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Statement of  
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before the  
Subcommittee on Economic Stabilization,  
Committee on Banking, Currency and Housing  
United States House of Representatives  
on

Developing and Commercializing Energy Technology

Mr. Chairman and Members of the Committee, we welcome the opportunity to be here today to consider with you the difficult problems of developing and commercializing energy technology. I would like to lay out a perspective and then focus my comments on two things:

- an overview of the scope of various legislative proposals now before the Congress that would provide various combinations of Federal financial support for developing and commercializing energy technologies;
- a brief description of recent and ongoing GAO work bearing on the question of Federal financial assistance for developing and commercializing energy technologies.

PERSPECTIVE ON ENERGY DEVELOPMENT

A large number of issues and choices face Congress in dealing with energy development. Energy development is a slow process. Legislative action will occur years in advance of actual impacts. While we recognize

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that legislative decisions will be required without full information, it is important that the Congress and the Nation focus on some critical issues and trade-offs that can enhance the quality of the decisions to be made.

First, there are no simple choices. Each technology has to be weighed against the benefits and costs of competing options. Those options are not only on the domestic production side. For example, while often overlooked, conservation is truly one of our least costly supply options. Consideration of financing conservation improvements as alternatives to, and complements to, large capital-intensive supply technologies is essential to rational decisionmaking.

Second, although no consensus exists among financial experts, sufficient capital will probably not be forthcoming to support the entire range of developing energy technologies. We can't do everything--we must choose. Further, since it is unlikely that private industry will be able to capture the benefits of many of the more expensive and risky research and development options, some form of Government financing will probably be necessary to stimulate new energy technologies. Developing the criteria to choose among competing technologies and choosing the funding levels for each will be difficult, but equally essential.

For each option we should pursue the question: When could the technology be commercialized? Also the energetics, or thermodynamic efficiencies, should be carefully weighed. Such a weighing of the

net energy output for each technology, will enable us to make energy efficiency comparisons among competing technologies. Adverse environmental effects and social costs of development must be considered as part of the total cost of any energy development project. Also, external influences, such as dependence on foreign oil, must be considered in choosing among future options and short term security.

Even once a decision is made to pursue a given option, we are not home free. Deciding among the most desirable methods for encouraging development, including various forms of Government ownership, tax policy, import controls, loan guarantees, price supports, etc., all depend upon the technology and the energy strategy and goals.

#### ENERGY DEVELOPMENT LEGISLATION

With this perspective in mind, it is useful to recognize that there are three main types of legislative proposals to financially assist the development of new energy technologies. Only by looking at all three areas comprehensively can a true picture of the total costs of energy development emerge.

First, what is termed "front-end" assistance is proposed. This amounts to subsidies to states and local governments in regions which are largely rural and unindustrialized to help them plan for development and to provide the public facilities necessary as a result of the development. Assistance could be in the form of loans, loan guarantees, and planning grants.

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Second, since private investors are reluctant to build and operate new risky commercial or near-commercial facilities, incentives in the form of loan guarantees, interest subsidies and tax write-offs are proposed.

Finally, even after commercial-sized plants are subsidized and operating, there is a potential that synthetic fuels will be too high priced to compete with alternatives such as domestic oil and coal or oil imports. Therefore, subsidies to producers in the form of price supports or to users in the form of tax incentives or low interest loans have been proposed to enable higher cost technologies to compete in the market place.

For example, legislative proposals have been submitted which would guarantee purchase of products. One would set up a board to purchase synthetic fuels and solar energy, and auction them off to the highest bidder. Some of these proposals cover more than one of the three financing categories discussed; but none is truly comprehensive. The point is that no one piece of proposed legislation covers in any comprehensive way the entire range of financial support being considered.

#### ENERGY INDEPENDENCE AUTHORITY

The Administration's most comprehensive energy development proposal would establish an Energy Independence Authority (EIA). The bill, S. 2532, would encourage the development and commercial operation of domestic energy sources and to a lesser extent, encourage energy conservation. A total of \$100 billion would be available to the EIA. The proposal would

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authorize direct investment in energy technologies, loans, loan guarantees, and price guarantees.

Our central concern lies in the proposal's lack of balance. The bill exhibits a clear preference for initiatives of the supply-increasing variety. According to one provision of the bill the conservation projects eligible for funding appear to be those not in widespread use. This would appear to preclude, for example, assistance to a utility-administered residential insulation project, since home insulation is already in "widespread domestic commercial use". No equivalent condition is attached to supply increasing projects.

The bill would hamper conservation efforts rather than simply fail to promote them. This is true because the bill would result primarily in the allocation, not creation of capital. The EIA's loan funds would, in large part, be raised in the private capital market. Its guarantees would make projects it assists financially more attractive to private capital than conservation projects not backed by Federal guarantees. Thus, both its loans and its guarantees will siphon private capital away from conservation projects which might have been able to obtain private financing in the absence of EIA operations.

