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[Concerns regarding Report on the Solar Energy Research Institute]. EMD-78-20; B-186105. November 25, 1977. 3 pp. + 2 enclosures (9 pp.).

Report to Rep. Timothy E. Wirth; Sen. Floyd K. Haskell; Sen. Gary W. Hart; by Elmer B. Staats, Comptroller General.

Issue Area: Energy: Executive Branch Organization and Processes for Dealing with Energy Problems (1611); Science and Technology: Federal Laboratories and Federally Supported Organizations Performing Research and Development (2003).

Contact: Energy and Minerals Div.

Budget Function: Natural Resources, Environment, and Energy: Energy (305).

Organization Concerned: Department of Energy: Solar Energy Research Inst.; Energy Research and Development Administration.

Congressional Relevance: Rep. Timothy E. Wirth; Sen. Floyd K. Haskell; Sen. Gary W. Hart.

Authority: Solar Heating and Cooling Demonstration Act of 1974 (P L. 93-409).

GAO's September 9, 1977 report on the Solar Energy Research Institute (SERI) was based on information obtained from continuing reviews of Federal solar energy research and development efforts. Research specifically related to the authorization and creation of SERI began in April 1977 after the Energy Research and Development Administration (ERDA) announced the selection of a contractor for SERI. Disagreements were expressed relating to findings and conclusions in this report. Findings/Conclusions: Clarifications were offered on the following questions raised about the report: (1) It inaccurately asserts that a certain amendment was adopted by the Senate during deliberations on the ERDA authorization bill. GAO did not make this assertion, but stated that a bill scheduled to be introduced in the House was similar to one adopted by the Senate. (2) It suggests that the need for SERI has been eliminated through consolidation of Federal solar energy efforts. At the present time, such efforts are fragmented. (3) GAO failed to recognize the congressional commitment to SERI by asserting that many of its projected functions could be performed at existing laboratories. Because of the time lapse since SERI's authorization, placing it at an existing laboratory could have hastened its operation. (4) Existing Federal laboratories are not geared to perform certain functions. Multiprogram laboratories not only have capabilities that could be built upon, but many laboratories have viable ongoing solar energy efforts. (5) Undefined factors do not limit SERI's importance. The importance of SERI's purposes were not questioned, but its need should be reexamined. (HTW)



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

B-186105

November 25, 1977

The Honorable Floyd K. Haskell
The Honorable Gary W. Hart
United States Senate
The Honorable Timothy E. Wirth
House of Representatives

In your joint letter dated September 23, 1977, you presented various information and indicated concern regarding our September 9, 1977, report on the Solar Energy Research Institute (SERI). We have carefully considered the matters in your letter, and our comments on each are contained in enclosure I. For convenient reference, a copy of your letter is shown in enclosure II.

As you know, our report was prepared as a result of an August 2, 1977, request from the Chairman, Subcommittee on Advanced Energy Technologies and Energy Conservation Research, Development, and Demonstration of the House Committee on Science and Technology. The report, however, was based on extensive and careful research that had actually begun long before our receipt of the Subcommittee Chairman's request.

Part of that research included drawing on the tremendous body of information accumulated during our prior and ongoing assignments involving solar energy. In this regard, we have been continually reviewing the Federal solar energy research and development efforts for the past several years and have issued a number of reports which touch on various aspects of these efforts. The most comprehensive of these reports was issued in November 1976 and contained several recommendations regarding the adequacy of the planning process established by the former Energy Research and Development Administration (ERDA) to meet the goals of its solar energy research, development, and demonstration program.

We have also recently completed a comprehensive examination into possible considerations for encouraging the widespread use of solar space and water heating. This examination covered the technical and economic status of the various solar heating applications; constraints or impediments to their widespread use; and, effectiveness of current and proposed efforts to encourage the use of solar energy, particularly existing

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State incentives legislation and the President's proposed tax credits. We are currently drafting a report on the results of that examination for issuance to the Congress.

We also have underway three other assignments in the solar energy research, development, and demonstration area which we expect to complete during 1978. They are (1) a review of Federal efforts and progress relative to the requirements of the Solar Heating and Cooling Demonstration Act of 1974 (Public Law 93-409); (2) a review of the probable impact of selected funding levels on the development and commercialization of solar energy; and, (3) an assessment of the management, progress, and problems associated with Federal efforts to develop the various solar technologies into viable energy sources.

