REPORT BY THE

Comptroller General

OF THE UNITED STATES

Improved Energy Contingency Planning Is Needed To Manage Future Energy Shortages More Effectively

Energy shortages have been occurring with increasing frequency. Responsible Federal agencies have not been prepared to implement emergency measures in a timely manner. Fortunately, the efforts of energy suppliers and consumers have minimized most adverse economic effects.

Responsible Federal and State energy agency officials made their first concerted effort to establish contingency plans for possible fuel shortages during the 1977-78 winter. Still, the coal strike and related electric power shortages required that actions be taken that were not planned for, but the coordinated efforts of Government and industry were successful in minimizing the economic impact.

Lessons learned from this experience need to be applied to present and future energy contingency planning efforts to improve their effectiveness.

EMD-78-106
OCTOBER 10, 1978

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-178205

The Honorable John D. Dingell
Chairman, Subcommittee on Energy
and Power
Committee on Interstate and
Foreign Commerce
House of Representatives

Dear Mr. Chairman:

As requested in your April 4, 1978, letter this report discusses Federal, State, and industry efforts in preparing for and coping with energy emergencies. It also addresses the development and accuracy of the unemployment estimate announced by the Department of Energy during the 1977-78 coal strike.

At your request, we did not obtain the written views of any Federal agency on this report. The matters covered in the report, however, were discussed with DOE officials, and their comments are incorporated where appropriate.

This report contains recommendations to the Secretary of Energy and the Chairman of the Federal Energy Regulatory Commission on pages 21, 34, 42, and 52. As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations to the House Committee on Government Operations and the Senate Committee on Governmental Affairs not later than 60 days after the date of the report. This written statement must also be submitted to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report. As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the date of the report. At that time we will send copies to interested parties and make copies available to others upon request.

Sincerely yours,

Comptroller General
of the United States

COMPTROLLER GENERAL'S
REPORT TO THE CHAIRMAN,
SUBCOMMITTEE ON ENERGY
AND POWER
COMMITTEE ON INTERSTATE AND
FOREIGN COMMERCE

IMPROVED ENERGY CONTINGENCY PLANNING IS NEEDED TO MANAGE FUTURE ENERGY SHORTAGES MORE EFFECTIVELY

D I G E S T

The natural gas shortage during the 1976-77 winter and the threat of a lengthy coal strike during the 1977-78 winter focused the attention of the Administration on the need to prepare a contingency plan of action to better respond to potential energy shortages. The Federal planning effort resulted in an Energy Emergency Planning Guide, prepared by the Department of Energy and issued to Government and State officials in November 1977.

CONCLUSONS

State energy offices and the electric utility industry were adequately prepared to respond to energy shortages with a minimum of Federal involvement. Still, there is a need to develop a regional, rather than a State, perspective in managing future energy emergencies because of the interstate aspects of the energy industries. This means that:

--State and industry capabilities should be recognized more fully by Federal planners in formulating future energy contingency plans.

--Federal assistance should be provided wherever needed to improve State and industry planning and implementing capabilities.

--An aggressive regional planning effort that coordinates the activities of States and the energy industries serving the area should be encouraged by Federal planners.

The industrial/commercial sector has enough operational flexibility to adjust to energy shortages effectively and to minimize the impact on the labor force. This capability should be recognized by the Federal sector in

developing economic impact forecasts to assure more realistic estimates, particularly those relating to unemployment.

The Planning Guide was a reasonable first step in energy emergency planning, serving as a reference list of proposed Federal/State actions in the event of energy shortages. However, the Planning Guide

--contained too many general proposals and insufficient implementation details to be of full use by officials,

--reflected a lack of inter-action between the Energy Department's planning staff and energy specialists within and outside the Department,

--included proposed measures which seemed unrealistic,

--proposed measures that were dependent on future legislation with no alternative measures, and

--relied on actions of other Federal and State agencies but did not assign responsibility for monitoring the timing of decisions to take such actions.

The Department's current contingency planning effort needs to be examined carefully to be sure that:

--Federal actions are proposed only in those areas beyond State and industry control.

--revisions to the 1978-79 Planning Guide recognize the deficiencies noted in the 1977-78 Guide.

--problems experienced during the 1977-78 winter concerning inadequate definitions and methods of computing or assessing energy industries' fuel supplies and the expected results of energy supply curtailments are being adequately considered.

--contractual services are more closely monitored so that the results of such services are both timely and useful.

CONTINGENCY PLANNING GUIDE HAS MINIMUM USEFULNESS

The Energy Emergency Planning Guide was developed by a Department of Energy task force whose seven members were not energy specialists. Suggestions were solicited from Federal, State, and industry officials, but the energy specialists within the Department and in other agencies were not directly involved in developing the Planning Guide. Some emergency measures were included in the Planning Guide that did not seem practicable from an implementation standpoint.

Energy officials neither had nor requested authority to require measures to be implemented. The Planning Guide assigned no monitoring responsibility to be sure that actions were taken.

The Planning Guide was of limited use to State officials, serving principally as an indicator of potential Federal actions under energy shortage conditions. Some of the proposed measures tended to present an overly optimistic assessment of Federal actions that could be taken--they were either dependent on future legislative approval or implementing them would not have been realistic because of possible legal implications.

The Federal task forces established to monitor energy supplies found no use for the Planning Guide.

FEDERAL, STATE, AND INDUSTRY ACTIONS GENERALLY RESPONSIVE TO EMERGENCY NEEDS

The Federal effort to minimize the effects of the coal strike was generally limited to monitoring energy supplies--particularly electricity and coal--and encouraging energy users and suppliers to work together in resolving problems caused by the strike.

Most of this effort was undertaken by the Department of Energy's coal and electric power task forces which were established in February 1978. The task force directors had allocation authority to move electricity and coal, but it was not necessary to take such actions to meet consumers' needs.

The electric power task force closely monitored the supply, demand, and transfers of electricity both in the States directly affected by the coal strike and in surrounding States that had transmission interties. The task force officials did not monitor the cost of power that was being transferred although data was available. The coal task force monitored supplies, deliveries, inventory levels, and transportation facilities. Estimates of utilities' coal supplies were computed, but without standard definitions, the task force supply data did not always agree with State or utility company data. Such inconsistencies raised questions as to the validity of the data.

The task forces provided daily and weekly information on the status of energy supplies and transactions. This information was transmitted to other Department of Energy and Administration officials.

State energy offices and the electric utility industry were generally well prepared for potential coal/electric power shortages. States that expected to be affected by the coal strike began developing contingency plans in the late summer of 1977 for managing these shortages and monitoring fuel supplies. As the coal strike persisted, State officials continued to monitor fuel supplies and also worked with the coal industry and public agencies to supply sufficient quantities of fuel to meet human needs.

Contingency plans for coal shortages usually required specific electric power curtailment actions to be taken by State officials as fuel supplies reached predetermined levels. Except for Indiana, most States were reluctant to impose these emergency

measures. Some States eventually ordered mandatory curtailments but Indiana was the only State that enforced the order.

The electric utility companies had primary responsibility for ensuring adequate power supplies. As a prestrike measure, the utilities increased their normal coal stockpiles by from 50 to 60 percent. Wherever possible, more expensive oil was burned to extend available coal stocks. Large amounts of electric power were purchased from utilities outside the affected region to ensure continued electric service. A number of conservation measures to reduce electricity use were taken by both utility and nonutility industrial/commercial establishments. Changes were made to maintenance schedules, work hours, and operational procedures to minimize energy use and unemployment.

ECONOMIC IMPACT OF ENERGY EMERGENCY

Aside from the unemployed coal miners and related transportation workers, industrial unemployment in the affected States which was directly attributable to the coal strike was relatively small--a reported maximum of 25,500 out of almost 14 million workers during the week of February 26 to March 5, 1978. The low unemployment figures were attributed to adequate supplies of electricity and the increasing availability of coal from mid-February through March.

The Administration, however, projected unemployment levels reaching 3.5 million under "worst" case assumptions of minimum coal deliveries and curtailments of electric power. The Administration continued to use such projections until the strike was settled although information available to it showed continued improvement in coal deliveries, decreasing unemployment, and adequate supplies of electricity. This position was taken because the Administration attached a high probability to strike negotiations collapsing and coal deliveries reverting to their low point of 300,000 tons per week.

The direct dollar cost of the strike fell primarily on the customers of electric utility companies in the affected States. The costs of higher priced oil and purchased electric power incurred by the utilities to ensure adequate power were usually passed directly to consumers through higher electric bills.

Some regulatory commissions limit the amount of fuel and purchased power costs that can be automatically passed on to consumers. In such cases, the costs not passed on would have to be borne by the utilities unless special relief was granted by the commissions.

CONTINUED FEDERAL PLANNING EFFORTS

The Department of Energy is continuing its contingency planning efforts, although little will be accomplished prior to the 1978-79 winter other than revisions to the 1977-78 Planning Guide. The major effort is the development of an Energy Emergency Information System to improve the data needed by Federal and State officials for better contingency planning and more effective operation during energy emergencies.

The Department relied extensively on the use of contractual services to prepare and implement the 1977-78 Planning Guide. Some of the end-products of these contracts were of little use for program implementation during the 1977-78 winter period. This use of contractors is being continued during the current planning effort with a number of different contractors involved in the Department's contingency planning effort. Over $450,000 has been programmed for this effort. An additional $7.5 million dollars over a 3-year period is planned for the Energy Emergency Management Information System.

RECOMMENDATIONS

The Secretary of Energy should develop a Federal interagency energy emergency agreement to designate:

--Actions which can be taken by the various Federal agencies during an energy emergency and who in each agency has the responsibility for each action.

--How task forces within DOE and between DOE and other agencies will be staffed and organized.

--Who on these task forces has authority to require action to be taken, regardless of the Federal agency involved.

--The energy emergency forecasting capability be refined to candidly report current energy impacts and to present a balanced assessment of projected conditions.

--The Economic Regulatory Administration encourage contingency planning among States and energy industries so that emergency managment actions are based on a regional instead of a State approach.

--Public hearings be held on proposed Federal regulations for possible energy allocation during an emergency so that State and industry officials will be aware of when and how the Department will carry out such allocations.

--Contractual services used in the planning process be more closely monitored so their results are both timely and useful.

The Secretary should critically review the Departments' current planning process to make sure that:

--Only those needs that cannot be met by State and industry programs are being considered.

--State needs for Federal assistance are met.

--Sufficient details on Federal programs and assistance are included in the 1978-79 contingency plan to be useful in responding to an emergency.

--Proposed Federal and State actions can realistically be implemented.

--A specific plan of action is provided to respond to an energy emergency.

--Proposed emergency actions involving the energy industries are approved by energy technical specialists.

--Development of the Energy Emergency Management Information System is given top priority within the Energy Information Administration.

The Federal Energy Regulatory Commission should

--establish procedures for monitoring the costs of wholesale power transactions by electric utilities during energy emergencies and

--make sure that electric utilities have appropriate rate schedules on file for energy emergencies.

Contents

ABBREVIATIONS

DOE	Department of Energy
EIA	Energy Information Administration
ERA	Economic Regulatory Administration
FEA	Federal Energy Administration
FERC	Federal Energy Regulatory Commission
GAO	General Accounting Office
WEEP	Winter Energy Emergency Plan

CHAPTER 1

INTRODUCTION

Energy emergencies are no longer a novelty to the U.S. economy, and since the New England power blackout in 1965, they have been recurring with increasing frequency. Major examples of such emergencies are the fuel oil and propane shortages in 1972, the oil embargo and coal strike in 1974, the natural gas shortage during the 1976-77 winter, and the coal strike again in 1977-78 with its attendant impact on electric power generation.

The responsible Federal and State agencies in the past generally have not been prepared to cope with the impact of these energy shortages. They have been forced to respond with "ad hoc" measures which were a poor substitute for carefully prepared contingency plans. The causes of the shortages, however, were usually beyond the control of the implementing Federal agency officials, and the severity of the problems was unexpected.

