmaking very well, if at all. Therefore, regional needs and those of other fuel producing, market, and economic activity areas of the nation need vital, incisive information along with whatever energy and other natural, human and economic resources it can reasonably expect to be available to guide the successful outcome of regional social, economic, environmental development compatible with local and national growth.

Multiple points of view need to be considered in the development and implementation of energy policy to minimize unforeseen and un-

intended repercussions. The national point of view must be leavened by information about prospects and differential effects regionally. The same problems exist as greater geographic specificity is required for policy implementation so that ultimately very local effects become relevant. What is needed is an institutional arrangement that can manage and disseminate policy relevant information and decisions in a system that reflects diverse geographic perspectives. We are finding at ARC that our institutional structure is particularly well suited to this task. (ARC)

Question 2(c). What is the role for substate development districts in planning and managing energy supply and demand on an area-wide or multijurisdictional basis?

Answer. The States have sub-state area coordinating agencies in existence in the form of development districts which are proving highly useful mechanisms for coordination of policy among localities. Their existence completes an institutional network that allows ARC to participate in national policy discussions with an awareness of the developmental impact of energy policy at the regional, state, and local level. (ARC)

Answer. Decisions that affect the energy policies occur at many levels and involve numerous governmental agencies and groups. Since energy is vital to all economic activities and affects the life of all people, decisions about energy, planning and development, and the environment should be made with the concurrence and input of local communities.

The state and Federal governments have the capability to bring together technical expertise for identifying needs and designing programs to deal with the present energy crisis. The problem comes in managing complex technical solutions once they are identified. The system of Federal-State regional commissions and agencies and sub-state planning and development districts and agencies can provide the vehicle for managing and implementing solutions. These districts can provide a forum where local private, corporate and public interest can determine community's needs, goals and plans.

The National Area Development Institute sponsored a conference on Energy, the Environment and Area Development on January 9-10, 1974. The conference discussed the role of local development district in regard to energy. The following are their recommendations about the role of the Development District:

(1) Keep an inventory of the area's available energy. This would include data on existing and potential bulk energy sites, raw and refined energy sources, and electric generating capacity. On the state or sub-state level, energy availability and end-use data would be very useful in area planning and development, and could serve as a data base for state and national policy decisions.

(2) Prepare energy impact statements or energy elements setting forth the possible trade-offs between energy needs, economic needs, and environmental needs of a comprehensive areawide development plan.

(3) Provide coordinate services between government and industry, and between local, Federal and state agencies in matters of energy use and development.

(4) Deliver technical assistance to local governments and businesses on their energy requirements.

(5) Serve as a communications link between energy suppliers and users.

(6) Manage areawide energy supply and demand by treating energy as a scarce economic resource.

Substate districts are entities within the state and thus Federal determination of the districts' role is not proper. However, it falls within the province of the districts to set priorities and plan for development. This planning should entail energy considerations and will assist the Federal government in cooperating with development districts' goals of comprehensive planning and development. (RDS/USDA)

Question 3(a). Some have suggested that interstate price controls on natural gas and the absence of such controls on intrastate natural gas consumption discriminates against producing states in the South and Southwest in favor of lower gas prices for residents of large metropolitan areas in the East. If the price of natural gas were deregulated, would an incentive be provided for new industrial and business development in the producing areas and states?

Answer. Because interstate wellhead prices are regulated, new supplies of natural gas in the gas producing states have been going primarily to the intrastate market. The ability of intrastate purchasers to offer producers substantially higher prices has kept much of the "new" gas out of the interstate market. On an incremental price basis, end-users of gas in the producing states are thus paying more than consumers in the East Coast. The existence of readily available gas supplies in the gas producing states has favored such states in the location of new industries, in spite of the gas cost being higher. If the wellhead price for gas sold in interstate commerce were deregulated, competition for supplies will in time bring the wellhead price for both the interstate and intrastate market in line with each other. Gas consumers in the gas producing states would continue to enjoy a price advantage because of the added cost of transportation to East Coast consumers which currently accounts for about 55 to 60 percent of the city-gate price. (FEA)

Answer. No one knows for certain if deregulation of natural gas prices would provide an incentive for new industrial and business development in the producing areas and states. The question presumes that increased production would result from deregulation. This may or may not be the case. Many industry experts believe that we may have reached the peak in the development of our natural gas resources. If they are correct, neither deregulated prices nor higher incentive prices within the current regulatory framework will stimulate production to much more than a "holding-the-line" level. On the other hand, if there are large economically recoverable reserves yet to be found, stimulated production resulting from unregulated prices would have to reach levels not only capable of erasing the large curtailments of service now being experienced, but also to rebuild our reserves inventory which has shrunk by almost 72 trillion cubic feet over the last 6 years. Once these criteria are met, industrial and business development might proceed in the producing areas, as well as any other area,

after residential and other priority needs were met. The magnitude of the natural gas supply problem which faces the Nation can be visualized when one considers that fully-satisfied demand could double by 1990 requiring a tripling of the discovery rate and drilling activity experienced over the past few years. (FPC)

Answer. The price effects of the current system of natural gas regulation both with respect to demand and supply are complex. While it is probably true as the question suggests that current users of interstate natural gas in eastern metropolitan areas enjoy lower than free market prices, it also appears that such areas suffer because new gas is not being made available to them through the interstate system. Conversely, producing areas which can use intrastate gas have available greater supplies of new gas at higher, but still attractive prices. (DOI)

Question 3(b). Can industry avoid high transportation costs and energy distribution problems by locating near the source of energy?