The choice of projects to receive financial assistance, and the form of assistance, ought to be based upon reasonable forecasts of the degree to which each project will advance the goal of independence per

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dollar of assistance accorded it. We believe that many initiatives in the direction of conservation hold the promise of moving the country farther down the road toward energy independence per dollar spend than do most supply increasing options.

In addition, the bill is underlaid by some assumptions regarding national policy which are by no means settled. Its predilection toward nuclear power generation is the most obvious example. Another is seen in its willingness to give the Government a large quasi-commercial interest in energy supplies which would be in competition with imported crude oil. Since the bill does nothing to limit imports directly, the underlying assumption appears to be that world crude prices will stay high enough to insure the profitability of the EIA's investments in alternative domestic supplies. Thus, the Government would have a financial interest in keeping world crude prices high. We believe that legislation regarding financial support for synthetic fuels and other energy development should be coordinated in a systematic framework which includes all the likely costs associated with development and detail on the mix, number, and size of plants, and types of financial support needed for each. Specifically, adequate financing for synthetic fuels commercialization requires further information, analysis, and evaluation of many factors, particularly the arrangements for subsidies or price supports which may be necessary to make synthetic fuels competitive. Subsidies or price supports in turn raise the question of Government energy pricing policy. For

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example, oil and gas prices are being held down by regulations while it appears that it would be necessary to subsidize higher cost synthetic fuels. While legislation on energy development need not be comprehensive, it should seem obvious that a balanced and consistent energy strategy can provide a useful framework within which individual proposals can be evaluated.

#### SYNTHETIC FUELS REPORT

Our March 1976 report discussed an Administration proposal to authorize ERDA to provide up to \$6 billion in loan guarantees for, among other things, commercial demonstration facilities for the production of synthetic fuels. To encourage industry to participate in synthetic fuels commercial demonstration programs the Administration recommended Government incentives consisting of loan guarantees, price supports, and construction grants.

Because of time constraints we did not evaluate the pros and cons of the various forms of Federal assistance considered by the Administration in arriving at its recommendation in that report. We did note, however, that important policy and judgmental questions were involved in arriving at the recommendations. A different emphasis on certain considerations such as impact on the budget, degree to which an alternative preserves and enhances competition, ability to achieve program goals, and extent of Federal involvement in management of operations--could conceivably lead to a different choice of alternative forms of assistance.

We stated our view that the Congress should consider awaiting further studies which ERDA expects to complete in July 1976 before approving any legislation. The studies should provide better information on the scope

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and magnitude of Federal assistance needed to carry out the programs, including better information on the type and number of plants needed.

ON-GOING GAO WORK

GAO has undertaken a review which focuses on technologies that have demonstrated technical feasibility but which do seem to have impediments to full commercialization. These impediments include a variety of non-technical reasons such as financial, environmental, and regulatory. The technologies considered are synthetic fuels, solar and geothermal energy, enhanced oil and natural gas recovery and certain conservation measures. Within this framework we will first address future supply/demand balances to the year 2000 and consider the probable roles of each of these technologies. We will attempt to determine the current status of each of the technologies and the current impediments to commercialization as well as the pros and cons of various Government options to stimulate financing activity. The options will cover such mechanisms as direct loans, loan guarantees, price guarantees, tax incentives and Government ownership.

We will then attempt to assess what priorities the Government should attach to the various technological options for the purpose of allocating funds or guarantees. In this section we will consider various social and economic goals such as obtaining the most energy at least cost, the maintenance of a competitive environment, economies of scale, tradeoffs between first and second generation technologies and the implications of on-budget and off-budget financing. As a conclusion, we will attempt to specify

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what legislative or policy approaches would, in our judgment, allow the most consistent and systematic consideration of Government role in financing energy commercialization efforts. We will also identify key tradeoffs in this area between the supply and conservation options considered in our report.

As you can see, Mr. Chairman, there are matters requiring closer examination regarding the scope and magnitude of Federal financial support for synthetic fuel and other forms of energy development. We hope that our further study will provide some useful insights on these matters. We plan to complete our study in mid-summer which is around the same general timeframe that ERDA plans to complete its follow-up studies on synthetic fuels.

I want to emphasize that our study not only addresses the fundamental question of whether early commercialization of synthetic fuel technology should be pursued as aggressively as the Administration proposed but also the broader question of how this country can best provide for its future energy needs.

In summary, we are suggesting that information which should be available from ERDA and GAO this summer should be helpful to the Congress as it proceeds toward final legislative action on H.R. 12112 or any of the other bills currently in Congress dealing with the Federal financial support for construction costs, price supports, and initial costs to State and local governments.

Mr. Chairman, this concludes my prepared statement. We will be glad to respond to questions.

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