The need for contingency planning to, as much as possible, alleviate the potential economic impact of energy shortages has been recognized for some time. Fortunately, the energy industries have been able to adapt their normal business operations to meet the conditions imposed by the emergency and with some localized exceptions, the economy has thus far been spared any permanent or long-lasting effects from these energy shortages.

RESPONSIBLE FEDERAL AGENCIES

Prior to October 1977, the Federal Power Commission (FPC) was the agency responsible for ensuring that the Nation had adequate supplies of natural gas and electricity. Under the authority granted by the Federal Power Act (16 U.S.C. 791 et seq.) and the Natural Gas Act (15 U.S.C. 717 et seq.) FPC was actively involved in improving electric utility interconnections following the New England blackout. FPC also ordered and approved natural gas pipeline curtailment plans for interstate companies following the first gas delivery shortfalls in 1971.

Creation of the Federal Energy Administration (FEA) in 1974 (Federal Energy Administration Act of 1974) to broadened Federal control over energy industries and complemented FPC's control over natural gas and electric power utilities. Among other things, it was responsible for regulating petroleum and refined petroleum products such as propane, butane, and

naphtha--supplemental fuels for natural gas users. FEA was also responsible for developing an energy emergency contingency plan for the 1977-78 winter.

On October 1, 1977, the newly organized Department of Energy (DOE) assumed the authorities and functions of FPC and FEA and divided most of them between the Federal Energy Regulatory Commission (FERC) and the Economic Regulatory Administration (ERA). The ERA staff continued the work on contingency planning that had been started under FEA and was responsible for the Energy Emergency Planning Guide: Winter of 1977-78 and for most Federal actions taken during the 1977-78 winter. It is currently responsible for the ongoing planning effort for future contingency actions.

REPORT OBJECTIVES

We were requested to evaluate DOE's contingency planning efforts, including preparation of the Planning Guide, DOE's response to emergency conditions caused by the coal strike during the period December 6, 1977-March 27, 1978, and its current efforts in energy emergency contingency planning. There are few clearly defined transition points in these three areas and considerable overlap exists between past contingency planning, actions taken, and future planning efforts. There were also both unilateral and coordinated actions taking place in all three affected sectors--Federal, State, and industrial. For the purposes of clarity, however, we have addressed each stage of DOE's responsibility in the succeeding chapters.

Chapter 2 of this report discusses and evaluates DOE's contingency planning methodology. Chapter 3 analyzes the implementation of preemergency measures proposed in the Planning Guide. Chapter 4 contains an assessment of Federal, State, and industry effectiveness in responding to the emergency conditions resulting from the coal strike. Chapter 5 covers the economic impact of the emergency. Chapter 6 discusses current DOE, State, and industry actions being taken to plan for future energy emergencies.

PREVIOUS GAO WORK

GAO has issued several reports that address the impact of energy shortages and Federal efforts to assess or alleviate the effects of these shortages. We issued a report on "The Economic and Environmental Impact of Natural Gas Curtailments During the Winter of 1975-76" (RED-76-39, October 31, 1975), pointing out the ability of the economy to cope with natural gas shortages and limit any potentially adverse effects.

In a letter to Chairman John D. Dingell, Subcommittee on Energy and Power, House Committee on Interstate and Foreign Commerce (EMD-77-12, January 13, 1977), we reported on FPC and FEA efforts to assess the economic impact of projected natural gas curtailments during the 1976-77 winter and the lack of contingency planning by those agencies. We also issued a report to the Congress, "Emergency Natural Gas Purchases: Actions Needed to Correct Program Abuses and Consumer Inequities" (EMD-78-10, January 6, 1978), in which we reviewed the actions of the Administration in responding to the natural gas emergency during the 1976-77 winter.

SCOPE OF REVIEW

During our review, we interviewed cognizant officials in the Departments of Energy, Commerce, Justice, and Transportation, the Environmental Protection Agency, the Federal Preparedness Agency, the Council of Economic Advisers, and the Tennessee Valley Authority. We visited energy offices and Public Service Commissions in seven States affected by the coal strike--Wisconsin, Michigan, Ohio, Indiana, Illinois, Kentucky, and West Virginia--and the Allegheny Power System serving western Pennsylvania. We interviewed operating officials at the Pennsylvania-Jersey-Maryland Interconnection, the American Electric Power Service Corporation's central dispatch center, and the Michigan Electric Power Coordination Center. We met with officials of two electric reliability councils--the East Central Area Reliability Coordination Agreement and the Mid-America Interpool Network. In addition to these extensive interviews, we reviewed the Energy Emergency Planning Guide and related planning documents from the Federal agencies, State contingency plans, utility curtailment plans and emergency operating procedures, status reports, reports of meetings, statistical data on fuel supplies and electric power interchanges, energy supply projections, and poststrike assessments of lessons learned.

ACCESS TO DATA PROBLEMS

One of the more significant efforts undertaken by the Administration was the assessment of the potential effects of the coal strike on employment. This effort was started by DOE officials but was later taken over and directed by the Council of Economic Advisers. The unemployment assessment and the use of the estimates produced were of special concern to the Subcommittee. To fully respond to this concern, we requested access to the documentation pertaining to the development of the computer model used to make this impact assessment, including assumptions used, input variables, output data, and any memoranda prepared by the staff evaluating the significance of the output data.

Council officials delayed in providing us this information because of the precedent that might be established regarding access to Presidential documents. Because of this delay, we were not able to obtain the requested information in time to be included in this report; therefore, our discussion of the unemployment estimates published and used by the Administration in March 1978 is limited to interviews and statistical data obtained from other sources.

CHAPTER 2

FORMULATION OF A FEDERAL ENERGY CONTINGENCY PLAN, WINTER OF 1977-78

The adverse economic effects and hardships resulting from natural gas and propane shortages during the 1976-77 winter were aggravated to some extent by the lack of contingency planning by Federal and State agencies prior to the onset of the winter heating season. In an attempt to prevent a repeat occurrence during the 1977-78 winter, an Interagency Task Force for winter energy emergency planning was established in July 1977 to develop a contingency plan to deal with any possible energy shortages.

Most of the effort to develop an energy contingency plan was the responsibility of a small group of officials within DOE, the Winter Energy Emergency Planning Task Force (WEEP). Working informally with various Interagency Task Force members, other Federal agency officials, and a subcommittee of the National Governors' Association, the WEEP Task Force developed an Energy Emergency Planning Guide: Winter of 1977-78 and distributed it to Federal and State agencies in November 1977.

We believe that the Interagency Task Force approach to formulating a contingency plan was appropriate since a number of agencies, other than DOE, have responsibilities and expertise that need to be considered in the planning process. We also believe, however, that the DOE planning staff did not utilize the knowledge and capabilities of other agency officials to the maximum extent. Consequently, measures that were later determined to be impractical were included in the draft sent to Federal, State, and industry officials for comment.

FEDERAL APPROACH TO 1977-78 EMERGENCY CONTINGENCY PLANNING

On June 24, 1977, the Administrator of FEA notified Mr. James R. Schlesinger, Assistant to the President, that FEA was in the process of developing comprehensive emergency plans to deal with possible energy shortages. The Administrator stated that in view of the multiple threats of (1) a very cold winter, (2) a coal strike, and (3) a petroleum supply interruption, he was establishing a Task Force to prepare plans to meet these contingencies. He further stated that he believed the Task Force should be expanded on an interagency basis and suggested that it include participants from

the Departments of Interior, Commerce, Transportation, the Federal Power Commission, and the Federal Preparedness Agency.

On the same date, the Administrator notified FEA's internal management officials of the Task Force organization. In his memorandum, the Administrator pointed out the need to begin early to develop plans that could be implemented in the event of an energy shortage later in the winter. He also emphasized the need for full coordination of the Task Force activities with other Federal and State agencies, and the Congress, and that this activity have top priority.

On July 8, 1977, Mr. Schlesinger issued a memorandum to a number of Executive departments and agencies formally establishing an Interagency Task Force as proposed by the FEA Administrator (with the Environmental Protection Agency added) and approving an FEA Deputy Administrator as Chairman. The need for contingency planning was largely predicated on the belief that the Administration must be ready with a well thought-out blueprint for helping the country through any foreseeable energy emergency. It was proposed that the Task Force would not only develop plans for taking administrative actions but would also prepare initiatives for new emergency legislation that might be needed.

The Interagency Task Force as a whole only met one time--an initial meeting in July 1977. Following that meeting, the WEEP Task Force consisting of seven FEA staff persons was formed. This task force assumed the responsibility for preparing and publishing a final product. The Interagency Task Force members were used by the WEEP staff primarily as a resource to identify agency personnel who were knowledgeable in the various programs being considered for inclusion in the Planning Guide. The Interagency Task Force members also had an opportunity to review a draft of the proposed contingency plan in September 1977 and to submit comments and suggestions to the WEEP group for their consideration in preparing the final report.

The National Governors' Association formed a Subcommittee on Energy Emergency Preparedness to work on energy emergency contingency planning matters. The Subcommittee staff attended WEEP Task Force meetings, provided State input to the Task Force's draft contingency plan, and highlighted State concerns about Federal emergency planning. The planning draft was also reviewed by each member of the Subcommittee when it was released in September.

In late July, the WEEP staff sent a questionnaire to each State energy office soliciting views on contingency

planning and assessing the need for assistance. Prior to being sent to the States these questionnaires were reviewed by the Interagency Task Force membes and the National Governors' Association Subcommittee. State responses were received by mid-August and those which contained sufficient information were used by the WEEP staff in developing the draft contingency plan.

The WEEP Task Force distributed the draft contingency plan for comment on September 19, 1977. In addition to the copies sent to the National Governors' Association for distribution to each State represented on its Energy Emergency Preparedness Subcommittee, the Task Force staff sent copies to all the other States, State and municipal associations, a number of Federal agencies, and members of FEA Advisory Committees. Written comments received by the Task Force staff were evaluated, and where appropriate, were incorporated in the final product.

The WEEP staff used contractual services in developing the final planning document. According to the Director of the WEEP Task Force, the contractor integrated the comments received on the coordination draft, put the material into its final format, and prepared the narrative for the final product. Task Force personnel told us that the contract also provided for typing and clerical support for the WEEP staff. Contract costs for these services were about $71,000. The final product of the WEEP Task Force was a two volume document entitled, Energy Emergency Planning Guide: Winter of 1977-78 which was released in November 1977.

GAO'S ASSESSMENT OF DOE'S CONTINGENCY PLANNING METHODOLOGY

The initial, and only, meeting of the Interagency Task Force was attended by over fifty individuals representing the principals named to the Task Force, the various energy interests of FEA, and other Federal executive agencies. The decision to narrow the large Task Force group down to a manageable working group (WEEP Task Force) was probably the right one to make because in most large task-force projects similar to this one, the responsibility for taking action and preparing a final product must be delegated to a few key individuals. An alternative might have been to appoint Interagency Task Force subgroups and then assign specific parts of the plan to each subgroup. While this might have brought more expertise to bear on each individual energy source, it generally requires more time--a commodity that was not available to the Task Force.

Although we believe the use of a small working group was the most efficient method, we question the absence of recognized energy specialists from other Federal agencies on the WEEP Task Force. The members were selected from five FEA offices (Intergovernmental Relations, Policy, Data, Management, and Regulatory Programs). None of these members had a strong technical background or understanding of the complexities of the natural gas, oil, and electric industries. We recognize that adequate representation needs to be given to these FEA offices, but it is more important that the type of product being developed receive significant input from technical specialists who are more familiar with the details of industry operations.

Our analysis of the September 1977 proposed actions in the draft contingency plan, the written comments received on the draft, and individual contacts with Interagency Task Force members suggests that there was insufficient interaction between WEEP Task Force members and energy specialists in other agencies. If the knowledge of these energy specialists had been better utilized, the proposed measures would probably have been more quickly narrowed down to those (1) that were readily implementable, (2) that would have dealt directly with energy emergencies, and (3) that would be the least disruptive to the economy. This in turn would have limited the time required by the Task Force to study each proposal for validity and would have resulted in fewer written comments that had to be analyzed and incorporated into the final product.