Answer. We cannot categorically say yes, for the economics has to be determined. Let us look at the situation. We have the bulk raw supply, the processor and the market. In choosing a plant site it seems practical to institute one close to the source of energy and also accessible to a large market. However, a detailed analysis must be made to determine the best option. Usually a bulk raw supply from an energy source costs a great deal to ship. However, if the rail rates are low enough and the pipeline cheap enough, the industry may decide to move closer to the market and not close to the supply. Besides transportation, industry must also take into account the accessibility of water and the environmental laws of the region, to name just a few of the other considerations.

Consequently, studies should be made to determine the least cost and maximum return in transporting energy resources. (FEA)

Answer. In the absence of a national fuels price equalization policy, it would generally be true that industry could avoid high transportation costs and energy distribution problems by locating near the source of energy production utilized by it. Of course, another factor to be considered here would be the determination by the government that certain fuels be used for specific purposes. In such cases industry might find itself using a higher cost fuel than it would otherwise use, even though it could realize economies by locating near the designated fuel source. Furthermore, if the industrial sector of the energy economy is eventually shifted largely to coal, location near this fuel source may be more difficult than for oil or gas since most current and prospective coal producing areas are located far from marketing and raw materials supply areas. (FPC)

Answer. The location of industry as a function of transportation costs and energy distribution involves a complex set of tradeoffs among transportation costs of fuel, transportation costs of raw materials and transportation costs of finished products. In light of these tradeoffs optimal locations may, depending on the exact nature of the industries involved, result in location near energy sources, location near raw material sources, location near markets, or some compromise among these. (DOT)

Answer. One of the factors which has always influenced industrial location decisions is the availability and cost of energy. The effect of

this factor varies with the intensity of energy usage. For many industries, the transportation cost of raw materials, parts, and finished products may be a more important determinant of location and energy cost. Also, other considerations such as labor availability and productivity, wage levels, taxation, quality of schools, and community interest influence location decisions.

The aluminum industry, which is one of the most energy intensive, has always located near a source of low-cost electrical power. In recent years this industry has been constructing its plants in developing nations where major low-cost hydropower sites could be built. This is a clear example of the general statement that industries with relatively significant energy costs will tend to locate near low-cost energy sources. However, few industries relate their location to energy cost as closely as the aluminum industry. (DOI)

Question 3(c). What would be the general impact of deregulation of natural gas on energy prices and energy consumption patterns?

Answer. With complete deregulation, the wellhead price of gas would rise considerably in the short-term basis because of the serious gas shortage. To a certain degree, the price rise may be tempered by the fact that most of the gas flowing today is under long-term contract. Nonetheless, producers in negotiating sales of new gas supplies would seek higher prices through renegotiations, for existing gas sales contracts. There would be no measurable impact of such price rise on other energy sources. The price of gas will tend to reach the market-clearing level, dictated primarily by the availability and demand for alternate fuels. Because gas is a clean burning, desirable fuel, it will very likely attain some premium value above other fuels. The higher price will also tend to curtail demand and shift energy consumption by diverting gas from inferior uses, such as boiler fuel, replacing it with fuel oil and coal, and in time with nuclear power. (FEA)

Answer. No one has yet measured the precise impact of deregulation of natural gas prices on energy prices and energy consumption. Such a measurement does not exist since the supply price elasticity for natural gas has never been determined. Of course, the general impact of deregulation would be an increase in natural gas prices, the full impact of which would take a period of years due to the expiration of long-term contracts at lower prices and negotiation of new contracts at the deregulated rates. To the extent that natural gas prices would rise faster than the prices of other fuels, there would be a tendency for a shift to take place towards other fuels, given the absence of a national fuels allocation policy and/or supply shortages of the other fuels. Such a shift would only take place over the long term due to the large investment in gas burning equipment, contract commitments and fuels transport facilities. (FPC)

Answer. The impact of deregulation of the field price of natural gas would be limited by the existence of long-term purchase and sales contracts and by the ability of regulated pipelines and utilities to "roll in" the price of new high-cost gas with the older low-cost gas. (Such utilities sell gas at the average cost of gas to themselves, plus a markup, so the marginal buyer frequently pays less than the marginal cost of the new gas.)

In the absence of these limitations, the price of all natural gas would move toward the "market clearing" level, which would probably be not less than the equivalent price of low-sulfur residual fuel oil or other low-sulfur fuels in the producing areas of the southwest. Major electricity utility and industrial users could be expected to shift to alternative fuels making additional supplies of natural gas available for the residential, commercial, and other industrial markets.

There would, however, be restraints on this trend. Major users with long-term commitments of low-cost gas would continue to consume it until they were offered a high enough price for their contract to clearly warrant a conversion to other fuels. Since this gas would be consumed as though it were at an effective price below the market clearing price, on the one hand, and purchasers from regulated utilities would pay less than the marginal cost of new gas, on the other, the price of new gas might be higher than it otherwise would have been.

Deregulation should have only a limited impact on the prices of other energy sources. In general, deregulation would tend to increase the demand for lower quality fuels, such as coal and residual fuel oil, and decrease the demand for higher quality fuels such as #2 fuel oil and electricity. (DOI)

Question 4(a). Kentucky has proposed to rebate part of its excess coal severance tax receipts back to coal producing counties to be used for public improvement projects such as roads, water and sewer systems, parks and industrial development projects. What is the prospect and feasibility for other local governments in nonmetro areas taxing energy sources such as coal, natural gas, oil and oil shale to finance rural development projects?