In addition to drawing on the results of our prior and ongoing efforts specifically relating to solar energy, our research included obtaining input from our recent examination of the energy research, development, and demonstration roles of ERDA's multiprogram laboratories. That examination included obtaining and analyzing information on the capabilities of these laboratories for performing work in the energy research, development, and demonstration areas, the nature and extent of their involvement in such areas, and the manner or mechanisms by which their respective roles in these areas are determined. Our examination was made, in detail, at each of the eight multiprogram laboratories and ERDA headquarters. We also did work at three of ERDA's operations offices, two energy research centers, the National Aeronautics and Space Administration headquarters and two of their facilities--the Jet Propulsion Laboratory and Lewis Research Center. In addition, we visited 25 industrial and educational organizations and met with a panel of several of our consultants having expertise in energy research and development at university, industry, and Government organizations to assist us in addressing the issues affecting the roles of the multiprogram laboratories. We expect to issue our report on the results of that examination early next year.

Our research that was specifically related to the authorization and creation of SERI began in April 1977, shortly after ERDA announced the selection of the Midwest Research Institute as the managing/operating contractor for SERI. Our rationale for beginning at that time was twofold. First, ERDA's selection of the SERI contractor would have a probable effect on the ongoing work at other Federal laboratories, and this had to be assessed in light of our then ongoing examination of the multiprogram laboratories. Second, we recognized the sensitivity inherent in selecting

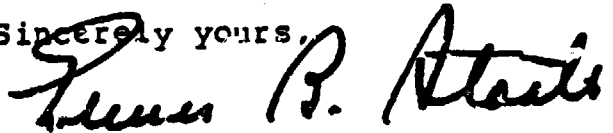
the contractor and location for SERI, and we anticipated congressional interest in this area.

Thus, by the time we received the Subcommittee Chairman's August 2, 1977, request, much of the research needed to satisfy that request had already been done. We had to do more, however, than simply write and issue the report. We still had to complete our review of pertinent legislation, obtain and analyze a substantial number of documents relating to the evaluation and selection of the SERI contractor, discuss the issues with many persons connected with bringing SERI into being, and prepare and process the report through our various normal review channels.

We trust that this background information and our enclosed specific comments satisfactorily meet your needs. We would be pleased to meet with you to provide further information should you so desire.

As agreed with your office, copies of this report are being sent to the Chairman, Subcommittee on Advanced Energy Technologies and Energy Conservation Research, Development, and Demonstration of the House Committee on Science and Technology, and other interested members of the Congress. Also, copies will be available to the public.

Sincerely yours,



Comptroller General
of the United States

Enclosures - 2

GAO COMMENTS ON MATTERS PRESENTED BY
SENATORS HASKELL AND HART AND CONGRESSMAN WIRTH
REGARDING GAO'S SEPTEMBER 9, 1977, REPORT
ON THE SOLAR ENERGY RESEARCH INSTITUTE (SERI)

The matters presented in a September 23, 1977, letter signed jointly by Senators Floyd K. Haskell and Gary W. Hart and Congressman Timothy E. Wirth, are enumerated and underscored below, followed by our comments thereon. To facilitate presentation, we restated or paraphrased some of the matters presented. The full text of the September 23 letter is contained in enclosure II.

1. The report inaccurately asserts that an amendment requiring the allocation of 80 percent of SERI's appropriation to the regional SERI network was adopted by the Senate in June of this year during its deliberations on the Energy Research and Development Administration (ERDA) authorization bill.

Our report did not make such an "assertion." In discussing the amendment in question, we stated in the report that the fiscal year 1978 authorization bill for ERDA was scheduled to go to the House floor in early September 1977. We pointed out that we were requested 1/ to provide comments on an amendment that was expected to be introduced at the time requiring \$25 million of ERDA's solar program funding to be spent through SERI, with 80 percent going to the regional SERI network. With respect to the amendment adopted by the Senate last June, we stated that it was "similar" to the one that was expected to be introduced on the House floor.

We recognize that the amendment adopted by the Senate did not set a specified amount or percentage of funds for allocation to the regional SERI network. The amendment did, however, provide that funding be authorized for the network. Accordingly, our use of the term "similar" in the report was based on the fact that the expected House amendment would similarly have had the affect of authorizing funds for the network.

1/Request dated August 2, 1977, from the Chairman, Subcommittee on Advanced Energy Technologies and Energy Conservation Research, Development, and Demonstration, House Committee on Science and Technology.

It was not our intention to convey the impression that these two amendments were identical. Nowhere in the report did we discuss the issue pertaining to the specified allocation of funds to the network, other than by way of background information on the nature of the Subcommittee Chairman's request.