The reorganization that occurred with the establishment of DOE on October 1, 1977, probably detracted from the effort that might otherwise have been expended on the contingency plan. The FEA Administrator assigned top priority to the project when it was initiated, but (1) the departure of key personnel , (2) the reassignment of staff to new positions, (3) planning and reorganization meetings, and (4) contract reviews all conspired to make the planning effort less than top priority.

The use of contract services to assist the Task Force was probably necessitated by the short time frame to complete the work. Because FEA generally used contractual assistance to perform various studies, and this was essentially an FEA effort, the methodology was not unusual, and probably would have been used even if the Task Force had been organized a different way.

An evaluation of the Planning Guide itself can best be made from the perspective of its performance in the pre-emergency and emergency phases of the 1977-78 winter. This evaluation will be provided in chapters 3 and 4 as we describe how the Planning Guide was used by Federal, State, and industry participants to prepare for and cope with energy emergency conditions.

CHAPTER 3

THE ENERGY EMERGENCY PLANNING GUIDE AND PREEMERGENCY PREPAREDNESS ACTIVITIES

The Energy Emergency Planning Guide that resulted from the WEEP Task Force's contingency planning effort was unlike the plan initially envisioned in mid-1977. Rather than a plan with definite programed actions to be taken at certain stages of an emergency, the Planning Guide merely contained suggested actions that could be taken by Federal and State agencies or industry depending on the participant's perception of the severity of the emergency conditions. These proposed actions were general in nature with few specific steps as to how or when they might be implemented.

The Planning Guide proposed that certain measures be enacted at both the Federal and State levels during the preemergency phase to increase the state of readiness for an energy shortage. Some of the measures were undertaken as planned but with varying degrees of success. Other measures to be taken were dependent on congressional approval of the National Energy Act or specific legislative action. When these actions were not completed, the measures could not be implemented.

A number of preemergency measures were taken by State agencies and natural gas and electric utility companies. Although the Planning Guide included suggested actions that the States should take in the preemergency phase, some of the States had been involved in the planning process prior to the development of the Planning Guide and in fact anticipated some of the Planning Guide's suggestions. The contingency efforts of industry officials were nearly all done outside the purview of the Planning Guide proposals. The industry efforts, in particular, were more oriented toward avoiding emergencies than they were to refining plans to cope with the effect of fuel shortages.

THE ENERGY EMERGENCY PLANNING GUIDE: WINTER 1977-78

The final product of the WEEP Task Force was something less than the contingency plan envisioned when the Interagency Task Force was formed in July 1977. Memoranda concerning the contingency planning concept indicate that the objective of the planning process was the development of an energy

emergency plan for major fuel shortages that could be implemented when needed to avoid or alleviate serious economic effects. When the WEEP Task Force compared the magnitude of that task with the amount of time left before the winter began, it was decided that a lesser objective would be more attainable and could still serve a useful purpose should emergency conditions occur.

As a result of that decision, the development of a contingency plan with specific programs to implement the various proposed actions was changed to the development of a Planning Guide. This Planning Guide listed proposed measures that could possibly be taken at the Federal, State, or local level prior to, or in the event of, an energy emergency. The Guide placed these proposed measures in a matrix of four major fuel sources and four phases of emergency severity resulting from shortages in these energy sources. This matrix was to provide the user some idea of the actions that might be taken depending on the severity of the energy shoratage and the type of fuel involved.

FEDERAL PREEMERGENCY PLANNING PROPOSALS

The four-phased approach used by the WEEP Task Force included a preemergency planning period as Phase I. This preemergency phase actually went into effect before the final Planning Guide was issued in November 1977 and was expected to continue in effect until an impending shortage was identified. During this preemergency period contingency measures were to be implemented to increase the state of readiness for an energy shortage. Some of these measures were DOE's responsibility, but others were the responsibility of other Federal agencies and State offices.

The Planning Guide did not assign any tasks to participating agencies and DOE officials lacked the authority to require other agencies to respond. A DOE official said that the only method available to do this would have been to prepare an Executive order and have the President assign these tasks to the agencies.

The Planning Guide suggested the following actions be initiated prior to the onset of any fuel emergency.

1. Establish an Energy Emergency Center by December 1, 1977, and arrange for special facilities and equipment for operating the Center.

2. Prepare and distribute an Energy Emergency Handbook to State and local governments and other groups by December 1977.

3. Conduct five regional workshops for State officials on winter-related, demand-restraint measures.

4. Implement energy information systems to monitor energy supply and demand and to produce timely forecasts including weather information.

5. Coordinate Federal and State contingency plans.

6. Provide assistance to electric utilities in developing contingency plans.

7. Secure legal authority for mandatory Federal and State measures.

8. Facilitate increased imports of natural gas.

9. Establish a State set-aside program for fuel oil.

The first six measures were generally applicable to actions that might have been completed in Phase I. The rest of the measures, however, were preliminary steps that might be initiated in Phase I and fully implemented as needed in Phases II, III, and IV as the extent of the shoratge intensified.

Some of the measures proposed for completion in Phase I were undertaken as planned, but the results were generally unsatisfactory. Other measures to be initiated and then implemented in succeeding phases of emergency severity were generally not developed as planned.

Just as there was no authority in the Planning Guide or in DOE to assign these measures for implementation, there was no assigned responsibility for monitoring the actions taken on the proposals. This lack of oversight may account, at least in part, for unsatisfactory contractor performance, delays in completing information systems, and delays or failures in establishing standby emergency regulations.

A discussion of each of the nine proposed measures is given below.

1. Establish the Energy Emergency Center

This was one of the more successful efforts by DOE to implement a Planning proposal. DOE's Energy Emergency Center,

located in Washington, D.C., was opened on December 1, 1977, as scheduled in the Guide, and served as an energy information and communication "clearing house" between Federal, State, and local governments. Its usefulness as an information center, however, was delayed to some extent partly as a result of inadequate planning and coordination. When the Center opened on December 1, it was housed in temporary quarters, had mostly untrained staff, minimal equipment, and no operating procedures. The development of operating procedures and organizational guidelines for the center had been contracted out by the WEEP Task Force, but the final procedures and guidelines delivered by the contractor were unsatisfactory to the Center Director and were later developed in-house. Fortunately, the lack of any energy emergencies during the first few weeks of operation gave the Director sufficient time to organize the Center, relocate to permanent quarters, obtain the necessary equipment, and develop the necessary organizational and procedural guidelines.

2. Prepare and distribute an Energy Emergency Handbook

This project was scheduled for completion by December 1977. The Handbook was to complement the Planning Guide with a more specific delineation of Federal assistance programs --how they would resolve problems, identify constraining factors, provide data to the responsible implementing office, and provide a reference list of Federal, State, and local offices and industrial associations involved in energy-related areas.

The Task Force contracted this effort out and a Handbook was finally developed. However, because of delays in getting the contract approved following the establishment of DOE 1/, the Handbook was not completed until March 20, 1978. A few Handbooks were sent to the National Governors' Association subcommittee for review but, because the winter was nearly over, DOE terminated the project. The director of the WEEP Task Force said that the Handbook was not an essential adjunct to the Planning Guide. Based on comments made to us by State officials as to the specific kinds of data they would have liked to have had, we believe that the Handbook would have been more useful than the Planning Guide.

1/DOE's contract office undertook an extensive review of all contracts under negotiation when it was established on October 1, 1977.

3. Regional workshops on demand-restraint measures

Demand-restraint measures were intended to effect an immediate and significant reduction in energy demands which are normally considered desirable or essential. The States have used these demand-restraint programs during prior energy shortages but with varying degrees of success. To promote an interchange of information among States and localities with respect to the effectiveness of and problems associated with these measures, DOE decided to conduct workshops with State representatives.

DOE again used contractual services to develop the workshop material and held five regional workshops on demand-restraint measures. These workshops were held in November 1977, as planned, and a summary report on the findings and conclusions of the workshop participants was sent to all participants in early December 1977. We reviewed the summary sent to the States and it reflects a general lack of interest on the part of the participants. Their concerns were generally not with demand-restraint problems but with other energy-related matters. Little effort was made by DOE to resolve demand-restraint problems in the States where the impact of coal/electricity shortages was likely to be the most severe.

4. Implement energy information systems for monitoring energy demand

The collection of fuel supply data appeared adequate, but the Planning Guide probably had little to do with it. Data collection efforts on coal supplies started in mid-1977 and continued with intensified effort right through the coal strike. The initial effort was a combination of FPC and the Bureau of Mines. After October 1, 1977, the Energy Information Administration became involved and assumed the responsibility for most of the data-gathering operations. The FPC natural gas staff also started extensive efforts to assess natural gas supply-and-demand conditions in mid-1977. There were no special data collection efforts made by FPC in the electric power area, but routine reports and utility contacts were continued throughout the fall and winter of 1977-78.

The Planning Guide proposed the development of an Electric Power Sufficiency Monitoring System to analyze supply-and-demand conditions and forecast potential power shortages for specific electric utilities. Work on this computer modeling system was started in May 1977--before the contingency planning effort was initiated. The system was not

completed for use during the 1977-78 winter, however, and development work on some parts of the model is still ongoing.

5. Coordinate Federal and State contingency plans

Very little, if any, action was taken to implement this step even as late as mid-February 1978. This coordination apparently was to be an important part of preemergency planning, but it required access to both Federal and State plans. The Energy Emergency Center was the focal point for this effort at the Federal level, but only a few State contingency plans had been submitted to the Center by early December. Most of the plans submitted related to only one specific fuel, such as coal or natural gas, and they were simply filed away as they were received. Some officials at the State level, however, told us that they reviewed the Planning Guide when it was received and compared the proposed Federal actions with their contingency plans. Beyond this, the Planning Guide was not used by State officials.

6. Provide assistance to electric utilities in developing contingency plans

The electric utility companies we visited were generally unaware of the Planning Guide or its proposed measures. Utility officials indicated that Federal assistance was not offered in this activity area. The development of industry curtailment plans is primarily a matter of concern to State public service commissions and is usually part of each electric utility company's emergency operating procedures. Power outages and other short-term emergencies are relatively commonplace in the utility industry and procedures to handle them have been well developed. If there is any need for Federal involvement, it would most likely be in the coordination of regional planning with multi-State utility systems to promote more uniformity in curtailment procedures among States.

7. Secure legal authority for mandatory Federal and State measures

The Planning Guide pointed out that legal authority already existed for implementing most of the proposed measures. The implementation of other measures, however, required either approval of the National Energy Act or specific legislative approval for a particular action.

We found that little had been done to assess the practicality of implementing some of the measures for which

legislative authority existed and the rapid implementation of these measures during an emergency was therefore questionable. The allocation by the Government of Federal royalty gas, for example, could raise legal questions that could require a court decision to resolve. Maximizing natural gas storage levels involves technical considerations that could limit the effectiveness of such an action. Accelerating Federal lease production of natural gas could also involve technical considerations that could limit the additional quantities produced.

The Planning Guide contained proposals for the emergency use of propane supplies which required changes or additions to existing regulations. One proposal involved the allocation of propane supplies to protect life and property during an energy emergency. Another measure proposed that a special rule be established that would increase the allowable percentage of propane in ethane-propane mixtures used as a supplemental fuel for natural gas. FEA had initiated action to revise the regulations in August 1977, and this effort was continued by DOE's Economic Regulatory Administration. In accordance with the DOE Organization Act, draft regulations were sent to FERC for approval in December 1977. No further action was taken until August 1978 when FERC finally set a date for hearings on the revised regulations. An ERA official said he had not been too concerned by FERC's inaction because he felt approval could have been expedited had an emergency situation occurred. He admitted, however, that State officials and industry participants most likely to be affected by the revised regulations had not seen the final draft and would not have had time to fully understand the revised regulations if approval had to be expedited.

The Planning Guide proposed that Executive Order 10480 be revised so that the Federal Preparedness Agency (FPA) could permit the Department of Transportation (DOT) to exercise priority and allocation authority over transportation in a defense-related emergency. This change would have given DOT maximum flexibliity to ensure the movement of essential commodities to areas of critical need. Action was started but never completed on this proposal.