Answer. As far as the staff is aware, there is little or no discussion in other states concerning the use of the severance tax for "earmarked" county government projects as outlined in this question. The staff, however, has no on-going research in the area of severance taxes so it has not been specifically scanning the normal information channels to keep abreast of the most current or pending legislation in this area.

The question touches on several controversies in public finance on which it might be useful to comment:

Should state collected tax revenues which are being distributed back to the local government be returned to where the money is collected—the point of origin—or be sent to the local area with the most need or the least ability to raise additional tax revenues? Specialists in public finance tend to agree that need is a better reason for distributing tax revenues than point of origin.

Should local government collect its own revenue (e.g. through the property tax) rather than shift the tax collection burden to the State? To minimize the leverage firms have on small units of government in extracting tax concessions it is desirable for the State to impose uniform taxes across counties. Wisconsin is now shifting the appraisal of business property to the state level rather than the local level because of the leverage and because it has a more qualified staff of appraisers.

Should the severance tax be used to force companies to cover all of their social costs of extracting the resources from the ground, in-

cluding the provision of governmental services required by its labor force, the cost of returning the land to a reasonable condition after the stripping has been completed and the paying for the cost of retraining the labor force for new kinds of employment or providing early retirement after the resources have been depleted? Theoretically all firms should pay the full costs of production both social and private. If not forced to pay full social costs, then all firms should be treated equally. It often appears that the extractive firms are not covering all of their social costs so higher severance taxes would seem desirable to offset the higher social costs.

Should the State-local tax burden be exported to the nation as a whole? From an equity point of view it may be desirable to prevent tax exporting by state-local governments since all state-local governments cannot share equally in tax exporting. From a political point of view, however, it is desirable to export the tax burden because an unknown burden from other states is already being paid by your constituents; thus most legislators consider a severance tax a desirable tax instrument unless the extracting companies have unusual amounts of economic power and can influence the legislative process. (ACIR)

Question 5(a). Some Governors have called for a "National Price Equalization Policy" to eliminate disparities in the price of gasoline between states and regions. Would a national price equalization policy discriminate against nonmetro areas that are located close to energy and fuel supplies—particularly natural gas and coal—offsetting any economic advantages these regions might otherwise employ by using their natural resources to promote economic development?

Answer. There is no need to establish a price equalization policy for fossil fuels (petroleum and coal). Free market forces will serve as the best allocator of energy sources. Some price disparity will continue to exist to cover differences in cost of transportation and distribution. A price equalization policy will, in time, do more harm than good because of its complexity and the likelihood of creating price disparities that will discourage the development of energy resources. (FEA)

Answer. The question of discrimination against energy producing areas arising from a national price equalization policy is answered differently depending upon one's view of the role of energy in the Nation's economy. If, on the one hand, one believes that energy producing areas should enjoy an economic advantage resulting from their proximity to fuel supplies, particularly natural gas and coal, while other areas (and in the case of the United States, largely urban areas) are left to fare for themselves in the fuels market, then one would probably object to a national fuels allocation policy on the basis of discrimination against fuel-producing areas. On the other hand, if one believes all of the Nation's resources belong to all its people, and that all areas of the Nation and sectors of the economy should have adequate fuel supplies at reasonable prices, then one would likely hold that uniform fuel prices, and for that fact, allocation of fuels among alternative uses, is the most equitable course to follow. (FPC)

B. ENERGY DEVELOPMENT AND RURAL DEVELOPMENT

Question 1(a). One senator has been quoted as saying that the absence of adequate production incentives for the energy industry is the

major problem in the current energy shortage. Can energy production incentives be combined into a national energy strategy that also provides incentives for rural development?

Answer. When considering the promotion of energy production incentives to be developed into a national energy strategy, all areas, urban, suburban and rural must be included. In speaking of a *national* policy it means just that, a policy that will be responsible for the entire nation including all areas. The Federal Energy Administration together with the Administration and other government agencies is currently working on Project Independence Blueprint which in essence is a program that is oriented in the direction of the United States becoming totally independent for energy resources. Its main objectives are to (1) estimate future supply and demand levels, (2) review the environmental and economic impacts, (3) establish options to increase supply. Participants in this project are developing recommendations and justification of these recommendations to devise an effective national policy. However, before concrete incentives can be established, there are three major uncertainties that need appropriate attention and clarification. They are: (1) freedom from controls on prices, (oil derivatives, natural gas at the wellhead), (2) anti-trust action on the part of the government, (3) tax provisions available.

At this point other issues that could arise such as government participation import policies (quotas and duties) and domestic development are secondary to the three issues mentioned above. Nevertheless, a national policy is in the making and all domains of the country, whether rural, urban or suburban will be given equal attention. (FEA)

Answer. Rural development incentives and policy are not within the FPC's area of expertise. However, it would seem reasonable to suppose that energy production and rural development incentives could be combined in a national energy strategy, perhaps by way of an investment tax credit for the energy industry. An example of this would be the subsidizing of the cost of and/or aiding in the actual construction of new communities adjacent to future coal gasification projects in the West by the project's sponsors. A portion of the cost of this rural development would be recouped by the gasification company by a write-off against federal income tax owed. Another possibility would be in the case of oil and natural gas companies whose expected future excess profits could be utilized for rural development near production areas either by expenditures of the companies to lower their tax liability or by a plowback to the areas of funds received by the federal government in the way of excess profits tax. (FPC)

Answer. Because much of the domestic coal reserves in the east are in the Appalachian region, a stable long-term expansion of coal production could provide incentives for the development of the economy of the rural region. This is also true of western coal. Other development of energy resources could be directed to a greater or lesser extent to provide incentives for rural development. (DOI)

Question 2(a). Some rural development advocates have suggested that the President's goal of energy self-sufficiency will provide an opportunity to promote non-farm economic development in rural and nonmetro areas. Most raw energy sources—coal, natural gas, crude oil, shale, geothermal—are located in rural areas. Is the Federal Govern-

ment—and particularly the FEO planning to provide incentives to encourage the production, conversion or refining, and consumption of energy resources in rural areas?