Our primary concern was that any authorization of funds for the regional SERI network, regardless of the specific dollar amount, would have been premature. Our bases for this position were:

- ERDA's decision to create the network appeared to have been rather arbitrary.
- Indications that the eventual role of the network may dilute the intended focal point role of SERI.
- The total estimated cost of the regional SERI network was unknown.
- Decisions had not yet been made concerning how the regional network would impact on and interface with SERI, the other Federal laboratories, and the headquarters organization.
- The reporting and control structure for the network had not yet been defined.

Accordingly, we stated our belief that the Congress should reject any amendment or proposal that would have the effect of authorizing funds for the network until the need for such a network is adequately demonstrated. In this regard, we suggested that the Congress should require the Department of Energy to conduct an examination into the need for the network and to provide the Congress with a comprehensive report setting forth its total estimated cost, organizational structure, management interrelationships, and scope of work.

2. The report suggests that the need for SERI has been eliminated through consolidation of previously dispersed Federal solar energy research, development, and demonstration (RD&D) efforts. Such efforts, however, remain fragmented.

It should be recognized that the primary purpose of our report was to bring out questions or problems which we saw with the amendment that was expected to be introduced on the House floor. We pointed out in the report that the changes

in the Federal efforts to develop solar energy, both in terms of consolidation of efforts and increased emphasis, have been significant since SERI's authorization in 1974. We felt it was necessary to bring these changed circumstances and associated matters to the attention of the Congress because the funding levels contained in the 1978 ERDA authorization bill, as well as the expected amendment, represented the first major financial commitment to the SERI effort. Since SERI had not yet become a viable operating entity, we pointed out that the opportunity exists for the Congress to rethink its position on SERI before embarking on a more substantial investment in the SERI effort.

3. GAO failed in its analysis to gauge the degree of congressional commitment to SERI as an instrument to hasten the realization of solar energy by asserting that many of the research and development functions projected for SERI could be adequately performed at existing laboratories, and that ERDA did not give due consideration to the option of placing SERI at one of these facilities.

We recognize that there has been substantial congressional interest and commitment to SERI as one of the means for hastening the early use of solar energy as a viable energy source. We note, however, that 3 years have elapsed since SERI's authorization and, as stated in our report, SERI has yet to become a viable operating entity. Accordingly, our report pointed out that by placing SERI at one of the existing Federal laboratories, ERDA could have brought SERI into being at an earlier date.

One of our principal concerns, however, was that ERDA did not give adequate consideration to placing SERI at one of these existing laboratories. We had a number of reasons for this concern. First, the legislation authorizing SERI's creation refers specifically to these laboratories as possible locations for SERI. In this connection, section 10(b) of the Solar Energy Research, Development, and Demonstration Act of 1974 states:

"The Institute may be located (as designated by the Chairman) at any new or existing Federal laboratory (including a non-Federal laboratory performing functions under a contract entered into with the Project or with any of the agencies represented in the Project as well as a laboratory whose personnel are Federal employees)."

Second, no detailed evaluation was made of the extent to which these laboratories could perform, or be modified to

perform, the functions envisioned for SERI. Third, the Federal laboratories were not allowed to respond to ERDA's request for proposals from organizations interested in becoming the managing/operating contractor for SERI. Taking into consideration the tremendous amount of funds already invested in the Federal laboratory system and the involvement of certain of these laboratories in solar energy, we believe equal consideration should have been given to placing SERI at one of these laboratories.

4. The existing Federal laboratories are not geared to perform such SERI functions as workshops and symposiums; analyze institutional impediments; or identify incentives that would enhance the economics of solar energy, which are essential to early realization of solar energy.

With respect to the capabilities of the Federal laboratories, our recent work on the roles of the multiprogram laboratories shows that certain of the Federal laboratories not only have the capability for conducting research on solar energy, but they have viable ongoing solar energy efforts as well.

As pointed out in our report, two of these laboratories --the National Aeronautics and Space Administration's Jet Propulsion Laboratory and ERDA's Sandia Laboratories--were expected to have outlays of \$33 million and \$30 million, respectively, for such efforts during fiscal year 1977. Also, according to ERDA, work at the Sandia Laboratories is typical of the solar energy research underway in university, industry, and other Federal laboratories throughout the country.