Congressional delays in approving the National Energy Act left proposed measures such as banning natural gas for boiler fuel use and allocating natural gas supplies with no legal status. While the Planning Guide recognized the limitation on these measures, it provided no alternative courses of action if approval of the National Energy Act was delayed.

A proposal was included in the Planning Guide to obtain expanded Interstate Commerce Commission temporary authority to direct the use of rail cars owned by private corporations other than railroads. This authority would require legislative approval. No preliminary actions were initiated to obtain this authority and it is questionable whether it would have been granted.

One measure requiring specific legislation was approved prior to the occurrence of any emergency conditions. A $200 million special appropriation to provide emergnecy assistance to low-income individuals for fuel bill payments was submitted by the Department of Health, Education, and Welfare and approved by the Congress in advance of need.

8. Facilitate increased imports of natural gas

This measure is viable to alleviate emergencies only if import contracts and transmission facilities already exist. DOE approval of petitions for importing additional quantities of gas can be granted in a short time period. An application for new imports, however, is not a short-term solution and any such application must be initiated and approved well before the winter season begins if supplies are to be received during the winter period.

9. Establish a State set-aside program for fuel oil

This program has been made available to the States since it was initiated by FEA in 1974. It was renewed again by DOE for the 1977-78 winter.

PREEMERGENCY PREPARATIONS BY STATE AGENCIES AND INDUSTRY

State officials also responded to the need for doing some contingency planning in anticipation of possible winter fuel shortages. In the seven States covered by our audit, we found that while preemergency planning had occurred during the summer and fall of 1977, results as of December varied among the States. Michigan, West Virginia, and Illinois, for example, had formal emergency contingency plans for all fuels. Wisconsin had a draft contingency plan available for use by December, but it was not published until February 1978. Indiana had a coal contingency plan as early as September 1977 but had no plans for responding to other fuel shortages. Ohio had contingency plans for coal, natural gas, and petroleum but they were never formally approved by the Ohio legislature and remained simply as guidelines for State officials. Kentucky had a statutory requirement that its

Department of Energy prepare an annual contingency plan to cope with any energy shortage. Despite this requirement, Kentucky energy officials did not have a detailed, formal plan for reacting to coal/electricity shortages. These officials prefer to assess planning needs on the basis of probability of occurrence and to use an "ad hoc" approach if action is required.

The extent of most State planning efforts appeared to depend on the perceived nature of an impending fuel shortage. Most plans, however, contained "trigger points" for determining when emergency containment actions should be initiated. Because we limited our review to coal-dependent States these "trigger points" for curtailing electrical service were tied to the coal inventories at electric utility plants. The variations between States' plans occurred because one State may have proposed curtailment action at 60 days' supply of coal while another State may have waited until only 50 days' supply remained.

Most States also required their jurisdictional utilities to file emergency operating procedures for electric power shortages with the State public service or State utility commission. In some instances, the State commissions did not like the individual utility curtailment plans and wrote a comprehensive plan that included all electric utilities under its control.

State officials usually view an energy emergency as a situation that would present danger to the health, safety, and welfare of its citizens. Consequently, all of the States we visited had generally concentrated their past planning actions on disaster-relief measures designed to meet "human need" situations. There appears to be some overlap between disaster-relief plans and energy emergency measures, so that a State's failure to have a formal energy emergency contingency plan does not necessarily indicate an inability to cope with energy emergency conditions that might develop from a fuel shortage. The Planning Guide pointed out, for example, that as of July 1977, 23 States did not have clearly defined authority by executive order or administrative directive to act during an emergency. Officials in all 23 States, however, probably had authority to act during an emergency under a broad interpretation of a Disaster Act.

We believe that there are sufficient differences between the two conditions that contingency plans for energy emergencies need to be considered separately from disaster-relief plans. We also believe that these State energy plans need to be closely coordinated with any Federal contingency plans.

As a normal part of doing business the electric utility industry has developed emergency operating plans, including curtailment schedules, to handle unforeseen power shortages of varying magnitudes. However, the coal strike, which started December 6, 1977, was not unforeseen. It was already recognized as a real possibility by at least one utility as early as December 1975.

Because actions taken to forestall an energy emergency are obviously more appropriate than developing and refining measures that will be needed to alleviate its effects, the utilities began building their coal inventories beyond amounts they would normally stockpile for the winer heating season--a 100-110 days' supply versus the normal 60-70 days' supply. These additional coal stocks, plus some anticipated nonunion or western coal deliveries and power purchases from utilities with oil-fired generating capacity, were considered by the utilities to be sufficient to provide adequate electric power for consumers throughout the winter.

The coal stockpiling efforts of some utilities were hampered during the summer and fall by widespread wildcat strikes. With few exceptions, however, the utility companies generally met their coal inventory objectives.

Some utilities with nuclear generating capacity, such as the American Electric Power Company, Inc., and Tennessee Valley Authority systems, used the opportunity to maximize this power source during the coal strike. Both systems had nuclear units in operation that were scheduled for shutdown and refueling in early 1978. To avoid having these units out of service during this critical time period, the utilities reduced the generation load on these units during 1977 so that they could run them at full capacity during the winter and also extend the operating time beyond the expected termination of the coal strike.

The natural gas pipeline companies also took action to forestall a natural gas crisis. The increased demand for natural gas during the cold weather in January and February 1977 left many companies with depleted storage reservoirs. Recognizing the need to have adequate storage gas at the beginning of the 1977-78 winter heating season, 1/ gas companies began efforts to ensure full storage reservoirs by November. The success of these efforts was evidenced by the

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1/Generally considered to be the 5-month period November 1 through March 31.

gas storage reports showing a large percentage of storage facilities at maximum capacity by early winter.

CONCLUSIONS

Apart from the actions taken by industry and a few States, it appears that there was little sense of urgency involved in preemergency preparations at the Federal and State levels. We believe that many of the measures proposed for implementation during Phase I in the Planing Guide are an important part of any contingency plan and should have been pursued more aggressively. The relatively poor success rate for some of DOE's early efforts to implement pre-emergency measures should not detract from the usefulness of the measures themselves. We also believe that more definite DOE responsibilities should have been assigned for monitoring the progress made by the various participants rather than leaving so much of the effort undefined. In particular, DOE's monitoring of contractual services in planning and implementing emergency measures needs to be strengthened.

The Planning Guide was too general and probably overly optimistic in assessing what could be done to cope with emergency situations, to be of real use to most participants. In addition, a number of the proposed measures had already been taken at the State and industry level. We believe that the Planning Guide should have included some "how to" steps that would have given direction to implementing officials in exercising the options offered.

It is not surprising that relatively few actions as outlined in the Planning Guide were actually undertaken. Agency officials were aware of the actions that could be taken in their own jurisdictional areas and they generally had their own plans in mind for managing possible emergencies in their sectors. Supply projections for natural gas and propane were generally favorable and the probability of a petroleum shortage of any magnitude was minimal. The emergency that was most likely to occur was expected to result from the coal strike. However, coal inventories were high, the strike was not nationwide, and electric utilities--the industry most likely to be affected--were well interconnected for power transfers in the event that specific, localized shortages developed. Consequently, the perceived need for expediting action to obtain standby authority or to have the necessary implementing provisions fully approved in advance of need was lacking.

Although we believe that the Planning Guide was deficient in certain respects, it was not without some merit. It did serve as a reference document for State planners and although general in nature, it provided a glossary of actions that the Federal Government believed could, or should, be undertaken to cope with varying levels of fuel shortages. State officials viewed it as tangible evidence that the Federal sector was concerned with being better prepared for energy emergencies. It also served to put industry officials on notice that they had the primary responsibility for meeting supply obligations and that Government intervention would occur only when emergency conditions became critical. The Planning Guide clearly pointed out, however, that ongoing activities of Federal agencies to monitor or prevent energy shortages would continue.

RECOMMENDATIONS

We recommend that the Secretary, DOE, more closely monitor the contractual services used in the energy contingency planning process so that the results of such services are both timely and useful.

CHAPTER 4

FEDERAL, STATE, AND INDUSTRIAL EMERGENCY ACTIONS

Once the winter began to increase in severity and it became evident that coal-strike settlement negotiations were going to become protracted, it became necessary for Federal and State governments and industry to take actions to forestall and minimize the impact of the winter weather and the coal shortage on the public. Some of these actions, not identified in the Planning Guide, combined successfully with certain Planning Guide proposals to minimize the effects of the coal shortage. One element that contributed to the successful management of the 1977-78 winter energy emergency was the cooperation among Federal and State governments and industry which allowed them to assess accurately the extent of the emergency as it unfolded and to react in a timely and flexible manner.

FEDERAL EMERGENCY ACTIONS

In early February 1978, when the effects of the energy emergency began to become evident, several task forces were established within DOE to assure continued supplies of coal and electricity. The establishment of these task forces indicates the degree of flexibility that is needed during such critical periods. The Planning Guide did not provide for such task forces; nevertheless, they helped to reduce the severity of the energy emergency. The task forces were placed under the direction of individuals who were acquainted with actions needed during an energy shortage but these individuals had not been involved in the preparation of the Planning Guide. The task forces were similar in that they all relied upon the development and maintenance of an informal working relationship, not only with the coal and electric utility industries, but also with other related industries.

The task forces were established to provide daily contact with the affected industries and to develop an energy data base that could identify energy needs and respond to them. The basic philosophy of their operation was to let these industries work together as best they could to reach the most amenable solution for all concerned. Each task force included individuals who had long-standing working relationships with and knowledge of the industries served by the group.

Electricity task force

The primary emphasis of this task force was to insure the reliability of electricity, without particular attention to cost. Under the authority of section 202 (c) of the Federal Power Act the task force could temporarily require electric utilities under Federal jurisdiction to institute emergency measures to insure adequate supplies of electricity. The Act provides that where it is deemed appropriate, electric utilities may be directed to interconnect with other utility systems and transfer volumes of power to other systems needing additional electrical power. According to task force officials, they did not have to rely on these statutory measures because they determined (1) the electrical power system was already adequately interconnected and technically capable of shifting power to meet demands and (2) utilities were voluntarily exchanging sufficient volumes of power to satisfy electrical demands. Electric utility and DOE officials told us that at no time during the emergency did utilities refuse to transfer needed volumes of electric power across their systems to other systems needing power.

A DOE official also told us, however, that during the emergency the electricity task force was able to identify available sources of short-term emergency electrical power which, in some instances, was not utilized because the cost of its generation was prohibitive. According to DOE and utility officials, the cost of generating these additional increments of power to supply short-term emergency needs was higher than normal because of the types of equipment or fuel that were required to generate that additional power. For example, if a system providing emergency power was primarily coal-fired--yet had to rely on oil-fired equipment to provide additional short-term emergency power--the increased costs would have to be absorbed by the system receiving the short-term emergency power. In some cases, this meant a doubling, or even a tripling, of costs that would normally be incurred using coal. FERC officials did not monitor the costs that were being passed through to customers as a result of these power transfers although this information was available at the utilities' dispatch centers.

Canton field office

As an extension of the electricity task force's effort to maintain adequate electrical supplies, a DOE field office was established February 12, 1978, in Canton, Ohio to (1) identify electric utility systems needing additional power and utility systems that were able to supply those needs, (2) monitor the power transfers between these systems,

(3) monitor the delivery and use of coal, and (4) assess the status of power-supply reliability throughout the region. One key to the success of this operation was its location. Canton is in the center of the East Central Area Reliability Coordination Agreement (East Central Area) region 1/ which experienced major electrical supply problems during February and March 1978. The central dispatch center for the American Electric Power System and the East Central Area Reliability Coordination Agreement office are located there. Between the dispatch center and the East Central Area office, Canton contained all the necessary data and communication networks for information exchanges between the parties experiencing energy-supply problems. Officials from the electric utility industry and the Federal Government told us that the East Central Area was probably the best region in the Nation as far as overcoming electric power shortages was concerned because of the excellent communication and electrical transmission links that exist there. The task force in Canton provided daily status reports on the electric power situation to the headquarters' task force in Washington. This information was included in daily and weekly summaries prepared for the Secretary of DOE.