Answer: As much of the Nation's raw energy sources are located in rural areas, it is inevitable that the development of these resources will be encouraged. Consequently, with the encouragement of these sources the geographic areas will benefit. In terms of creating incentives in these areas there are several means by which this can be accomplished. To increase the rate of leasing for on and off shore mineral lands, owned by the Federal Government would be one possible option. In regard to the refining of these resources, by encouraging the construction of new refining sites and offering certain investment tax credit, a definite interest for involvement in these areas would be created. Promotion of solar heating and windmills is another incentive that will be given particular emphasis in rural areas. (FEA)

Question 2(b). The Administration is reportedly considering spending up to \$100 billion in a crash program to develop synthetic fuels. How could such a program be administered to help achieve national rural development objectives?

Answer. In line with the FEA charter which directs us to explore all states, we are considering a number of alternatives for development of a synthetic fuel industry and other energy resources. At this time, however, no specific dollar amount has been decided upon and even the extent of Federal government participation remains to be resolved.

It is premature at this point to determine accurately how these proposed programs will be administered to help achieve national rural development objectives. We are actively encouraging the locating of new energy projects in rural areas; i.e., oil shale refineries, and liquefaction. (FEA)

Answer. The objectives of the Rural Development Act of 1972 include those of improving the economy and living conditions in rural America. If a crash program is implemented to develop synthetic fuels, measures should be taken to insure that rural areas receive a proportionate share of the benefits associated with the program. Since the production of a large part of present energy (i.e. coal, oil, etc.), occurs in rural areas, a program should take into account the impact of such production on housing, employment, environmental and other concerns of rural areas.

In developing specific programs for rural areas and in coordinating other research and development efforts, an effort should be made to insure that rural areas receive their share of the benefits. Consistent with the provisions of Section 603 (b) of the Rural Development Act of 1972, special emphasis could be placed on the location of Federal offices and installations in rural areas. (RDS/USDA)

Question 2(c). In 1968 the ACIR suggested a strategy for developing new towns in nonmetro areas based on energy production. Has such a strategy received any further consideration at the federal level?

Answer. ACIR reports that their suggestions concerning the development of new towns in nonmetro areas were not specifically tied to energy production activities and that they are unaware of consideration of such a strategy within the Federal Government.

Question 3(a). Some states (Kentucky, Illinois, Oklahoma, West Virginia, and Indiana) are developing plans for research projects on coal gasification, liquefaction and other new energy sources and hope to secure funds and cooperation from the federal government and private industry in these endeavors. Has the FEA considered the feasibility of supporting state energy R&D programs?

Answer. The feasibility of the Federal Energy Administration supporting state Energy Research and Development programs has been considered. However, this responsibility was purposely not given to the Administrator in the Federal Energy Administration Act of 1974.

This function which would have required the Administration to expedite the development of energy resources, was not extended to the FEA to emphasize that the Administration's primary concern should be to alleviate immediate energy problems and administer conservation measures.

The FEA is expected to promote the increased utilization of known energy resources through application of currently available technologies. The FEA seeks to put sound long-range policies into place but must also concentrate on short-term needs. (FEA)

Question 3(b). Can energy producing states and areas utilize their energy resources to promote rural development through energy related employment such as R&D facilities, conversion facilities and by attracting energy intensive industries to these areas?

Answer. There is no question whether energy producing states and areas *can* utilize their energy resources to promote rural development through energy related employment such as R&D facilities, conversion facilities and by attracting energy intensive industries to these areas. But, there are questions whether this should be encouraged and if so, how? Thus, it is beneficial that research projects are being initiated in these states, and elsewhere, because we do not know the answers to many of the questions being raised. We need to know more about the occupational requirements for jobs in these facilities and about factors affecting the location of energy intensive industries and other industries that might use products and services that are produced in the conversion process. However, we do have some partial answers.

It would seem that if a state were to sponsor research on a particular natural resource or study its utilization it would make sense to encourage location of relevant R&D facilities proximate to the resource location. But, we know that R&D facilities employ very highly trained personnel and as a consequence usually locate in areas that have access to other trained personnel as well as to amenities in order to compete for brainpower with other institutions which are located in desirable places. Thus, R&D facilities often require a combination of a nice environment, proximity to a fair sized town or city, and closeness to an institution of higher learning.

Unfortunately, many areas such as the Great Plains are resource rich but are vastly underurbanized when compared with the country as a whole. What many of these areas lack is an urban structure (e.g., an SMSA of a quarter million residents). (ERS/USDA)

Question 3(c). Could such a federal-state strategy promote rural development by dispersing energy conversion facilities and energy intensive industries to nonmetro areas?

Answer. Conversion facilities would definitely provide jobs and through the multiplier contribute to rural growth in income and employment if they were so located. Most of the economic impact would occur in local communities where the plants are to be located or where employees reside. A smaller fraction of the impact would be distributed to the adjoining trade and service centers which will provide some goods and services to the local residents. Similarly, locating energy intensive industries in the area will also contribute to local income and employment.