The laboratories have also been involved in providing management support to headquarters in such areas as solar energy RD&D planning, proposal assessments, and contract monitoring. Furthermore, five of the laboratories are currently involved in the Department of Energy's ongoing Solar Technology Transfer Program. This program is to facilitate the early transfer of solar technology, in part, through providing potential users of solar energy with information on technical and economic feasibility, Government incentives, and consumer protection. In this program, the laboratories, together with the Department of Energy's Chicago Operations Office, provide support type functions to a network comprising six regions located throughout the country. Such functions include education and training; conduct of workshops, seminars, and conferences; preparation and display of exhibits and other information dissemination activities; and work with individuals and groups, such as universities,

industry-related trade and professional associations, and regional, State, and local Government entities.

The capabilities of the multiprogram laboratories were also recognized by ERDA in its December 1975 report of the Field and Laboratory Utilization Study Group. The purpose of that study was to evaluate the management practices inherited by ERDA from other organizations and make recommendations that might contribute to the best use of existing field and laboratory resources in accomplishing ERDA's mission. The Study Group concluded that the multiprogram laboratories' capabilities in solar energy and other nonnuclear areas warranted giving them major mission assignments in such areas. The pertinent section of the Study Group's report is quoted below:

"With the change in the Atomic Energy Act in 1972, the multi-program laboratories were strongly encouraged to enter into AEC-supported work in the non-nuclear energy area. Their achievements to date, as exemplified by progress in geothermal energy, in situ coal gasification, solar thermal energy, analysis of energy systems, and applications of high technology developments such as super-conductivity to energy have been impressive for the efforts invested. The major activities of the multi-program laboratories continue to be in nuclear-related research and development and in long-range research, both of which are important and are statutory responsibilities of ERDA. Their skills and disciplines, as well as some related experience, can be directly applied to the non-nuclear energy-related challenges. The flexibility inherent in a Government-owned, contractor-operated operation, with a broad technology base, gives the laboratories the ability to marshal broad technical project teams to concentrate on specific complex scientific and technological problem areas. The laboratories, therefore, should be assigned major missions in non-nuclear areas."

In our report on SERI, it was not our intent to portray the laboratories as having in place all of the prerequisites (e.g., staff, equipment, and facilities) for handling all of SERI's immediate and possible future functions. We believe, however, that by building on the research expertise, management structure, and facilities existing at the laboratories, ERDA could have brought SERI into being at an earlier date.

5. While there are many important factors which are not adequately defined at the present time about SERI, this does not in any way limit the importance or require a reevaluation of SERI.

Certainly, our report did not suggest that the many unknowns about SERI limit the importance of the purposes it was designed to serve. We pointed out, however, that substantial changes in the organization, management, and content of the Federal solar energy RD&D efforts have occurred during the intervening years since SERI's authorization and that, in light of these changed circumstances, the need for creating SERI may be called into question. Accordingly, we stated in the report that this need should be reexamined before SERI becomes a viable operating entity.

We believed it appropriate to advise the Congress that there are a number of unknowns about the SERI effort and that the Congress may wish to consider them in light of the requested funding levels for SERI and the regional SERI network. In this connection, we made two suggestions concerning these unknowns. The first dealt only with the regional SERI network. We pointed out that because of the current unavailability of information and the rather arbitrary justification for establishing such a network, the Congress should reject any amendment or proposal that would have the effect of authorizing and funding a regional SERI network until the need for and composition of such a network are adequately demonstrated.

Our second suggestion dealt with the need for the Congress to be more fully informed concerning SERI and the regional SERI network. We suggested that

"* * * the Congress should request ERDA or the Department of Energy to submit to the appropriate legislative committees of the Congress, a comprehensive report setting forth the total estimated cost, organizational structure, management interrelationships, and scope of work for both SERI and, to the extent warranted, the regional SERI network."

United States Senate

WASHINGTON, D.C. 20510

September 23, 1977

The Honorable Elmer B. Staats
Comptroller General of the United States
General Accounting Office
441 G Street
Washington, DC 20548

Dear Mr. Staats:

We take issue with several of the conclusions of a recent Government Accounting Office (GAO) report on the Solar Energy Research Institute (SERI). This report, prepared at the request of Representative Mike McCormack of the House Science and Technology Committee on September 9 of this year, is overly simplistic in its analysis of the issues relating to SERI and includes significant errors of fact and judgement which we would like to call to your attention.

