



Project Summary

Final Report on the Workshop on Energy Development Issues Affecting Appalachia

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In January of 1979 a workshop involving representatives of private industries, government agencies, and public interest groups was held to raise and discuss issues related to Appalachian energy development. The workshop was sponsored by the Environmental Protection Agency with the assistance of the Appalachian Regional Commission. The final workshop report that is summarized here describes the issues identified by these individuals. It also indicates that participants felt future studies of Appalachian energy should be developed to assist the decision makers who ultimately will act on these issues.

This Project Summary was developed by EPA's Industrial Environmental Research Laboratory, Cincinnati, OH, to announce key findings of the research project that is fully documented in a separate report of the same title (see Project Report ordering information at back).

Introduction

This workshop was held to provide its sponsors and participants with a better understanding of the principal issues associated with energy activities in Appalachia. Of particular interest were the impacts on the environment. With the increased demand for coal in the

United States, Appalachia's coal resources are expected to be exploited at an increasing rate during the remainder of this century. Given this possibility and in light of the numerous interest groups that will be affected by the way in which such development takes place, members of the EPA Office of Research and Development held a workshop to discuss the energy issues that would affect Appalachia in the next 20 years.

The workshop, which was held during a two day period in 1979, in Atlanta, Georgia, was attended by 37 invited participants, representing Federal and state government agencies, private enterprise, and public interest groups. All had been closely involved in various aspects of Appalachian energy activities for some time. Prior to the workshop, participants agreed to join one of three small discussion groups. Each group focused its attention on one of the following parts of the energy supply chain:

1. Resource Extraction.
2. Energy Conversion Facilities.
3. Energy End-Use.

The group facilitators provided some structure to each group's discussion, but the amount of direction was limited; participants were relatively free to shape their conversations within the confines of each topic area. A plenary

session was held at the end of the workshop. At that point, the findings of each group were summarized for all the participants.

Broadly stated, the objectives of the workshop were three-fold. The first goal was to identify participants' common concerns about future energy activities in the region. Second, members of the conference sought the basis for any differences in opinion about how energy development might best occur. Third, they attempted to learn where there are gaps in our knowledge about the alternatives for energy growth, and to determine the means of managing growth (where necessary) and of minimizing the problems that growth creates for Appalachia. Suggestions for research were phrased in terms of what the focus of an overall assessment of possible future Appalachian energy activities might be, such a study being referred to as an "Appalachian energy technology assessment."

Throughout the workshop emphasis was on environmental issues, but many other technical, economic, and institutional subjects were discussed because of the close interrelationship.

For the research offices of a government agency such as the Environmental Protection Agency (EPA), a workshop of this type has two primary benefits. The agency gains a better understanding of how energy activities form part of the social fabric of a particular region of the country and how those involved in the region would like to see change occur. Such insights help to reveal the social, as well as physical, environments within which agency decisions will have to be implemented. In addition, the workshop shows where the agency might focus research efforts to improve the comprehensiveness of its own decisions and to help residents of the region understand the options available to them.

This article highlights the findings of the workshop. A more detailed description of those two days of discussions is provided in the full Project Report.

Conclusions and Recommendations

Resource Extraction Session

The discussion of the Extraction Session progressed through two phases. The first phase addressed issues pertaining to the scope and objectives of

an Appalachian energy technology assessment. During the second phase, the discussion turned to the identification of issues to be investigated during the course of such research.

It was suggested that one contribution that a technology assessment of Appalachian energy development would provide is the documentation of both the formal and informal institutional arrangements underlying energy-related development. The formal institutional structure is provided by the laws and regulations that must be complied with in order to pursue energy activities. The informal structures are the unwritten rules and patterns of conduct adhered to in the day-to-day business of private industry, as well as in societal interactions and government operations. Future research should seek to identify the nature of these relationships and, in particular, to analyze the effects on them of formal legal requirements.

Three scenarios were suggested to provide a framework within which the interplay to technological, environmental, economic, and social concerns could be examined:

1. A continuation of existing technology, regulations, and institutional relationships, with no new extraction development in the region.
2. A continuation of existing technology, regulations, and institutional relationships, increased levels of coal production.
3. Increased levels of environmental and economic regulation designed to meet existing air, water, and land use standards and to maintain the quality of life at an acceptable level.

These scenarios reflect different assumptions about the level of future coal development and the stringency of environmental and economic regulation of energy activities. Thus, they provide a method for drawing out and illustrating the relationship of the factors that influence specific issues.

The remainder of the discussion in the Resource Extraction Session centered on two issues. One was the impact of the regulatory environment on coal extraction. The other concerned how increased coal mining affected the quality of life in the mining areas. The discussion led to the development of specific questions that future research could examine. The following list

highlights the major questions that resulted from the session:

- How do environmental regulations affect small coal mine operators?
- What is the effect of increased government regulation on the competition of coal with oil and gas?
- Will extraction technology improve substantially in the near future?
- What are the effects of current regulations on technical innovation?
- Would area-wide environmental regulations be more effective than site-specific permitting?
- Who will assume the increased economic burdens of coal production on social institutions?
- How can quality-of-life issues achieve a larger role in the decision-making processes associated with coal extraction?