The increases in employment will need to be traded-off against adverse environmental and social impacts that are likely. (ERS/USDA)

Question 4(a). One state has proposed that a federal fund be established to help finance planning and the provision of public facilities in rural communities where new energy production is expected to bring an influx of new people and supporting industries (i.e., oil shale development in Colorado, Wyoming and Utah). Should the federal government assist states and communities in planning for and supporting new energy related development in sparsely populated areas?

Answer. Since national policy will affect the rate and location of development, it must recognize the strain it imposes on local governments and their revenues. Localities and states will be forced to use their taxing and other powers to provide infrastructure and services where development is fostered and to provide ameliorative programs where adverse effects are felt. There are also opportunities for states and localities to influence the location of economic activity through positive incentives or restrictive policies. The functional and geographic focus of research and development provides an example of these impacts. The processes stimulated are not generally usable, but are specific in terms of feasible inputs and locations. As these affect inter-area energy prices and availability, they affect the location of activity. (ARC)

Answer. Many of the areas that might be affected in the production of new energy sources such as the oil shale development in Colorado, Wyoming and Utah, are states with low population density. Planning is especially important since towns will be expanding and new communities will be formed. Good planning will add to growth of the economy and will assist in the incorporation of those features which make places good communities for families as well as workers. An influx of new population and supporting industries to these areas could strain existing facilities and services. The Federal Government could assist these states in planning for this new development. (RDS/USDA)

Question 4(b). Are existing federal programs such as the Rural Development Act and the EDA program adequate to assist state and local government cope with new energy related growth?

Answer. Present programs such as the Economic Development Act and the Rural Development Act can provide support to assist state and local governments cope with energy related growth. The Rural Development Act of 1972 provides for community facility loans, business and industrial loans and grants to public bodies to help develop business enterprises. The Rural Development Act of 1972 also pro-

vides for coordination of Federal programs to improve the responsiveness of national programs to needs of rural people.

The programs of the Economic Development Administration are also available for planning and technical assistance to rural areas. These include the regular programs of the Administration and the Public Works Impact Program. (RDS/USDA)

Question 5(a). Should the federal government require states and regions of the country to absorb their fair share of bulk energy sites (refineries, atomic power plants, deep water ports, power plants and hydroelectric projects) ?

Answer. It takes approximately 5 years from conception for a refinery to become fully operative. Atomic power plants take approximately 8 years. A hydroelectric plant may take 5 years. The last refinery to be constructed in this country was begun in 1968. Since demand for energy has been rising with increase in population, it is clear that there is an immediate need for new energy sites, especially refineries.

Obviously it is not feasible to locate refineries far from the energy source or from population centers. But, those areas of the country in which a site is geographically feasible must be willing to permit construction of bulk energy plants if our Nation's energy needs are to be met.

The Federal Energy Administration is also working on comprehensive land use programs to better plan for bulk energy sites. (FEA)

Question 5(b). If such a federal policy were adopted could well planned energy siting help attain development objectives in nonmetro and rural areas?

Answer. Well planned energy siting can expand the local job market and contribute to other development objectives in nonmetro and rural areas. At the same time federal initiative may help the states to solve some siting problems because of their technological nature or because they are beyond the scope of state authority. But, to propose that the federal government require states and regions of the country to absorb their "fair" share of bulk energy sites is not tenable. If such a proposal were allowed to become law, all it would do is institutionalize short-term or *ad hoc* responses to the present energy crisis. Such a policy may be advantageous to the resource developer but it may lead to rural exploitation, contravention of local zoning (which is more representative of the communities desires), and narrowing of local options. Communities may be forced to accept projects they do not desire or cannot use, especially, when decisions are to be made by residents of metropolitan areas ten states away.

There is a growing concern in various states with land-use planning and environmental degradation with respect to siting in the power generating industry.¹ This reflects a shift in priorities both within the public sector and in the communities at large. Until recently our national resource policy implicitly assumed that rapid industrial growth and economic development were desirable *per se*. Legislation and laws were framed to allow maximum freedom and flexibility to entrepre-

¹ See: Judith A. Best, *Recent State Initiatives on Power Plant Siting: A Report and Comment*, (sponsored by the National Science Foundation—Research Applied to National Needs), Paper No. 72-3, Feb. 1972.

neurs and developers of our national resources. The regulatory agencies and the companies they regulated had a mandate to provide and assure cheap, reliable power. If there were objections, the burden of persuasion fell on those who objected to show cause why the law should intervene. These days, there appears to be a different trend.

The emerging state initiatives regarding power plant siting show that there is a growing awareness that the protection and preservation of natural resources should be considered as well as the timely development and utilization of the plant. In trying to protect local residents from environmental degradation there is an attempt to force industry to justify its proposed action and to demonstrate that it will not irrevocably disturb the natural environment. Thus, a number of states are taking the initiative to resolve conflicts over the location, construction, and operation of energy providing industry. These initiatives have led to such measures as: formal certification, consolidation of the certification process, mandatory consultation with or participation of the environmental factors, public notice and opportunity for public hearings, and governmental review of long-range plans.

These measures not only expedite certification, but what is more important they keep public options open, especially at the local level. They allow the review of proposals by officials who are accountable to the public and at a time when options are still open, *i.e.*, before substantial commitments of resources are made. Furthermore, by encouraging long-term planning by industry and in the local sector decision-making under a crisis atmosphere is diminished. (ERS/USDA)

Question 6(a). EDA has provided the state of North Dakota with a grant to determine the feasibility of intensive lignite development in North Dakota as an alternative energy source. The state will consider the impact of establishing lignite gasification plants and electric power generating facilities in the state—which is predominantly rural. Would such a strategy, if feasible, provide jobs and attract industry and people to rural North Dakota and could this strategy be applied to other nonmetro areas?