In its recitation of the legislative history surrounding the evolution of SERI, the GAO report asserts that an amendment which would require the allocation of 80% of SERI's appropriation to the Institute's regional network was adopted by the Senate in June of this year during its deliberations on the ERDA authorization bill. This is wholly inaccurate. Senator Hart's remarks in the June 27, 1977, Congressional Record (p. S 10815) clarify the intent of the Senate in adopting the Humphrey amendment to the ERDA authorization. Senator Church, the Floor Manager of this legislation, agreed only to making SERI a separate line item in the ERDA budget. In his response to a written inquiry by Senators Hart and Haskell, he indicated that the Senate Energy and Natural Resources Committee's acceptance of the Humphrey amendment did not commit the Committee to the concept of providing a fixed percentage of SERI's funding for the Institute's regional network. This is indicated in the text of Senator Hart's statement.

The GAO report also suggests that the creation of the Energy Research and Development Administration and, subsequently, the new Department of Energy have eliminated the need for SERI through consolidation of previously dispersed Federal solar research and development efforts.

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Although the level of funding for solar energy has increased significantly since 1974, research, development, demonstration and commercialization efforts in this area have remained fragmented. No clear lines separate ERDA's and FEA's responsibilities in the development of various solar technologies. In the new Department of Energy, at least three assistant secretaries will share responsibility for solar technologies, with no individual or entity devoted specifically to solar energy or to exercising integrated program control over Federal efforts in this area.

Congressional intent regarding the development of solar energy is clear: our efforts are to be accelerated so that this important alternative resource may provide a significant percentage of our future energy needs. To accomplish its aggressive goals for solar, Congress mandated the creation of a single, integrated, highly visible, semi-autonomous and adequately financed Federal solar energy research institute. Clearly, the founding premises for SERI remain as valid today as at the institute's inception.

The GAO report asserts that many of the research and development functions projected for SERI could be adequately performed at existing laboratories, and that ERDA did not give due consideration to the option of placing SERI at one of these facilities. Again, it is evident that the GAO has failed in its analysis to gauge the degree of Congressional commitment to SERI as an instrument to hasten the realization of solar energy.

NASA's Jet Propulsion Laboratory (JPL) and ERDA's Sandia Laboratory will receive 85% of the \$75 million ERDA will devote to solar research and development this year. However, solar energy comprises only a small part of the functions presently performed at the JPL and Sandia. The National Academy of Sciences (NAS), which considered the possibility of placing SERI in an existing research facility as part of a comprehensive set of recommendations to ERDA on SERI, stated that a national solar program ". . . needs an institution combining analysis with experimental science and engineering." Additionally, the NAS report envisioned a SERI facility which would conduct workshops, symposia and other activities designed to increase public acceptance and utilization of solar energy, as well as analyze institutional impediments to the development of solar and the identification of incentives for communities and industries that will enhance the economic attractiveness of this alternative

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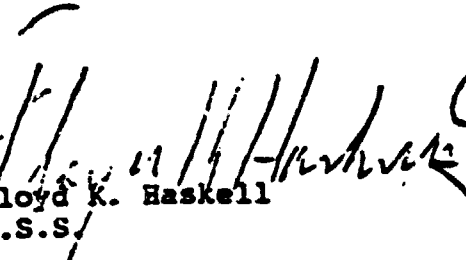
energy resource. Existing Federal research laboratories are not geared to perform these functions, which are essential to the early realization of solar energy.

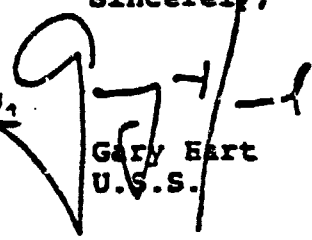
Finally, we agree that many important factors, such as the total cost for SERI and the regional SERI network, their respective work assignments and program responsibilities, organizational structure, and management interrelationships, are not adequately defined at the present time. However, we do not believe that this in any way limits the importance or requires re-evaluation of SERI. We believe that ongoing dialogue between Congress, SERI and the Department of Energy and, where appropriate, clarifying legislation, should help more clearly to define and enhance SERI's role in solar research, development, demonstration and commercialization.

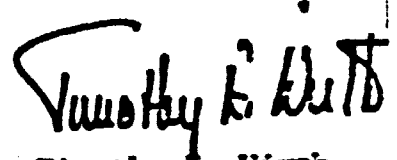
Our greatest concern is that this GAO report has, through failure to appreciate the scope and magnitude of the responsibilities assigned to SERI by Congress, unjustifiably tarnished the public image of the Institute and unnecessarily confused the role it is to play in the development of solar to meet our future energy needs. Consequently, we request that the GAO reassess its recommendations on SERI in light of the arguments presented here.

Thank you for your kind assistance.

Sincerely,


Floyd K. Haskell
U.S.S.


Gary Hart
U.S.S.


Timothy E. Wirth
M.C.