

C. INTRODUCTION

Since ERDA has been in existence for only a short time, its plans relating to fossil energy have had to be developed very quickly. This is a formative period in the creation of a balanced energy program, pressured by the urgency of decreasing the national dependence on external sources of fossil fuel and by the decline in domestic resource oil and gas. Given the substantial challenge of formulating a balanced strategy under these conditions, the ERDA program in fossil energy is a good first effort. There is an obvious need, however, for continued planning and improved analyses of alternative strategies, and the following observations are made in the hope that they can contribute to this ongoing planning process in a positive manner,

The Plan lacks a clear and consistent identification of priorities—It is clear that there is a strong need for some form of systematic, across-the-board optimization of energy programs on the basis of agreed-upon criteria. Congress has requested that ERDA develop such a capability and base its decisions on it. The present ERDA plan (vol. I), however, is merely an indication of the possible consequences of representative alternative strategies. The “national ranking of R, D&D technologies” cannot be used as anything more than an illustration, and the relative funding levels of different programs discussed in vol. II of the ERDA Plan must be determined in some other manner.

One striking feature of the fossil energy program is the absence of a clear priorities list of the various technologies being pursued. The rationale for this absence is that many of its research and development programs lack sufficient information to make critical assessments of the alternative strategies. ERDA has apparently made the decision at this early stage to keep open all options that hold any promise at all of having a long-term payoff. Although funding in the fossil energy program appears to be sufficient to pursue this strategy at present, the situation will change radically when the costs of the program mount in later years. Demonstration

and commercialization will require significantly increased funding and will force hard decisions with regard to competing alternatives. It is important that ERDA move swiftly to build the necessary decisionmaking capability.

In deciding priorities, the substitutability of one fuel for another is an important consideration. To what extent can electricity based on coal combustion (or systems other than fossil fuels) substitute for liquid and gas fuels? What are the needs of industry for liquid and gas feedstock? In what cases can low-Btu synthetic gas substitute for natural gas in industry? What are the economic and social costs of a conversion from one product to another? What are the likely time lags? The answers to questions like these will have a major impact on the relative needs for different fossil fuel R, D&D programs in ERDA. Issues 1, 4, 9, 10, and 11 discuss specific cases of the lack of clear priorities.

The Plan lacks a sense of urgency about increasing energy supplies from domestic resources—By focusing on new technologies, the fossil fuel program (contrary to the supply projections contained in it) limits itself to an insignificant impact on energy supplies in the short term—before 1985. The first priority should be to get better information about presently available technologies and to facilitate their use where feasible: primary oil and gas recovery from new sources (especially, the Outer Continental Shelf), enhanced recovery of oil, pipeline gas from coal, and shale oil from surface retorting. Although the economic feasibility of many of these technologies is highly uncertain at present, the promise of second generation technologies is seldom much brighter. In the meantime there is a need for better information about the impacts, economics, and operating experience of commercial-scale operations. It must be recognized that the era of abundant cheap energy is over—especially in the cases of liquid and gas fuels. Issues 2, 3, 4, 5, 6, and 9 express concern about the urgency of the energy supply situation.

Demonstration plants should be the keystone of the fossil fuel technology R, D&D program—Because of the urgency of the national energy” situation, the ERDA fossil fuel program should emphasize the demonstration of available technologies at a scale appropriate to their stage of development: near-commercial scale for cases where no serious technical obstacles exist (such as high-Btu gas and possibly oil shale with surface retorting), pilot scale for cases where technical problems still need to be solved (such as tertiary recovery of oil, stimulation of tight gas formations, coal liquefaction, and low-Btu gas-combined cycle powerplants). Although the opinion that emphasis should be placed on demonstration plants for several technologies is not universally espoused, it is not just an industry view. Environmental specialists and university representatives join in the call for better, and more universally credible information about alternatives.

An unresolved question is the possible impact of the proposed national synthetic fuels commercialization program. If this is approved and implemented, its impact on the development of fossil fuels would be substantial. As part of the review of the ERDA programs in fossil energy, Congress may wish to clarify the status and effects of the proposed program in synthetic fuels commercialization. Issues 3, 4, 5, 6, and 10 discuss specific technologies,

Constraints on the commercial application of fossil fuel technologies are given insufficient emphasis in the plan—While fuel technologies are discussed in some detail by ERDA, too little attention appears to have been directed towards the broad range of impediments that can serious-

ly delay, if not block altogether, the introduction of otherwise economically viable technologies. Institutional constraints must be addressed early if the technologies upon which ERDA is concentrating its efforts are to be brought to commercialization. It is poor planning, for example, for ERDA to pour large amounts of funds into the development of a commercially feasible technology for coal liquefaction if the technology cannot then be used—because coal mines cannot supply the coal due to inadequate transportation facilities, capital is unavailable, or water is insufficient. The efficient use of ERDA’s R, D&D funds requires a systematic look at entire energy development systems. The fact that ERDA does not have the primary responsibility within the Federal Government for dealing with some of these constraints is not a sufficient response; all the more reason exists in such cases for concern that the Government may not adequately consider some components which are vital for the successful introduction of new technologies. In later plans, perhaps ERDA will assume the lead role assigned to it by Congress and formulate a broad interagency approach to all aspects of fossil energy problems, thereby providing the assurance that important factors impeding development are not overlooked. As with the technologies themselves, a key consideration in dealing with constraints is the need for information that will be accepted as a basis for discussion by groups in society with varying viewpoints. This is especially important—and especially difficult—in assessing the effects of technologies on environmental and social systems, and it emphasizes the importance of undertaking appropriate studies now. Issue papers 8, and 12 through 16 treat these questions in more detail,