Answer. The objectives of the lignite development project are to expand employment opportunities in western North Dakota through the development of lignite resources and to ensure that this development takes place in a manner such that adverse effects on agriculture, tourism, and the environment are minimized.

There is no question whether a coal mining—processing complex could have a substantial impact upon an area experiencing reduced employment opportunities and loss of population. The development of coal resources and the proposed siting of coal gasification plants, steam electric generating plants, and even uranium enrichment plants may lead to a vast expansion in local business activity and employment opportunities in a relatively undeveloped area. This will not only attract commuters from other regions of the state but cause substantial population growth in the communities located near the coal development.

The development, however, will not come about without strains and obstacles. Bringing coal and its products to the market will require additional investment in rail and pipeline (slurry and gas) transport. There will be limitations in skilled manpower and probably in essential materials used in mining, production, and construction. And, it

will create increased needs for public and private services. It will put strains on housing needs and on public utilities serving the area. But, what may be more important are the unresolved issues of water availability and reclamation.

One issue is how a major lignite development project, with its vast water requirements, will affect the agricultural and tourist industry. Large amounts of water will have to be transferred between basins. Shifts in water use are likely to compete with agricultural and recreational use and might impact unfavorably on downstream users. Little would be gained if existing jobs in agriculture and tourism were sacrificed for new jobs in gasification plants.

Another issue concerns reclamation. The quickest and most economical way to get Western coal out is by surface mining. But, surface mining disturbs the land surface, ground water, and other physical land features. Limited bottom lands may be stripped and in an area where climate and soil conditions render much of the land environmentally fragile, mining may limit the use of land for farming and grazing even after extensive reclamation (which may be a relatively slow process).

Thus, there is a distinct possibility that water availability may preclude or place serious limitations on developing the natural resources of the West. Moreover, surface mining probably will not be permitted until the public is convinced that land in the arid regions of the West can be restored.

Given these concerns, it is beneficial that state and other public bodies are concerned with the orderly development of natural resources so that adverse impacts on agriculture, tourism, and the environment are minimized.

A strategy of promoting *orderly* resource development could be applied in other nonmetropolitan areas for they all face similar problems—reduced employment opportunities and loss of population. There are vast quantities of coal available for economic stripping in the northern half of the Appalachian Basin and in the Illinois Basin. In these regions, land can be reclaimed for agriculture if companies are willing or required to do so. Another case is oil shale. Rich deposits lie in eastern Utah, southern Wyoming, and northwestern Colorado. (ERS/USDA)

Question 6(b). Would these new generating facilities be required to share power with other regions, or could the new energy sources be used on a regional basis to spur economic development?

Answer. The existing and new lignite generating facilities financed by REA in North Dakota are used to supply the power and energy deficiency of certain REA financed systems in rural areas in the states of North Dakota, South Dakota, Iowa, Minnesota, Nebraska, Colorado, and Wyoming. To limit the use of such facilities to a particular region would limit the optimum utilization of resources and result in much higher energy costs.

Such facilities aid economic development initially through increased employment in the construction and operation of the facilities and in mining. In addition, construction of high energy use plants near large generating units would offer industry advantages of better reliability and lower costs for energy. (REA/USDA)

Question 6(c). EDA has provided the state of North Dakota with a grant to determine the feasibility of intensive lignite development in North Dakota as an alternate energy source. The state will consider the impact of establishing lignite gasification plants and electric power generating facilities in the state which is predominantly rural. Has FEA provided inputs to EDA and North Dakota on this project?

Answer. FEA has had no direct input into the study or grant of such a project. With the emphasis on energy research and development, we are always encouraging and supporting any potential energy development projects. We do intend to provide input into and support of this impending project. (FEA)

Question 6(d). Are any similar projects being undertaken in other states?

Answer. A number of similar projects are being undertaken in other states and regions both by the Federal Government and the States.

The Department of Agriculture, Department of the Interior, and the Environmental Protection Agency are conducting the Northern Great Plains Resources Program (NGPRP) to study different aspects of potential coalfield development, including regional geology, mineral resource, water, atmospheric aspects, surface resources, and socio-economic and cultural systems. The objective is to provide an analytical and informational framework for policy and planning decisions of federal, state, and local interests who together must plan and manage the area's land and natural resources.

The United States Forest Service in cooperation with several other USDA agencies is undertaking a project related to Surface Mining and the Environment (SEAM). This project was created to study the environmental and engineering problems related to land reclamation from surface mining. Initially the program will be concentrated in several demonstration areas located in the West. In these areas new techniques in preliminary design of mining operations, new methods of rehabilitation, new mining technologies, and environmental stewardship criteria will be simultaneously evaluated and displayed. This project will include analysis of the developmental implications of coal and oil shale production in the Northern Great Plains.

The Department of Interior and the Forest Service are also cooperating on a detailed multiresource analysis of the Decker-Birney Region of southeastern Montana.

The United States Bureau of Land Management Energy Materials Allocation Recommendation System (EMARS) is designed to develop criteria for leasing Federal coal compatible with national social, environmental, and energy needs.

Another example, is the study Coal-Energy Development in the Northern Great Plains sponsored by the Office of Water Resources Research, U.S. Department of the Interior and the states of Wyoming, Montana, and North Dakota. This was undertaken to delineate research needs and priorities for the region, to inventory current research and information systems, to assess the potential contribution of each, and finally to assess the capacity of the region's scientific resources to provide needed data analysis and evaluation.