The Coal and Transportation Task Force

This task force was assembled to monitor all aspects of coal supply, demands, and transportation. It was similar to the electricity and Canton task forces in that it was comprised of individuals who had long-standing working relationships with and knowledge of the coal and transportation industries. As the emergency conditions became more severe, the task force determined the extent of its statutory authority under the Energy Supply and Environmental Coordination Act of 1974 (ESECA) to allocate coal supplies, and began developing the regulations required to implement the pertinent provisions of the Act. Such legal measures were unnecessary, however, because of adequate coal production and transportation during the strike. The officials told us that the key to the successful operation of the group was the close contact that was developed and maintained with the coal, transportation, and electric utility industries during the strike. This informal relationship enabled the task force to (1) determine the location of available supplies of coal, (2) determine the types of alternate coal

1/Includes Michigan, Indiana, Ohio, Kentucky, West Virginia, and parts of Virginia, Maryland, and Pennsylvania.

or fuel that could be burned in boilers, (3) monitor the ability of the transportation network to move available supplies of coal, and (4) exchange other types of technical data and information with industry officials.

The task force operated throughout the strike using the rationale that coal allocation should be the last measure used to obtain coal supplies. This approach appeared to be successful because by developing and maintaining a viable industrial relationship, the supply of coal was assured during the strike. This relationship was built on the knowledge that if continued coal supplies became unavailable, less acceptable Federal requirements might have been placed on the industry.

THE ENERGY EMERGENCY CENTER

The Energy Emergency Center was not established as a task force operation similar to the three task forces previously discussed but was an integral part of their successful operation because of its data collection and dissemination function. The Center was included in the Planning Guide as a proposed measure to be taken by DOE and had been functioning as an energy information and communication "clearing house" during early January 1978. As the emergency conditions became more severe, however, the volume of data and the intensity of the Center's operations increased.

The Center was initially organized to serve as a single reference point at the Federal level for State and local agency officials requesting energy data and other related information. The Center staff met this need and task force officials commented on the usefulness of this aspect of Center operations. As many as 400 telephone calls per week on substantive energy matters were received. Had the Center not existed, these calls would have interrupted the operations of task force personnel developing much of the requested data.

State officials were not completely satisfied with the data sent to them from the Center. Some State officials told us that the data provided by the Center was inconsistent, not timely, and was often not in a useable format.

During the period January-March 1978, the Center's data management effort was more oriented towards collecting and processing energy data for DOE and White House officials. Information on all fuels was updated daily by the Center staff. Beginning in early January 1978, a daily status report on the energy situation was prepared for the White

House staff and DOE officials. After the electric power and coal task forces were organized in early February 1978, the Center staff also prepared a weekly status report based on data received from each of the task forces and EIA.

STATE EMERGENCY ACTIONS

The States we visited appeared to be able to define accurately the extent of the emergency to determine its effects on them, and to react successfully in a flexible manner to each energy shortage that occurred. The key to the successful management of the coal shortage by the States was attributable to two factors--(1) a good State energy management framework which accurately assessed the changing energy picture, and (2) minimal Federal intervention in the activities of the State.

The States generally managed energy matters through three primary offices--(1) the State public utility commission, (2) the State energy office, and (3) the Office of the Governor. Through the combined efforts of these organizations and the cooperation of industry, State officials were usually able to assess the energy supplies and needs of the States. Sufficient fuel was made available to meet human needs and adequate electricity supplies were ensured without resorting to drastic actions. The human-needs effort was usually directed at ensuring coal supplies for residences and health-care facilities. Most States established emergency telephone lines and worked through energy offices or disaster-relief agencies. These offices operated informally and generally obtained the cooperation of coal retailers and public offices, including law enforcement agencies, to move necessary coal supplies. In Illinois, officials obtained the cooperation of management officials of the coal mines and unions to obtain and transport coal to residences, schools, and public institutions.

The States closely monitored coal supplies at the electric utility companies. Most States operated in accordance with contingency plans that suggested voluntary conservation actions to conserve fuel supplies. These actions usually consisted of public appeals to consumers by the State or utility officials. The State regulatory commissions were usually concerned with conservation measures taken by the utilities such as rescheduling plant maintenance operations and revising operational procedures to reduce internal load demands.

Some State Governors, after petitioning the President and receiving his approval, declared energy emergencies which allowed them to suspend Federal air emission standards and

temporarily discontinue the operation of emission control equipment. These declarations also allowed utilities to burn lower quality coal which improved their supply situation. State officials told us that the experiences of past energy crises provided a good learning base from which to respond in order to manage the energy shortages of the 1977-78 winter.

In States that had contingency plans containing "trigger points" (specific energy supply conditions which would dictate specific actions), State actions usually consisted of either delaying "trigger point" actions or attempting to avoid reaching those points through appeals for voluntary curtailments. In most of the States emergency management actions were predicated on a loose semi-regulatory framework which reacted to the emergency in a limited manner. Some States did reach points in their State plan which indicated that actions should be taken, but State officials considered other factors before immediately imposing curtailments. In the few States where mandatory curtailment measures were imposed, only Indiana officials actually enforced it. The following examples illustrate the various approaches the States took toward electrical power curtailments.

West Virginia exports about 69 percent of its electrical power to the States of Virginia, Pennsylvania, Ohio, and Maryland. Early in February 1978, West Virginia reached its "trigger point" of 30 days' coal supply and imposed a 10-percent mandatory curtailment on large industrial users. In mid-February, West Virginia reached its "trigger point" of 25 days coal supply which called for a 30 percent electrical curtailment on large industrial users, but delayed imposing the curtailment pending the outcome of a conference to be held among the affected States on February 21, 1978. The purpose of the conference was to obtain agreement on a mutually satisfactory region-wide curtailment plan so that industrial customers in each State would be treated equitably. The result of the conference was a multi-State agreement whereby, beginning March 2, 1978, West Virginia would restrict electric power deliveries to most commercial and industrial users by 30 percent. The imposition of the 30-percent curtailment level was delayed to provide the necessary time for businesses and industries to complete work in progress and to make preparations for the curtailment. On March 1, 1978, the order for the 30-percent curtailment level was suspended, however, because the United Mine Workers contract vote was scheduled for the following week and a settlement was anticipated. The proposed contract was rejected by the mine workers and the 30-percent curtailment level was rescheduled to become effective on March 8, 1978. The curtailment went into effect on

March 8, 1978. On March 27, 1978, it was cancelled by the West Virginia Public Service Commission because (1) coal deliveries had substantially increased, (2) sufficient power was being provided to the needy States, and (3) the mine workers appeared to favor acceptance of the new contract proposal.

The energy contingency plans submitted to the Ohio Public Utility Commission by electric utility companies also contained conservation/curtailment steps keyed to specific "trigger points." Commission officials said, however, that mandatory curtailment was clearly a step to be avoided and no one wanted this drastic action. Consequently, curtailment requirements were delayed whenever possible. For example, during the week of February 23, 1978, Ohio Edison Electric Company was nearing its 30-day mandatory curtailment "trigger point." The Commission knew, however, that coal deliveries were increasing. To delay the power cutback, the Commission ordered all utilities to submit an extensive report on the predicted effects of mandatory curtailments. This delaying action was successful; the additional time allowed Ohio Edison to purchase sufficient coal and electric power to avoid reaching the 30 day "trigger point."

The curtailment actions of the State of Indiana were an interesting contrast to those of West Virginia and other States we visited. Shortly after the coal strike began the Governor requested the utilities to revise their operations to maximize their available coal stocks. Appeals were also made to all users of electricity to conserve voluntarily as much as possible, but the results of the voluntary conservation requests were initially disappointing. On February 8, 1978, the Public Service Commission of Indiana declared that an emergency existed and directed all utilities to attend weekly meetings to report (1) the success of their conservation efforts, (2) their current fuel levels, and (3) any other fuel shortage related problems. These meetings became the focal point for the Commission's actions during the winter.

On February 13, 1978, the Commission took the following steps to reduce the consumption of electricity: (1) non-essential outdoor lighting such as display lighting, window displays, and advertising was curtailed and (2) all the generating utilities under Commission jurisdiction were ordered to follow the curtailment plan developed by the Commission. These conservation measures were more successful and load reductions reached the 10-15 percent level.

On February 20 and February 24, 1978, the Commission imposed mandatory curtailments on the industrial and commercial customers of two companies because they had reached

their "trigger point" of 40 days supplies of fuel. According to the Commission Chairman, the imposition of the mandatory curtailments was not delayed because: (1) he did not know how long the coal strike would last and (2) he was concerned that the public would think there was no long-term crisis. The enforcement of these curtailments was vigorously carried out, and meter readers and some clerical staff of the utilities were used to read the meters of the curtailed customers on a daily basis. During the week of March 6, 1978, it was estimated that 39 customers of one utility were not in compliance with the Commision's curtailment program; within 7 days after notification, however, all but 3 customers had come into compliance with the Commission's order. The utility's continued efforts eventually brought all customers into compliance. On March 16, 1978, the other utility which was curtailing industrial and commercial customers began billing a penalty charge of 10 cents per kilowatt hour to customers who were found to be in noncompliance with the Commission's curtailment order.

On March 27, 1978, the Commission granted the petition of the two curtailed utilities to end their mandatory curtailments. The voluntary curtailments, however, were to remain in effect and would be removed on an individual basis as generating utilities obtained coal inventories above the 50-day level. These voluntary conservation measures were in effect until April 20, 1978. On May 24, 1978, the Commission declared the end of the energy emergency and scheduled hearings for October 23, 1978, so that it could fully evaluate the effectiveness of its emergency curtailment plan and make recommendations to modify the plan for future emergencies.

Electric utility and other industrial actions during the coal strike

Once the potential for power shortages became evident in the winter, the electric utilities instituted measures to avert such shortages and minimize curtailments. These measures had already been established as part of normal operating procedures by the utilities and were not specifically developed as a result of the coal strike. More forceful energy reduction measures were probably unnecessary because (1) the States and industry had adequate supplies of alternate fuels such as propane, natural gas, and heating oil, (2) sufficient volumes of emergency electrical power could be purchased, and (3) existing coal supplies were supplemented by coal from nonunion and Western mines that were not on strike.

The measures taken by the utility industry were designed to optimize the use of available coal supplies by voluntarily shifting coal supplies between generating plants and exchanging amounts of electricity between utilities having adequate and marginal power resources. Because the electrical system in the East Central Area region was so well interconnected, large amounts of electricity were generated outside the region and transferred into areas of the region which were experiencing problems in meeting their demands. Utility officials told us that some power purchases and exchanges are normal, everyday operations of a utility system. The recent winter was unusual, however, because of the large volumes of power that were purchased and exchanged. Utility officials told us that even though these volumes were larger than normal, all power needs were successfully met by the system; in fact, generally more power was available than was expected. The officials also pointed out that during the extreme conditions facing the utilities last winter, there were no power blackouts or shortages attributable to the coal strike. The power purchases and exchanges generally insured the reliability of the electrical system, but did work to increase the cost of electricity generated and exchanged during the emergency.

Although our visits to the States did not reveal massive industrial actions taken to avert energy shortages, utility and State officials continually emphasized that a major contributor to the successful management of last winter's energy shortages was the ability of the industrial and commercial sectors to adjust their operations quickly to fit the current energy situation and economic conditions. This operational flexibility appears to be paramount in minimizing economic disruptions during national crisis conditions.

Where electricity demand-restraint measures were instituted because of State curtailment requirements, they were generally in the form of curtailing nonessential uses such as reducing outdoor advertising, extinguishing parking lot and highway lighting, or even postponing evening sporting events or other activities.

UNCERTAINTIES AND PROBLEMS IN MANAGING THE ENERGY SHORTAGE

The curtailment of electric power was an integral part of most State and utility contingency plans. The effects of these curtailments at various percentage levels, however, were essentially unknown because of no prior experience. The benefits of mandatory as opposed to voluntary conservation measures were also relatively unknown although both approaches were used.