Energy Conversion Facilities Session

The discussion in this session began with an examination of the benefits and problems resulting from the continued expansion of coal-fired electric generating facilities. Later in the session, the group turned to a discussion of the possible alternative energy sources available to the region, including gas, oil, biomass, and solar energy. Although these other sources of energy are viable alternatives in Appalachia, the group participants agreed that any discussion of energy in the region would be most productive if initially focused on coal.

It is anticipated by the workshop organizers that many of the issues arising in an initial examination of the technology involved with the coal-fired generation of electricity would be related to other energy technologies, for example synthetic fuels production. For this reason, discussion focused first upon coal-fired generating facilities. The benefits and problems resulting from the expansion of such electric plants were identified. From these, the group developed a list of problems and constraints faced by those involved in facility development. This list is presented in Table 1.

Each member of the group was then asked to choose three of the listed items that were most important to the interests he or she represented, and also to consider the choice of the item by weighing its relevance to future research on Appalachian energy development.

Table 1. Problems/Constraints Associated with Expansion of Coal-Fired Electric Generating Facilities

1. Electricity demand ("load") management - redistribution rather than expansion.
2. Facility siting (including small plants for local power generation and use) - regulations and costs.
3. Financing - taxation and capital investment.
4. Availability of fuel.
5. Public policies not yet available for coal.
6. Mining practices - regulation and strikes.
7. Interest group participation - lack of communication.
8. End-use patterns - forecasting uncertainties.

The choice made by the participants indicated that environmental regulations and facility siting were given a high priority by most present. Public policies, defined as Federal and State policies toward energy development, were of particular concern to private industry. The participation of interest groups in policy and regulation formation was ranked high by government representatives, while the public interest representative felt that socio-economic considerations were more important.

Based on these results, the conversion facilities group was directed to a discussion of the following five factors and their implications to Appalachian energy activities:

1. Environmental impacts - air, health, water - and their regulation.
2. Facility siting.
3. Interest group participation.
4. Public policies.
5. Socio-economic and cultural consideration.

As a result of discussing these five topics, a list of problems which might be addressed in an Appalachian energy technology assessment was composed. That list is presented as Table 2.

Energy End-Use Session

The Energy End-Use Session resulted in a group consensus that one general, central issue and four specific subissues represented the group's concerns:

A. Central Issue: Lack of a consistent national policy on fuel utilization.

Table 2. Conversion Facility Session List of Problems to be Addressed in an Assessment of Appalachian Energy Development

- What mechanisms exist for dealing with the long-range transport and cumulative effects of air pollution?
- What will be the impact of air regulations on state and regional economic development? In particular, what tradeoffs must be considered when allocating air pollution increments for Prevention of Significant Deterioration (PSD)?
- What effect would clean air regulations have on developing energy technology?
- What are the net economic costs and benefits to various government jurisdictions that would result from establishment of different types of institutional frameworks to manage the development of energy facilities and their associated impacts?
- What impact would the promotion of alternative energy sources (synthetic fuel, biomass, etc.) have on regional development?
- What mechanisms exist, or could be created, to deal with the inconsistencies between state and Federal EPA air pollution control regulations?
- How many differing attitudes of Appalachian communities toward development affect the type and location of future growth?
- What are the health tradeoffs associated with different energy conversion alternatives?
- What mechanisms exist for community control of, or at least involvement in, the conversion facility siting process?
- What will be the effects of different levels of energy production, as well as various energy conversion technology mixes, on the Appalachian region?
- What mechanisms exist for public participation in the siting and development of decision-making processes at both the state and multicounty levels?
- What effects do differing policies at different levels of government have on energy development?

B. Specific Subissues:

- Communication among different levels of government (local, state, and Federal) and between governments and the public.
- Centralization vs. decentralization of power generation.
- Growth management and development.
- Technological applications.

It was generally felt by session participants that a consistent *national policy on fuel utilization* is essential to assessing future impacts of energy growth. Such a policy would provide a framework for decision making. Modification of the current fuel and energy regulations to provide consistency may or may not be possible, but they must be examined to determine the climate in which growth would occur. It is especially important to examine these regulations with respect to Appalachia energy production and use in general, and to coal production and use in particular.

One of the major factors that results in conflicting regulations and programs is the lack of communication and cooperation between various levels of governments (local, state, and Federal). Such communication also often appears to be lacking among the various departments of government at each level. Thus, the states may set standards or have policies that are inconsistent with those at the Federal level; or one Federal department may be pushing for increased coal utilization, while another is limiting power plant emissions, thereby placing economic constraints on coal utilization.

Communication with the private sector is also limited in many respects. This can cause long delays as those private or public interest groups which were not heard during the planning phase make their views known through lawsuits and court injunctions. Better communication channels between all those associated with energy development and its regulation would help minimize such problems.