There are many other R&D projects both proposed and underway. The Montana University System coal development research proposal, the Old West Regional Commission research proposals, and so on.

The importance of these proposals can be judged by the increased funding from various State and Federal agencies. (ERS/USDA)

Question 7(a). The Federal government is currently leasing public land for geothermal power generation. What are the prospects and feasibility of small nonmetro communities receiving energy supplies for their public utilities from geothermal sources, from solar experiments, and other exotic energy sources?

Answer. At this time California is the only state where geothermal development is taking place. It is highly unfeasible to transport geothermal steam; however, after the steam has been converted to electrical power, transmission lines could be built to transport this energy to nonmetro communities. This is a prospective course of action.

Solar and exotic energy sources are very practical and have tremendous potential. However, at this time, these types of energy are not feasible within present day technology. There are several bills (S. 2819—S. 3234) currently in Congress and other projects proposed for technological development in the solar and other energy fields. (FEA)

Answer. Geothermal energy today provides about 0.1 percent of the Nation's electric power supply. With the most optimistic assumptions of its development in favorable locations, it is unlikely that it will be more than a few percent of the electricity supply by the end of the century, based on our present technical knowledge. Therefore, over the next few decades, geothermal energy must be considered as a useful local supplement in favorable areas, but not as a significant addition to the total energy supply.

Where small communities are adjacent to favorable geothermal regions, as in northern California or the Salton Sea area, it will be feasible for them to use geothermal energy as a major source, but this will not be true of the nation as a whole.

There is a general consensus that the best immediate near-term use of solar energy will be in its better use and control for building heating and cooling. Such improvements can be effected in communities of all sizes.

Generation of electricity from solar energy is not now economic. In all probability, large-scale installations will be required to achieve economic parity, and these would be likely to exceed the needs of individual small communities. However, it is conceivable that the solar energy R&D program could develop modular solar generating units suitable for rural communities. Windmill generators, of course, represent a form of solar energy utilization and they are technically feasible, but not now economic, for small communities.

Other exotic energy forms, such as fusion power, almost certainly will require large generating units to be economic. Since geothermal energy of all of these exotic types can be of significance in some localized areas, its status is reviewed in more detail below.

Feasibility

There are four major types of geothermal energy systems: (1) dry steam, (2) wet steam, (3) hot dry-rock and (4) geopressured brine.

(1) Dry steam reservoirs produce superheated steam with only minor amounts of other gases and virtually no water. Unfortunately, they are very rare; only three commercially dry steam resource areas have been found in the world and only one of these exists in the

United States. Pacific Gas and Electric Company presently has 500 megawatts (MW) of electric power generating capacity on steam at the Geysers, north of San Francisco; 1,000 MW are planned for 1980. The technology exists for exploiting dry steam fields if they can be found. The original turbines at the Geysers were designed at 55 MW; the turbines scheduled for installation in 1974 and later are about 110 MW.

(2) Wet steam reservoirs produce hot water or hot brine. These are potentially exploitable for generating electric power if brine emerges at 500° F. or higher. The hot brine is fed into intermediate pressure tanks where part of it flashes into steam. Wet steam reservoirs are much more numerous than dry steam fields but technology does not now exist which allows exploitation of this energy source. The high salinity of the hot brine causes severe corrosion in operating equipment and disposal of the cooled brine in an environmentally acceptable way is difficult. San Diego Gas and Electric Company, in cooperation with Magma Power Company, is constructing a 25 MW pilot plant in the Imperial Valley of California. If the pilot plant operates successfully, a 50 MW power plant could be under construction by 1978. The National Science Foundation is also presently supporting research on this problem.

(3) Hot dry rock systems represent a third potential source of geothermal energy. These are "hot spots" of impermeable rock of low porosity near the earth's surface and are numerous throughout the 11 Western contiguous states and Alaska. To exploit this energy, one must drill a hole and create a permeable fracture system in the rock, inject water into the voids and cracks in the rock, and return the heated water to the surface through a second drilled hole. Cooling one cubic mile of hot rock by 360° F. would yield an equivalent of one week's energy consumption in the United States. No hot dry rock geothermal system is now producing electric power. The National Science Foundation is supporting drilling research at Marysville, Montana, near Helena.

(4) Geopressured brine systems, hot water deposits up to 380° F., exist in zones trapped by impermeable beds of deep sedimentary basins at depths greater than 2.5 miles. While it is known that such zones exist, little else is known; the extent of the zones is a subject of much speculation. Of prime concern is the capability of any given reservoir to supply a sustained source of steam or hot water long enough to warrant construction of a power plant.

Prospects

The paragraphs above indicate that dry steam reservoirs can be exploited to reproduce power now, if the reservoirs can be found. They indicate also that more numerous wet steam reservoirs probably will be exploitable by 1980 but that hot dry rock and geopressured brine systems are only experimental at the present time.

The main barrier to development of the limited known geothermal resources, according to testimony given before the Senate Interior Subcommittee on Water and Power Resources in 1973, is the lack of development of specific geothermal reservoirs. Much of the exploitable reserves lie under Federal land. Even though the major intent of the Geothermal Steam Act of 1970 (P.L. 91-581, 84 Stat. 1566, 30 U.S.C. 1001-1025) was the prompt and orderly development of geothermal resources on public lands, the leasing program had not been imple-

mented by the Department of the Interior by early 1974. Note also that most of the outstanding visible displays of geothermal fields have been incorporated into national parks; no development of geothermal resources may take place in these parks (30 U.S.C. 1014(c)).