The uncertain effects of curtailments posed a special problem to the electric utilities serving areas where there was a high potential that curtailments would be required. An American Electric Power Company, Inc., official told us that large curtailments of power could lighten the load on a transmission system enough to cause an increase in voltage and possibly disable the whole system. When this happens, one solution is to disconnect the lightly loaded lines and route the flow to alternate lines, and this was done on one system during the coal strike. DOE utility specialists said that although this may relieve the immediate problem, it reduces the flexibility and reliability of the system to overcome subsequent problems that may occur. The utility specialists told us that utility companies perform light load studies to predetermine the possible system effects of reduced capacities. These studies, however, had not simulated the conditions that occurred during the 1977-78 winter on some systems, primarily because of the high cost and the low probability of the conditions occurring.

A report by the National Electric Reliability Council 1/ stated that light load operating constraints on electric generating units of utilities needing purchased power limited the amounts of power that were imported into the coal-deficient areas. The report also stated that imports were limited because of the uncertainty as to how firm the supply of energy to be transferred really was.

The use of "burn days" as a measure of the stocks of coal available at electric utilities was used to assess the extent of the fuel shortage and also as the basis for taking curtailment actions. The computation of this figure was made throughout the winter and was included in reports to responsible officials. It did not have a common definition and did not include deliveries made to the companies. This resulted in considerable confusion and conflicting estimates of exactly what the coal stocks really were. One of the coal task force staff prepared a different analysis during the strike to obtain a better assessment of the coal supplies when it became obvious the old method wasn't satisfactory. The different analysis was not used, however, by anyone but the task force at the Federal level.

We did not find these uncertainties to be insurmountable problems during the emergency. The utility industry was aware

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1/"The Coal Strike of 1977-78 - Its Impact on the Electric Bulk Power Supply in North America," A Report by National Electric Reliability Council, May 30, 1978.

of the system uncertainties and took measures to determine the impact of taking unusual actions respecting generation and transmission. Although the effects of curtailments were also uncertain, some States imposed mandatory curtailments for short periods of time. Only one State actually enforced the curtailments, however, and the economic effect on consumers was minimal.

LESSONS LEARNED FROM THE WINTER ENERGY EXPERIENCE

The recent coal strike and the attendant severe winter have provided the Nation with an excellent forum for changing its approach to energy crises. The results of our efforts at Federal and State governments, public utility commissions, and utility systems have made it clear that Federal involvement should be kept to a minimum. Federal planning efforts should recognize the capabilities of States and industries to respond to emergency conditions and be directed at ways to provide Federal assistance so they can improve their performance. It was also made clear that actual, measurable results of energy emergencies and national strikes are often less than initially projected. Long-term adverse impact to the Nation as well as local communities is usually negligible--if measurable at all. It could be that one of the more beneficial products of the 1978 coal strike and winter might be a more predictable, logical national approach to energy management. We offer the following observations.

Actions for the Federal Government

While some State and industry actions during last winter were analogous to emergency actions outlined in the Planning Guide, it can not be given credit for these actions because, based on normal operating experience, the States and industry probably would have responded to the emergency in the manner in which they did, irrespective of the existence of the Planning Guide. State officials generally indicated the Planning Guide was probably a reasonable first step in preparing for an energy emergency condition but said it was too vague and academic for practical use.

One problem identified previously concerns the Planning Guide's proposed emergency actions which were not yet viable because the legislation required to carry out those actions was not yet in place or clearly defined and understood by those responsible for its implementation. Clearly, available actions and alternatives for Planning Guide users should be based on actions that can be realistically implemented when conditions demand decisive action. Had such actions been required last winter, we question the agencies' abilities to fully implement them in a timely way.

One remedy for this might be to solicit input to the Planning Guide from Federal officials who, in an emergency, will have statutory authority for resolving emergency conditions. Another remedy might be the initiation of public hearings and comments on proposed Federal regulations for possible energy allocation during an emergency so State and industry officials will be aware of available energy resources and react accordingly. This should make the Planning Guide more realistic in its approach to managing energy emergencies and should enable the States to implement more easily actions suggested in the Guide.

Poor utilization of available energy data was identified as a negative aspect of last winter's energy shortages. Often, not only was data from the Energy Emergency Center inaccurate and of minimal value to the States because it was outdated, but Federal data requests to the States were duplicative and were not of the type that would have provided substantive information for other data users.

Actions for State governments and the utility industry

We believe the best energy emergency management can be effectuated at the State and industry level. We also believe that as each energy emergency has come and gone, these sectors have been able to successfully apply the lessons learned from the last emergency to minimize the adversity of the current emergency. However, there is still room for improvement.

Our review disclosed the need for more aggressive and closely coordinated planning between States and the utility industry to insure that emergency management actions are based on a regional approach instead of a provincial State approach. The current energy-supply technology transcends State boundaries; therefore, a revised State view of energy supply and demand is needed. As demonstrated by the large volumes of electrical energy transfers last winter, the operations of today's utility systems are based on serving electrical needs throughout a number of States, irrespective of political boundaries. State energy emergency actions should be based on the same approach. Active efforts should be instituted at the State level to aline energy curtailment plans so that one utility serving a number of States will be able to operate in accordance with one uniform curtailment plan and will not have to be burdened with trying to meet a number of unequal curtailment plans. The need for such efforts is illustrated by the actions taken in West Virginia to develop a common curtailment policy.

The regional approach to energy shortages should also include common definitions for energy stocks, and energy data which is circulated within the region should have common meaning and understanding. Better measures should be instituted to more accurately determine amounts of coal remaining in stockpiles and more meaningful common definitions of terms such as "burn days," and "emergency" need to be developed. The public should be made aware of the use of these terms and definitions so when they are employed during an emergency data credibility will be maximized.

Our visits to States and utilities revealed that energy data available to them was generally accurate and useful for trending purposes. We believe better public awareness of this data and its relationship to the energy crisis would contribute to more effective voluntary conservation measures, and hence, better emergency management.

We also believe the development of a regional approach for managing an energy emergency should include more research by States, utilities, and industries of the actual, measurable effects of energy curtailment. Our discussions with State and utility officials revealed that an accurate assessment of the effects of energy curtailment is not available to the States or utilities. We believe it is vital that emergency managers and the public have more accurate knowledge of the real effects of energy curtailment. An improved public and utility awareness of the effects of energy curtailment should significantly contribute to a more rational, predictable approach to handling future energy shortages.

RECOMMENDATIONS

We recommend that the Secretary, DOE:

1. Encourage more aggressive and coordinated contingency planning between States and the utility industry so that emergency management actions are based on a regional approach instead of an individual State approach.

2. Require that public hearings be held on proposed Federal regulations for possible energy allocation during an emergency so that State and industry officials will be aware of when and how DOE will carry out such allocations.

CHAPTER 5

ECONOMIC IMPACT OF THE ENERGY EMERGENCY

There appeared to be three possible major economic consequences resulting from the coal strike and its attendant impact on the availability of adequate electric power to consumers. These possible consequences were (1) an increase in unemployment, (2) additional costs to utilities, and (3) additional costs of electricity to consumers.

Weekly unemployment data from the East Central Area region showed that the coal strike and electricity shortages had only minimal effects on the economy--a maximum of 25,500 workers out of about 14 million were reported unemployed. The Administration, however, chose to rely instead on data generated by a questionable forecasting methodology which showed possible future unemployment figures many times greater than were actually occurring--as much as 3.5 million under certain assumed "worst case" conditions.

We believe that the Administration had information that made the use of this "worst case" data suspect and that, by not tempering its projections with this information, it did not present a fair assessment of the situation to the public.

Some additional costs were incurred by electric utility companies as a result of increasing coal inventories beyond what is normally carried. Some utility companies also incurred extra costs associated with large power purchases.

The electric power consumer eventually pays all or most of the price of the increased generating/transmission costs and much of the cost resulting from the coal strike is already reflected in retail customers' utility bills. In some areas, this meant doubling, or even tripling, the charges that would have occurred had the utilities been able to operate normally.

UNEMPLOYMENT ESTIMATES SHOW WIDE DISPARITY

Two basic methods were utilized to measure unemployment caused by the coal strike. One method relied on telephone contacts with management personnel of affected business concerns in the East Central Area region to determine the actual situation as it was occurring. The other method used a computer analysis of anticipated actions to determine the

consequences that could be expected in "best" and "worst" case scenerios. The direct survey method showed weekly unemployment during the February-March period ranged from a low of 9,500 to a high of 25,500 compared to a manufacturing and trade workforce of almost 14 million. The computer analysis method provided forecasts of unemployment ranging from 27,000 in the "best" case scenerios to 3.5 million by April 1978 under "worst" case assumptions. These efforts are more fully described below.

Direct survey method and findings

The Bureau of Labor Statistics (BLS) regularly performs monthly surveys designed to measure the national employment posture through contacting both households and businesses. In this effort, BLS contacts about 70,000 households and about 160,000 manufacturing and wholesale/retail establishments. Information is gathered regarding the numbers and types of skills of persons that are currently unemployed, the impact on the payroll of the establishment, the numbers of employees that may anticipate furloughs or unemployment, and attempts that are being made to locate employment opportunities.

During the coal strike BLS worked with DOE to modify this sample to fit DOE's needs on unemployment data. BLS developed a subsample of about 4,000 national firms with over 1,000 employees each. DOE then selected about 1,000 manufacturing firms and wholesale/retail establishments in the States most affected by the coal strike for its data base on unemployment.

Beginning about the second week of February and continuing until the last of March, this weekly telephone survey obtained the following employment data from management personnel at the business concerns being surveyed.

1. Employee count.

2. Total hours paid.

3. Number of employees less than the previous week and why there was a decrease.

4. An estimate of the following week's employment posture.

The BLS effort was not only able to determine that there was very little unemployment directly related to the coal strike, but it was able to determine the types of actions that business concerns were taking to minimize the adverse effects

of the strike. It is interesting to note that the survey found that severe weather conditions were more often blamed for unemployment problems than the coal strike, but this reason was not tabulated by BLS surveyors. The findings of the survey were timely because results that were compiled and tabulated as of Friday were provided to Administation officials on the following Tuesday.

On February 24, 1978, BLS published the results of its first survey which indicated that about 9,500 factory workers were laid off for all or part of the week of February 12-18 because of coal and electricity shortages. The survey went on to project that about 67,000 workers might be laid off during the following week of February 19-25 for the same reason. The survey for that week did not support this projection, however, because it found that approximately 22,600 workers had been laid off for strike-related reasons. Throughout the period covered by the survey, the projected unemployment was always greater than the actual number of workers found to be unemployed for strike-related reasons. The following table shows the actual number of workers found by the BLS direct survey to be unemployed for strike-related reasons.

Survey Report Data	Workers Found Unemployed
2/24/78	9,500
3/2/78	22,600
3/9/78	25,500
3/16/78	22,900
3/23/78	23,400
3/30/78	18,100

One factor that may have contributed to the relatively small number of unemployed workers was that, during the coal strike, the production and movement of coal actually increased each week after reaching the low point of 300,000 tons in early February. Information developed through DOE's Coal Sufficiency Monitoring System (CSMS) indicated that coal deliveries into the East Central Area region increased each week until they reached approximately 1,500,000 tons for the week of March 18, 1978. This same general trend was not unique to that region alone, however, because CSMS data showed that weekly coal deliveries nationwide were increasing from their low point of about 3 million tons in early February to over 5.5 million tons for the week of March 18, 1978.

Computer forecasting model

Even though the direct survey data indicated minimal unemployment because of the coal strike, the Administation

determined that a forecasting model was needed to predict possible unemployment levels under certain assumed conditions. Therefore, an interagency task force comprised of representatives from BLS, DOE, and the Council of Economic Advisers (CEA) was formed to develop a computer model to project industrial productivity and unemployment scenerios based on such variables as (1) coal deliveries, (2) energy curtailment levels, (3) coal consumption, (4) strike duration, (5) purchased electricity imports, and (6) noncoal electricity generation.

