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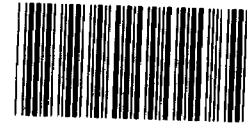


UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

ENERGY AND MINERALS
DIVISION

APRIL 21, 1981

B-202826



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The Honorable James B. Edwards
The Secretary of Energy

Dear Mr. Secretary:

Subject: Electric Utilities' Concerns with
the Department of Energy's Wind
Energy Program (EMD-81-77)

We recently completed a survey of the Department of Energy's (DOE's) wind energy program. We do not intend to perform any more work on the wind energy program at the present time. However, we are sending this letter to apprise you of the results of our survey for consideration in developing the wind energy comprehensive program management plan required by the Wind Energy Systems Act of 1980 (Public Law 96-345, Sept. 8, 1980).

Our work identified a number of needs and concerns electric utilities had relative to the wind energy program. While we have not validated all the information we obtained in our survey, we did note that some of the utilities' concerns are similar to those we have identified in our previous reviews of other renewable energy programs. Because of the important role the electric utility industry will play in the ultimate widespread use of wind energy and the need to make the most effective use of limited program funds, it is important that these concerns be considered.

We recognize that the administration has proposed a number of budget reductions which sweep across the entire solar budget, and that the wind energy program was not spared in this process. In this connection, the administration has proposed a funding level of \$19.4 million for the program in fiscal year 1982, compared to a level of \$80 million in the preceding year. However, while the ultimate level of funding and scope of the program is the subject of ongoing congressional deliberations, it is clear that some form of wind energy program will emerge, but perhaps at a reduced

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funding level. Consequently, [the needs and concerns identified by the utilities covered in our survey are especially relevant in view of increased prospects of limited funds for the program, and it is even more crucial that they be considered in developing appropriate program plans and in setting the future course of the program.]

In performing our work, we concentrated on the large wind machine portion of the program which is being carried out by the National Aeronautics and Space Administration (NASA) under DOE's direction. Large wind machines are the major focus of DOE's program, and these machines, when interfaced with existing utility grids, are expected to have the largest impact toward achieving widespread use of wind energy. Some sources indicate large wind machines will provide 85 to 90 percent of all power produced by wind energy systems by the year 2000. We conducted our survey at DOE headquarters in Washington, D.C., and at NASA's Lewis Research Center in Cleveland, Ohio. We also identified over 150 utility companies expressing interest in wind energy. From this number, we selected and discussed wind energy and DOE's program with 50 utilities spread out over a wide geographic area. They consisted of various utility types and sizes, having differing degrees of involvement in wind energy.

BACKGROUND

The wind energy program has grown from about \$200 thousand in fiscal year 1973 to its current level of \$80 million in fiscal year 1981. The program had recently been given added emphasis by the enactment of [the Wind Energy Systems Act of 1980. The act established an aggressive 8-year program of research, development, demonstration, and technology applications for converting wind into electricity and mechanical energy.] The major objectives of the act are to

- reduce the average cost of electricity produced by installed wind energy systems to a level competitive with conventional energy sources;
- reach a total installed capacity in the United States from wind energy systems of at least 800 megawatts-- 100 megawatts from small machines (less than 100 kilowatts each) and 700 megawatts from large machines (over 100 kilowatts each); and
- accelerate the growth of a commercially viable and competitive wind energy industry in order to reduce consumption of fossil fuels.

[The act requires DOE to submit to the Congress, by June 8, 1981, a comprehensive program management plan delineating activities and strategies to achieve the purposes of the act. The plan is to include information on the anticipated goals and objectives to be achieved by the program; the program's elements and activities; the program's strategies; and the effects which the program may achieve.]

Although program officials are putting together such a plan, it appears that only a limited effort is being expended to obtain the views of electric utilities. The results of our survey indicate that consideration of these views can be important for purposes of planning and setting the future course of the wind energy program.

SURVEY RESULTS

FC. [Our survey work indicates that the utility industry generally agrees with DOE's basic strategy for developing wind energy. The strategy calls for researching, developing, and demonstrating a series of progressively more efficient and reliable machines; methodically studying ways to reduce costs until wind energy reaches a level competitive with conventional fuels in a broad market; and then providing incentives to stimulate the use of wind energy. Utilities generally agreed that DOE's strategy is probably the best for a program which still has many technical and other barriers to overcome.]