Even though sources of dry steam are not extensive and exploitation of hot dry rock and geopressured brines is many years away, there are prospects that some small non-metro communities in the western 11 contiguous states and Alaska will receive energy supplies for their public utilities from wet steam sources by 1985. Development of small (10 to 25 MW) power plants based on wet steam resources appears to be the most probable technical approach. However, they will be integrated with the existing electric power supply network and, except where the geothermal source is near a small community, it may not be feasible for a community to develop a geothermal source for its own exclusive use. At the present time, there is an average of about 2 kilowatts of generating capacity per person nationwide. At this average, a 10 MW installation could serve a city of 5,000 people while a 25 MW installation could serve 12,500 people. (FPC)

Answer. At present, the technology to make energy available to small communities from geothermal sources, solar experiments and other exotic energy sources at low costs is not available. Where such potential sources exist, they need to be integrated with other systems for reliability and continuing service and for additional capacity needs for load growth. Isolated operation of these exotic sources could result in higher cost and poor service reliability.

The potential for the utilization of "exotic" energy sources will depend upon the pace of technical advances. It is anticipated that, with the exception of isolated cases, it will be necessary for the small communities to participate with the larger communities as is presently taking place with respect to nuclear energy. (REA/USDA)

Answer. The prospects of some small nonmetro communities receiving energy supplies for their public utilities from geothermal energy appear to be fairly good. The pressure of steam obtainable from hydrothermal geothermal reservoirs is very low. Because of this, the capacity of geothermal plants will be rather small. For example, the capacities of individual turbogenerator units at The Geysers, the only commercial geothermal power generating facility in the U.S., range from 11,000 to 55,000 kilowatts.

The total electrical output from a geothermal installation generally is expected to be comparatively small. Because of the power transmission costs that would be associated with many potential geothermal installations, utilizing the power in communities near such installations may be more economic than moving the power to large load centers. Also, power shipped over an appreciable distance into an area where the load is small usually will have high transmission costs, and might be more expensive than geothermal power produced in the area. Hence, competitive geothermal power in favorably situated small nonmetro communities appears promising.

Solar energy is not expected to be used for generating electric power by public utilities before 1990. However, the outlook, based on experiments in progress, for some homes and buildings having their own individual solar installations to provide heat and power at an earlier date appears more promising.

There does not appear to be any likelihood of other "exotic" energy sources being used by public utilities in the foreseeable future. (DOI)

APPENDIX

ASSIGNMENT OF QUESTIONS AND RESPONSES RECEIVED BY AGENCY

[X-response received; 0-response invited but not received]

Question	Agency ¹											
	ERS	REA	RDS	ASCS	ARC	EDA	FEA	DOL	DOI	DOT	FPC	ACIR
I. A. Economic and social consequences:												
1. (a)	X				0	X		X				
(b)					0	0		X				
(c)	X				0	0		X				
2. (a)			X			0						
3. (a)							X					
4. (a)							X	X				
(b)								X				
5. (a)				X			X					
(b)	X											
6. (a)	X											
(b)	X											
7. (a)							X		X			
(b)							X		X			
II. B. Federal allocation program:												
1. (a)	X			X			X					
(b)				X			X					
(c)				X			X					
(d)				X			X					
(e)				X			X					
(f)							X					
2. (a)	X									X		
(b)							X					
3. (a)				X			X					
4. (a)							X					
(b)							X					
5. (a)							X					
6. (a)							X		X		X	
(b)							X		X			
7. (a)							X					
C. Transportation:												
1. (a)										X		X
(b)										X		
(c)										X		
(d)										X		
(e)										X		
2. (a)							X				X	
3. (a)										X		
(b)									X		X	
(c)		X									X	
4. (a)							X					
D. Institutional roles:												
1. (a)		X			X							
(b)					X	0	X					
2. (a)							X					X
(b)							X					

ASSIGNMENT OF QUESTIONS AND RESPONSES RECEIVED BY AGENCY—Continued

Question	Agency ¹											
	ERS	REA	RDS	ASCS	ARC	EDA	FEA	DOL	DOI	DOT	FPC	ACIR
II. A. Economic development:												
1. (a)-----	X				X	0						
2. (a)-----			X		X	0	X					0
(b)-----					X	0	X					0
(c)-----			X		X	0	X					0
3. (a)-----							X		X		X	
(b)-----						0	X		X	X	X	
(c)-----							X		X		X	
4. (a)-----												X
5. (a)-----						0	X				X	
B. Energy development and rural development:												
1. (a)-----						0	X		X		X	
2. (a)-----							X					
(b)-----			X		0		X					
(c)-----												X
3. (a)-----							X					
(b)-----	X				0	0						
(c)-----	X					0						
4. (a)-----			X		X							
(b)-----			X			0						
5. (a)-----							X					
(b)-----	X											
6. (a)-----	X					0						
(b)-----		X									0	
(c)-----						0	X					
(d)-----	X					0			X			
7. (a)-----		X					X		X		X	
Total re-sponses/	13	4	7	7	7	1	38	5	10	9	9	4

¹ ERS—Economic Research Service, Department of Agriculture. REA—Rural Electrification Administration, Department of Agriculture. RDS—Rural Development Service, Department of Agriculture. ASCS—Agricultural Stabilization and Conservation Service, Department of Agriculture. ARC—Appalachian Regional Commission. EDA—Economic Development Administration, Department of Commerce. FEA—Federal Energy Administration. DOL—Department of Labor. DOI—Department of Interior. DOT—Department of Transportation. FPC—Federal Power Commission. ACIR—Advisory Commission on Intergovernmental Relations.