The computer model provided a range of possible future unemployment levels that might be expected if the strike was not settled. The degree of projected unemployment was predicated on "best" case and "worst" case assumptions of the amount of weekly coal deliveries that might be expected during the strike. According to agency officials, the technique of providing "best" and "worst" case assumptions is normal practice when making econometric projections. The basic aim of these projections is to project what may actually happen (the "best" case) and what the most unfortunate consequences of the situation could foreseeably be (the "worst" case). The officials told us that if the modeling exercise is performed properly, the "best" case should be a reflection of the actual circumstances that are occurring during the situation that is being analyzed.

The real importance of the unemployment impact estimates resulting from the coal strike became apparent about the middle of February 1978, when strike settlement negotiations deteriorated and coal deliveries had dropped from their normal level of about 3 million tons a week to their low point of about 300,000 tons a week. Using this coal delivery figure, and assuming the imposition of State curtailment plans, the computer model projected a "worst" case unemployment figure of about 3.5 million in the East Central Area region by the middle of April 1978. The model also made a "best" case scenerio, however, which paralleled the BLS survey results and indicated that about 27,000 workers might be unemployed because of the strike. The reason for these different scenerios was that the model made a direct link between coal deliveries and unemployment by assuming that as coal deliveries increased the level of unemployment would decrease.

Problems with computer model assessments

Throughout our audit effort government officials who are responsible for computer model assessments told us that no reliable direct causal relationship can accurately be established between energy curtailment and reduction in the number

of workers employed. Too many other factors which cannot be adapted to a computer model work to affect the actual reasons workers are unemployed during an emergency situation. These factors, which can change daily, include unemployment due to changing weather conditions, a change in plant operations to ensure continued employment, a change in the capital/labor mix of a production operation, or a change in the actual production cycle to circumvent the current shortage. Our audit revealed that the officials responsible for containing the effects of the strike were aware of these shortcomings associated with computer model forecasting, yet chose to utilize this methodology to determine the potential impact of the coal strike.

Rationale for use of "worst" case scenerio

Even though the general trend for coal deliveries during the strike indicated an increase, officials responsible for managing the emergency based their impact assessments and subsequent actions on the "worst" case scenerio. The decision by CEA officials to base their "prudent planning" recommendations for the crisis on the "worst" case scenerio was predicated on the following:

1. Coal deliveries were increasing, and consumption was decreasing. This was offset, however, by the historical perspective that violence was usually associated with similar strike actions, and if violence did occur, coal deliveries might diminish to the low point of 300,000 tons a week or less.

2. The disjointed posture of the United Mine Workers' union did not appear to lend itself to early resolution of the strike issues.

3. The validity of coal source information was questionable and the reliability of continued coal supply was doubtful.

4. The outlook for an occurrence of the "worst" case scenerio appeared to outweigh the possibility of the "best" case scenerio actually happening.

The hard data available to the Administration showed minimal unemployment attributable to the strike, the continuing upward trend in coal deliveries, no major increase in strike related violence, and continued availability of electric power. In addition, CEA officials were aware of the situation in Indiana where electric power curtailments

to industry of 15-25 percent had little effect on employment levels.

We are not questioning the Administration's prerogative to assume the worst possible situation occurring and plan for actions that would need to be taken under those circumstances. We believe that in choosing to use what they knew to be a relatively unreliable assessment method, however, the Administration should have been more circumspect in its use of the forecast estimates. If it was necessary to make the estimates public, the Administation at least should have presented the estimates as a range of possible unemployment levels and should have indicated the probability of each unemployment level actually happening.

OTHER COSTS ASSOCIATED WITH THE COAL/ELECTRIC SHORTAGE

The extensive unemployment projected by the Administration's forecasting model did not materialize and our contacts with State officials indicated there was no major decreased industrial output directly attributable to the coal strike. Apparently State officials were not concerned with the industrial impact resulting from the coal strike because no formal assessments of the coal strike on industrial output have been made. This does not indicate, however, that there were no costs attributable to the coal strike. Rather, economic ramifications of the coal strike might be more subtle than initially anticipated. The following sections discuss the possible economic impact of the coal strike on industry and consumers.

Industrial impact

The coal strike forced the electric utility and other industries to take actions and to incur costs which might not otherwise have been required for the 1978 winter. These actions probably would have occurred, however, but over a longer period of time with less immediacy associated with them. We were told by officials of the American Electric Power Company, Inc., for example, that it cost about $275 million to stockpile adequate amounts of coal for the 1977-78 winter. While it is true that normal utility operations would not usually dictate such large stockpile purchases, those amounts of coal would have eventually been purchased over longer periods of time. These purchases did have a negative economic impact to the utility because larger than normal cash outlays were required for the winter stockpile; however, those outlays, less interest costs, will eventually be reimbursed to the utility by its customers. We did not

identify any coal stockpiling measures at any of the systems we visited which appeared to be unwarranted or in excess of prudent planning.

Some utility companies were required to buy large amounts of power from other utilities that had access to Western or non-union coal or had an oil-fired generation capability. These costs were usually higher than their own coal-generated power. The ability of the utilities to pass these additional costs on to consumers varied with the regulatory provisions under which they operated. Illinois utilities are generally precluded from passing on purchased power costs; Ohio and Indiana utilities, however, can recoup about 90 percent of extra costs. Under some circumstances, the FERC automatic fuel adjustment clause allows a utility to recoup only the fuel-cost portion of purchased power even though other charges may have been included in the total cost. Even where a utility may petition for, and receive, relief from excessive costs, the Commissions may not allow full recovery.

Other business segments of the economy might have been affected as a result of the strike, but of a far less magnitude. In the States visited we did not identify any large-scale adverse economic effects on businesses directly attributable to the coal strike. Some remote, localized effect might have been felt by small business concerns, but the long-term effect of the coal strike on these concerns is probably negligible.

Impact on consumers

The effect of the coal strike on consumers is generally more visible and subject to public emotion. The coal strike did precipitate an increase in electrical costs to consumers because of the massive power purchases made by the electric utilities. Utility officials pointed out, however, that the purchases were made to avert electrical curtailments and shortages.

The utility officials we interviewed told us the increases in electric bills during the coal strike were made in accordance with established tariffs on file either at the State public utility commissions or at FERC. The officials noted, however, that in some instances the rates the utilities were required to use to facilitate the power purchases were not intended to be used during long-term energy shortages. Generally, these rates are designed to offset each other through power exchanges which are a normal part of utility operation. The coal strike and its resultant power transfers into the East Central Area region--with no offsetting exchanges--worked to exaggerate the inappropriateness of

these rates to supply long-term needs. Utility officials stated that in some instances they realized inequities were occurring, but the administrative procedures required to alter the already established rates prevented timely action by the utilities and FERC. A review of these power transfers has been instituted by FERC and is more fully described on page 50.

CONCLUSIONS

There are many unknowns relating to the use of the unemployment estimates made by the Administration during the recent coal strike. The results of these Administration actions and estimates appear to be that, even though the decision-makers had hard, weekly data that showed little-to-no adverse unemployment impact arising from the coal strike, they chose to ignore this more realistic data and relied instead on computer projections which "guesstimated" a possible unemployment figure of 3.5 million workers in the East Central Area region alone. The Administration's assessments of the coal strike, usually included this figure--whether on national TV or in affidavits submitted to the court to support its efforts to obtain relief under the emergency provisions of the Taft-Hartley Act.

The larger power transfers that were needed to maintain adequate service to utilities' customers probably required that a profit incentive be built into the allowable tariffs. We believe, however, that both State Commissions and FERC officials should have monitored the cost of these transfers and required the use of tariffs that would have balanced the cost to the consumer and the incentive needed for a utility to engage in the transaction.

RECOMMENDATIONS TO THE SECRETARY, DOE

We recommend that the Secretary require that forecasts of the economic impact of energy shortages be refined to recognize DOE's public responsibility to (1) candidly present current conditions and impact of the shortage and (2) present a balanced assessment of projected conditions and impact if the shortage continues.

RECOMMENDATIONS TO FERC

We recommend that the Commission establish procedures for monitoring the costs of wholesale power transactions between electric utilities during energy emergencies.

We also recommend that the Commission require that electric utilities have rate schedules on file which are appropriate to use during a protracted energy emergency.

CHAPTER 6

CAN ENERGY EMERGENCIES BE MANAGED MORE EFFECTIVELY?

DOE and FERC have initiated several programs and studies to improve the management of short-term energy shortages. These efforts will apply to all fuels and time periods and will help, at least peripherally, State and industry officials manage energy shortages. Even though some of this work will not be completed before the 1978-79 winter, we believe that DOE and FERC could perform their roles if there is another energy shortage comparable to those experienced during the 1976-77 and 1977-78 winters. DOE, however, needs to critically evaluate its current contingency planning efforts to insure that (1) all current programs are being properly staffed and are necessary and (2) there is better coordination between DOE and other Federal agencies during an emergency.

Similarly, but to a lesser extent, State and industry officials are reviewing their procedures and preparedness for energy emergencies, and are making some minor adjustments or revisions. In general, however, and especially as far as the utility industry is concerned, these State energy agencies and industry are well prepared to manage an energy shortage and its related problems.

CURRENT DOE ENERGY EMERGENCY PROGRAMS--IMPROVING INFORMATION AND COORDINATION NEEDS

The Energy Information Administration (EIA) and the Economic Regulatory Administration (ERA) within DOE are conducting the major short-term emergency preparedness efforts of DOE. These are (1) the Energy Emergency Management Information System (EEMIS), (2) the Energy Emergency Planning Guide, (3) the Energy Emergency Center, and (4) improving the coordination of emergency operating procedures among States and the utility industry. Federal, State, and industry representatives agree that DOE's help is needed in these areas. Details on these planning efforts are given in followng sections.

Energy Emergency Management Information System

The President, in his National Energy Plan, called for an Energy Emergency Management Information System to provide Federal, State, and local officials with up-to-date information on energy supplies and consumption. EEMIS, within EIA,

is DOE's response to the President's proposal. The development of the program has already started with a project manager assigned to contact potential users of EEMIS and discuss the system and their information needs. The EEMIS program is proposed in DOE's fiscal year 1979 budget at $7.56 million.

The basic purpose of EEMIS is to provide users with more timely and specific information and projections prior to and during energy emergencies. According to DOE officials this will allow users to deal more effectively with national and local shortages or distribution delays in petroleum, natural gas, coal, and electricity.

As a first step, a program plan is being developed which will describe user requirements, system concepts, and recommend a system development plan. The program plan is scheduled for completion in October, at which time public hearings will be scheduled. The full development and implementation of EEMIS will take at least 3 years. Until that time, EIA officials told us that the existing information system will be improved based on the identification of data needs during the development of EEMIS and the experiences gained from recent energy shortages.

While it is too soon to evaluate EEMIS, we believe that if it is developed as intended, it could be a very important source of useful information, especially during an energy emergency. To insure this, DOE should give the development of EEMIS top priority within EIA.

Energy Emergency Planning Guide--an improved reference document

The Short-Term Energy Planning Division of ERA is responsible for annual updates of the Planning Guide. The update for FY 1979 is currently in draft form and has been revised once based on comments received from other DOE sections and other Federal agencies. This draft will be sent to various State energy agencies and energy industries for additional comments either directly or through certain national or regional associations. According to DOE officials public hearings will be held on the Planning Guide if there is time to do so before the October 1, 1978, issue date. ERA is being assisted by a contractor in this effort at a cost of $225,000.

The draft Planning Guide, like its 1977-78 predecessor, is basically a reference document describing all possible actions that could be taken during an energy emergency by industry, Federal, State, or local governments, and by the

general public. Certain improvements, such as helping a user decide which actions to take, have been made which make the draft Planning Guide more useful and informative than the previous document.

Another improvement addresses the feasibility and acceptability of each action for the energy industry, energy consumers, and other interested groups. This gives the individual user of the Planning Guide a starting point for evaluating whether a certain action could or should be taken.

A DOE official told us that when it is completed, the Planning Guide will provide a quantitative analysis of the costs and benefits of the various actions which should be valuable in deciding the desirability of taking certain actions during an energy emergency.