When the question of choice of fuels to generate energy was evaluated, the issue of whether to *centralize or decentralize generating facilities* arose. Centralization would lend itself to exporting energy. Decentralization would lend itself to local development in which the generating facilities would serve load centers. This could lead to stimulating the growth of Appalachian manufacturing industries, thereby moving the region away from an economic position which is heavily dependent upon exporting mineral resources and power. It was noted that the availability and economics of alternative fuel types would have an important effect on the centralization/decentralization issue.

Implementing centralization, decentralization, or some mix of the two will require a program of *growth management* to effectively guide changes in local and regional growth patterns. Growth management in Appalachia will include promotion of the growth of industry and population. It will also necessitate the management of expansion resulting solely from free-enterprise forces, as well as that resulting from government programs. A comprehensive growth management plan would eliminate much wasted motion and could be used as a means to involve the private sector of Appalachia.

Another important area to be considered is the *technological applications* used to accomplish the foregoing plans. This would include pollution control technology. This is a unique opportunity to construct utilities and industries from the "ground up" thus reducing the need to modify existing facilities in the future. A logical presentation of the energy and control technology alternatives available to accomplish growth will be a necessity for any assessment of future Appalachian energy development.

An analysis of the current research and development programs and their future direction will also be required. This would certainly aid in predicting or stimulating growth in Appalachia. Some R & D efforts may even be redirected to assist in solving problems highlighted by the proposed assessment.

Four questions that represent the thrust of the End-Use Session were developed by the group. It was thought that the following questions should be addressed in the course of an assessment of Appalachia's energy future:

- What are the alternative procedures for communication among the various levels of local, state, and Federal governments; within those government levels; and between those government levels and the Appalachian private and public sections?
- Would the energy development goals of the Appalachian Regional Commission be best served by centralization or decentralization of generating facilities or some combination of the two strategies?
- By what mechanism will growth management in Appalachia, including transportation, be accomplished?
- Can technological application be examined, especially in the areas of conservation and control devices?

Issues Pervading the Workshop Discussions

There were issues that appeared to dominate the workshop. Some, such as making regulations more effective and efficient, were explicitly stated. Others were implicit in the discussions as indicated from a number of more narrow issues that were raised. The question of how the burdens and benefits of energy development should be distributed was such an implied issue.

Four major issues appeared to dominate much of the two days of discussions:

1. What are the most important factors to consider when formulating future policies on Appalachian energy development?
2. How should the burdens and benefits of energy development in Appalachia be distributed?
3. How can the effectiveness of environmental regulations which govern energy development be improved, while restraining the cost of their implementation?
4. What should be the principal objectives of an Appalachian energy technology assessment?

In the final section of the Project Report these issues are presented using a common format. First, the issue statement is made. Then an attempt is made to clarify the issue by discussing why different interest groups feel it has arisen, why it is important to them, and what they think ought to be done about the issue. In the case of the first three issues, discussions are also presented

of how participants felt future research might contribute to a better understanding of (1) the factors underlying each issue and (2) the alternatives for resolving each issue.

The first three issues reflect the desire of many participants to see improved communication, more realistic regulations, and improved economic conditions within the Region. The fourth issue defines what the workshop participants felt researchers should try to accomplish in an Appalachian energy assessment and how such a study should be carried out. The main conclusions reached on this fourth issue may be summarized as follows:

1. *Study Purpose* - The study should provide the region's decision makers with better understanding of current energy activities in Appalachia and of the possibilities for future change and growth. There was disagreement, however, on what aspects of energy development should be emphasized. For some, the study should lead to expanded coal development and use. For others, it should focus on minimizing the environmental impacts of any type of development. Still others wanted the study to investigate all the alternative sources of energy (e.g., coal, solar, nuclear) that could be developed in Appalachia by 2000.
2. *Study Objectives* - Three were emphasized: (1) define current energy activities and the likelihood of future change and growth alternatives, (2) investigate the credibility of past studies, and (3) include Appalachian interest groups in the study process.
3. *Study Audience* - While not given a clear-cut definition in the workshop, it appeared to the authors of the final report that a two-tiered system might be appropriate. The study would address its findings to Federal, state and local government agency needs (Tier One), but include business and public interest groups (Tier Two) in the study so that they could also learn from the process and influence the direction of the study.
4. *Study Geographic Scope* - The study should not be confined by the boundaries of the Appalachia Region, but should be scoped by the problem of the region which is being investigated. For example,

strong demand for exporting energy will require investigation of future market structures outside the Region.

5. *Study Timeframe* - The period from 1985 to 2010 should be the study timeframe. This would allow researchers to consider how near-term decisions will affect future energy activities without looking so far to the future that the uncertainties of the findings would be of little immediate practical value.

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The complete report, entitled "Final Report on the Workshop on Energy Development Issues Affecting Appalachia," (Order No. PB 81-234 387; Cost: \$9.50, subject to change) will be available only from:

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