[However, there were areas of concern with DOE's wind energy program expressed by many in the utility industry which we believe should be brought to your attention. The concerns are (1) pessimistic outlook for DOE attaining its program goals, (2) need for more emphasis on a successful demonstration and less emphasis on complex machines, (3) questionable usefulness of the wind energy resource assessment portion of the program, and (4) the need for better information dissemination on wind energy.]

Most utilities surveyed believe the cost, energy, and commercialization goals of the wind energy program are admirable and ambitious. However, [most believe these goals are unattainable by 1988 as established by the act. These utilities expressed concern that DOE's program goals may result in the installation of many wind machines which are not market-ready. Consequently, credibility of wind energy may be lost by pushing machines which are uneconomical, not reliable, unsuitable for utility use, and otherwise unattractive to potential buyers and users.] The utilities stressed that DOE needs to minimize failures in the program if it is

to create a wind energy industry and achieve effective wind energy commercialization.)

Almost half of the utilities stated that [a successful demonstration of a large wind machine is the most important step DOE can take to advance the use of wind energy.] According to these utilities, a successful demonstration would be one that results in a machine that is both cost-competitive and reliable. [Once wind energy is demonstrated to be cost-competitive with conventional power sources, they contended that other problems impeding the use of wind energy would be attacked by the utilities with more vigor.] In this regard, several utilities expressed concern that the wind machines currently being built under DOE's program are too complex and sophisticated for widespread use. [They believed that the Government machines will be too complicated and expensive for utility use, and will do little to convince the industry of wind energy's viability.)

Our past work in other solar technology areas supports the utilities' concerns relative to complex demonstrations. Our prior reviews of the solar heating and cooling demonstration program disclosed that many complex systems were being demonstrated and were having severe problems. Those demonstrations not only failed to satisfactorily demonstrate the viability of solar heating and cooling technology, but may have had an adverse effect on the public acceptance of this technology.

[Concerning the questionable usefulness of the wind resource assessment portion of the program, most of the utilities believed the assessment, as currently envisioned, would be too general and of little value for their specific site requirements.) The Wind Energy Systems Act of 1980 established a 3-year, \$30 million national wind resource assessment activity aimed at validating existing data on wind resources, conducting regional wind assessments, and initiating a general site prospecting program. The utilities generally stated that the assessment activity will not provide the specific wind resource data they need, and that [funds could be better spent by supporting site specific wind surveys for those utilities that express interest in investigating the potential of wind energy in their respective service areas.]

[Virtually all the utilities believed DOE could improve its wind energy information dissemination efforts.] Many stated that they were not receiving the type of information needed to make investment decisions on wind energy. Frequently heard comments were that much of the information is

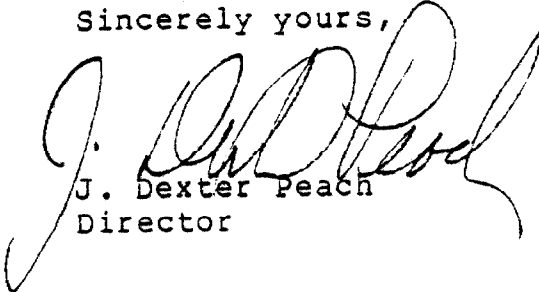
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too technical, not timely, and does not include sufficient performance and operating data. Some utilities indicated that they rely on trade journals and non-Federal organizations to keep abreast of program progress and problems. The utilities indicated that without better information, decisions to use wind energy cannot and will not be made, and the widespread use of wind energy will be slowed.

In summary, the utility industry will be the major focus of the wind energy program, and while most of the utilities we surveyed generally agreed with the direction of DOE's wind energy program, we believe the concerns they expressed to us are significant and need to be considered in developing DOE's comprehensive program management plan for wind energy. We discussed the results of our work with your wind energy program staff, and they indicated that these concerns will be taken into consideration in developing the legislatively mandated plan and setting the future direction of the wind energy program.

We appreciate the cooperation and courtesy extended to our staff in carrying out our work.

Sincerely yours,



J. Dexter Peach
Director