The draft Planning Guide makes an important point of defining the roles that should be played by responsible officials in managing an energy emergency. We believe it correctly points out that the most effective actions to be taken during an energy emergency are those implemented voluntarily by industry and the general public. The Planning Guide proposes that if the emergency persists, State and local governments should bear the primary responsibility for acting to spread the burden of the shortfall. The draft Planning Guide also explicitly states that the Federal role in an energy emergency is primarily to provide assistance and information to the States while monitoring the situation. The States and utilities we visited all agreed with this assessment of roles, and stated that they were pleased with the restraint shown by Federal agencies during last winter's emergency.

Despite these improvements, the draft Planning Guide is still a reference document as opposed to an actual plan. We believe that DOE still needs to take the lead in coordinating and monitoring Federal energy emergency actions. Agreement should be reached on what the various Federal agencies can do, who within a particular agency has specific responsibility for each action, and how task forces within DOE and between DOE and other agencies will be staffed and organized. Managers in State energy offices and industry would then have a better understanding of what the Federal government can and will do during an emergency; this should allow State and industry officials to be better prepared for such actions.

There should also be a provision in this Federal interagency agreement for appointing one agency or person

(presumably DOE or the Secretary of Energy) as Director during an energy emergency. This Director should have the authority to order the implementation of the various Federal actions needed regardless of the agency involved. As stated in chapter 3, we believe the lack of such authority could cause serious delays in taking needed actions during an energy emergency.

The DOE planning staff also needs to examine the uncertainties that existed concerning the possible effects of taking specific actions during fuel shortages. If these uncertainties are not being resolved or studied, the Planning Guide should be amended to incorporate such steps.

Energy Emergency Center

The Energy Emergency Center that was established during the 1977-78 winter continues to act as a clearinghouse for information and assistance requests.

As stated in chapter 4, State energy officials, while pleased with the concept of an Energy Emergency Center, had some problems with the accuracy and timeliness of information from the Center during the coal strike. These problems are being addressed by DOE. Plans are being studied which call for a consolidation of the Center, bringing individuals from the necessary operating divisions together under the direction of an energy coordinator. Also, agency officials told us that the Center will have its own communications equipment, computer terminal, and conference rooms. During an emergency, the director of the Center will also have responsibility for disseminating information gathered by EIA's information system and EEMIS. We believe these actions should allow the Center to respond more quickly and accurately to information needs at Federal, State, and local levels.

Coordination of energy emergency plans

The Short-Term Emergency Planning Office in ERA is coordinating a number of Federal and State energy emergency planning activities. These efforts, which will take place between May 15, 1978, and October 1, 1979, include:

--Preparing a program description delineating objectives for energy emergency planning in the United States, receiving State and public comments on this program, and revising it as appropriate.

--Conducting analyses of emergency actions based on their national relevance to possible energy shortages

this winter. The analysis will consist of assessing the effectiveness of the action and its social, economic, labor, and environmental impact.

--Determining the extent of national preparedness for a short-term energy emergency. This is scheduled for the latter part of November 1978 and will be done through coordination meetings with State, local, and regional energy officials.

ERA has contracted for assistance in these activities at a cost of $90,000.

In addition to the activities mentioned above, officials of ERA's Office of Utility Systems told us that they are developing an electricity-curtailment coordination program. Utility officials told us that utilities operating in more than one State can encounter operational difficulties when differing curtailment levels are imposed on their system. Therefore, the Office of Utility Systems will work with State energy officials and the various utility and power pool representatives to assess State and Federal curtailment plans and to develop policy recommendations regarding the most suitable Federal role. As part of this coordination effort, the Office of Utility Systems will be looking at the effects of existing curtailment plans on simulated shortages of electricity, regardless of the fuel service (nuclear, coal, oil and gas, petroleum products). This effort has just been initiated and a final report on the results of this program is scheduled to be completed in April 1979.

The Short-Term Emergency Planning Office also intends to carry out a series of preparedness exercises that, over the next 3 years, will test Federal and State preparations for and responses to energy emergencies. These exercises are intended to promote better cooperation among States to handle energy emergencies on a regional basis. The exercises will, at first, involve only a few States and will simulate only regional mock-emergencies. Subsequent exercises will encompass most, or all, of the States, and will test responses to mock-emergencies of national scale. Participants in the exercises will be the various State energy offices; the Defense Civil Preparedness Agency; DOE's Energy Information Administration; and ERA's Office of Fuel Regulations, Office of Utility Systems, Energy Emergency Center, and Short-Term Emergency Planning Office. FERC, the news media, and nonparticipating State energy offices will send observers. Preparedness exercises have already begun, and at least two per year will be held throughout the 3-year test program.

ERA has contracted for assistance to develop and analyze these preparedness exercises; $48,300 has been used to initiate planning for these exercises, and an estimated $200,000 will be required to complete Test #1.

At DOE's request, legislation was introduced by Representative Harley O. Staggers on July 11, 1978, and by Senator Henry M. Jackson on July 12, 1978, which would provide financial assistance to States for development of State conservation plans and State energy emergency plans (State Energy Management and Planning Act of 1978, H.R. 13420 and S. 3283). The proposed legislation calls for these energy emergency plans to be coordinated with DOE plans and to provide, among other things, for (1) administration of State set-aside programs for petroleum products and other energy supplies and (2) administration of a State program for allocation and curtailment of fuels in short supply. The bills also state that the Secretary of DOE shall encourage States to establish and participate in interstate or multi-State regional organizations which help develop and coordinate energy plans. The bill would allow States to provide assistance to these regional organizations from the funds received under this proposed legislation. Hearings on the bill have been scheduled by House and Senate committees. The State energy officials we visited told us that this legislation would be helpful to them in testing emergency plans and in evaluating the effects of various actions in the plans.

CURRENT FERC EFFORTS IN PREPARING FOR ENERGY EMERGENCIES

FERC is responsible for assuring adequate supplies of natural gas and electric power to consumers at reasonable prices. As part of this responsibility, FERC (1) establishes and enforces natural gas curtailment plans, and (2) establishes and enforces rates and charges for electric energy transmission and sales for resale. The following sections describe the steps FERC is taking to improve its knowledge in these areas so that it can be better prepared for energy shortages.

The impact of natural gas curtailment

On May 31, 1978, FERC issued an order which established procedures, instituted proceedings, and provided for hearings to evaluate the impact of natural gas shortages projected by interstate pipeline companies. The purpose of the order was to insure that the Commission receives the best information available on gas supplies for the 1978-79 winter season so that it can exercise its mandate under the Natural Gas Act to insure adequate natural gas service. The proceedings will

obtain factual data from 29 natural gas pipelines in the form of testimony and exhibits relating to anticipated natural gas supply, storage operation and inventories, emergency purchases, customer requirements, levels of curtailment, and impact of curtailment on end-users.

The data from the companies has been submitted to FERC and a preliminary analysis has been completed. Hearings have been held on two pipeline companies, mainly because of the large volume of emergency natural gas purchases projected by these companies for the 1978-79 winter. The FERC staff is preparing reports based on the company data and hearings, and a final report should be issued to the Commission in mid-September 1978.

Audit of electric utility billings during the coal strike

On April 3, 1978, FERC announced that its staff was starting field audits to verify intercompany billings of utilities operating and selling electricity in the area affected by the recent coal strike. This verification is designed to assure that the utilities are properly billed for the power according to their wholesale rate schedules on file with the Commission.

On May 10, 1978, the Commission issued an order stating that, based on preliminary findings of the staff, further investigation was needed to determine (1) whether extraordinary operating and billing practices that occurred during the strike were proper, (2) whether the selling, buying, and transmitting utilities used appropriate rate schedules in rendering such services and (3) whether the companies properly used fuel adjustment clauses to bill costs related to the transactions. This investigation was still ongoing as of September 1, 1978. A detailed questionnaire has been sent to 74 utilities to obtain information on their operations during the coal strike. The utility officials we visited, however, are having great difficulty in answering these questions. We believe much time and effort could have been avoided if FERC had been monitoring these transactions as they occurred, as it does with emergency natural gas purchases.

Based on the results of this investigation, it appears that FERC will require or encourage utilities to have rate schedules on file at the Commission which are intended for use during protracted energy shortages.

STATE AND UTILITY INDUSTRY PREPARATION FOR FUTURE ENERGY EMERGENCIES

Generally, the State energy agencies and utilities we visited are not making any major preparations for future energy emergencies. Some studies and revisions of operating procedures are being conducted, but State and utility officials are confident of their ability to manage almost any potential emergency situation. State and utility officials, however, do recognize the need for better information exchange and coordination of emergency plans, and they are willing to work with DOE to improve these areas.

State energy agencies

The State officials we visited were satisfied that they took the correct actions to handle the problems experienced during the coal strike. Therefore, not much effort is being directed towards developing or revising emergency plans. Some State agencies are simply formally stating in a contingency plan what is already well known and understood by them. Other State agencies are making some revisions of their energy emergency plans, such as including more definitive "trigger points" for taking various conservation and curtailment measures. Public hearings have been held or scheduled by some State energy agencies to discuss possible improvements in their energy emergency plans.

Utility industry

We believe the utilities and regional reliability councils we visited are well prepared to handle most emergencies voluntarily. Reports on their operations during the coal strike are being prepared by these utilities, but only minor revisions to emergency operating procedures are expected as a result of the studies. The National Electric Reliability Council (NERC) has issued a report on the coal strike which contains recommendations for improving operations during an energy emergency. Most of these recommendations refer to continuing certain efforts already started by the utilities.

Two areas identified in the NERC report as needing improvement were also named by the utilities we visited. We were told that variations in (1) utility contingency plans and (2) differences in State regulatory agency policies regarding when and how to initiate emergency curtailment plans resulted in difficulties when implementing the plans. There were also misunderstandings among State and utility officials because of the varying definitions used for quantifying a utility's remaining coal stocks.

As previously stated, both the Short-Term Emergency Planning Division and the Office of Utility Systems in ERA have started to work on coordinating contingency and curtailment plans among State and Federal agencies and the utility industry. In addition, utilities have begun standardizing the definition of remaining coal stocks and are developing an overall fuel supply index. This will be a more accurate indicator of a utility's fuel situation because it will consider the availability of all fuels, not just coal. Once these definitions and indices are developed, they will be coordinated with other utilities and State and Federal regulatory and energy agencies.

CONCLUSIONS

DOE and FERC correctly recognize their role of coordinating emergency operating procedures among States and the energy industry, improving information gathering and disseminating procedures, and developing a framework for the various divisions within DOE and other Federal agencies to come together during an emergency to monitor the situation and take appropriate actions. We believe that, in general, DOE and FERC have taken or are planning to take the necessary steps to improve their effectiveness during an energy emergency, and that they could adequately perform their roles during future energy emergencies. DOE, however, needs to critically evaluate its current contingency planning efforts and insure that (1) all current programs are being properly staffed and are necessary and (2) there is better coordination and monitoring of Federal energy emergency actions to insure that all necessary Federal measures are taken during an emergency. FERC needs to monitor power costs more closely during an energy emergency so that difficult and time-consuming audits after the emergency won't be necessary.

State energy agencies and the energy industry are confident of their ability to handle emergencies. No major changes are being made to emergency operating procedures. State and industry officials recognize the need for greater coordination during an energy emergency and will cooperate with DOE to achieve it.

RECOMMENDATIONS

We recommend that the Secretary, DOE, develop a Federal interagency energy emergency agreement which designates:

1. What actions can be taken by the various Federal agencies during an energy emergency and who in each agency has responsibility for each action.

2. How task forces within DOE and between DOE and other agencies will be staffed and organized.

3. Who on these task forces has authority to require action to be taken, regardless of the Federal agency involved.

We further recommend that the Secretary critically review the Department's current planning process to ensure that:

--Only those needs that cannot be met by States and industry programs are being considered.

--State needs identified during past emergencies that require Federal assistance are met.

--Sufficient details on Federal programs and assistance are included in the 1978-79 contingency plan to make it useful in responding to an emergency.

--Proposed Federal and State actions can realistically be implemented.

--Whenever possible, a specific plan of action that can be taken to respond to an energy emergency is provided.

--Proposed emergency actions involving the energy industries are approved by energy technical specialists.

--Development of PEMIS is given top priority within EIA.

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