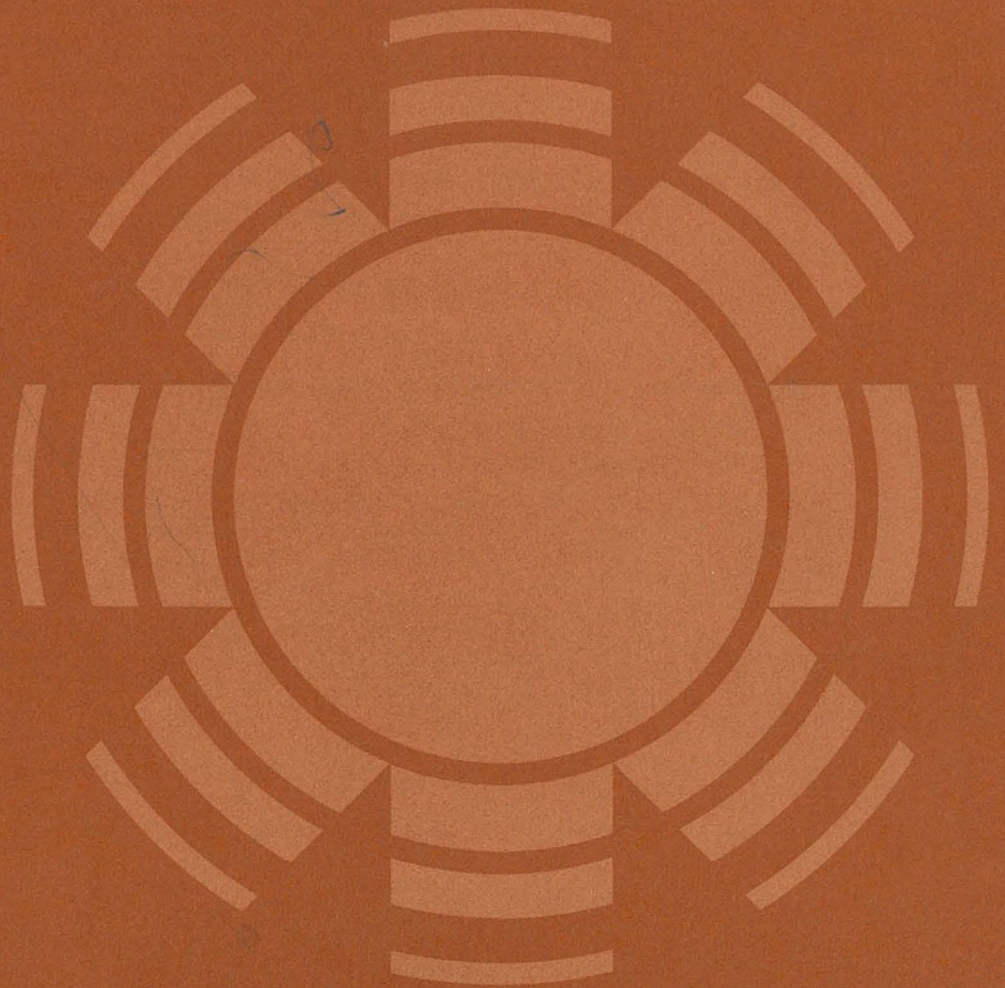


The First Year



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The role of solar energy in meeting the future energy requirements of the United States and the world is not without controversy. There are those who envision solar energy as the ultimate energy alternative — a benign, democratic resource with enormous near-term potential. Others regard solar as something of an energy curiosity — a resource outside the mainstream of energy development with significant applications probable only in the next century.

Our ability to speculate about the future of solar energy is founded on necessarily limited knowledge about our economic, social, and energy future, but there's no question in my mind that solar can emerge, in the next 15 or 20 years, as an important commercial energy resource. The challenge before us is to develop the several solar technologies and the marketplaces in which they will be utilized to the point where solar energy decisions can be made with confidence by the public and by business and industry.

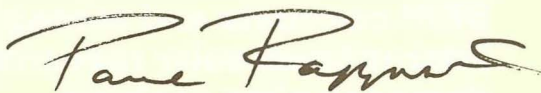
The family of solar energy technologies is a big one: solar heating and cooling of buildings, agricultural and industrial process heat applications, solar thermal electric generation, photovoltaic technology, wind energy conversion, bioconversion, ocean thermal energy conversion, and low-head hydroelectric power. Some of these technologies are beginning to mature rapidly. Others require essential research, development, and demonstration. In all cases, more must be known about the economic and social conditions under which deployment of the technologies will take place and the manner in which the solar marketplace can and should be influenced by public policy.

The extent to which solar energy will be able to contribute to our energy future depends on our willingness to invest time, talent, and resources in its development and utilization. A major national commitment could lead to solar energy's accounting for 10 to 20 percent of our total energy demand by the end of the century. But such a goal will not be achieved easily. It will require initiative, innovation, and dedication akin to the spirit by which this nation has addressed similar challenges in the past.

The Solar Energy Research Institute was established in mid-1977 to assist in meeting this challenge. SERI's mission is to undertake research, development, and related functions in support of the national solar energy program and to assist in the establishment of the industrial base necessary for the widespread, early utilization of solar energy. The first year of SERI's operation has included the establishment and staffing of the organization, the development of operational plans, and the initiation of numerous important research projects in engineering and the physical sciences, the economic and social sciences, data base development, planning, and many related areas. Several of these projects have been completed within the first year.

To accomplish its programs, SERI's operating budget was \$12.7 million for fiscal year 1978, and will increase to about \$25 million for fiscal year 1979.

This first annual report to the public will discuss some key aspects of the formative year of SERI. The entire Institute has had to move forward rapidly in many directions, and only the highlights are presented here.



Paul Rappaport
Director, SERI

Expanding demands for energy, increasing concern for environmental quality, and limited domestic capacity to meet these demands with traditional fossil fuels, brought the nation to the realization that renewable sources of energy must be given a new priority.

In 1973, the urgency of the problem was dramatically impressed upon the leadership of the nation with the Middle East oil embargo. It became clear to the American public that while the oil embargo would pass, the nation, and even the world, could never again rest in complacency that existing sources of energy or traditional dependence upon fossil fuels could continue.

An assessment of the energy situation was an outgrowth of this "brush with crisis," and in the mid-1970's positive first steps were taken through the passage of several important energy-related acts of legislation.

Among them was the Solar Energy Research, Development, and Demonstration Act of 1974 (PL 93-473). No coordinated effort for solar energy development on a national or international scale had heretofore existed.

The need for a comprehensive solar energy program aimed at developing solar energy as a viable contributor to the nation's future energy supply prompted the creation of the Solar Energy Research Institute (SERI) as provided for in this legislation.

Following completion of planning studies

to determine the scope and mission of the proposed national organization, the Energy Research and Development Administration (ERDA) issued a request for proposals for SERI, seeking a manager-operator and an initial site with an option for a future site.

After extensive evaluation of many proposals, ERDA announced in March 1977 that SERI would be managed and operated at a site in Golden, Colorado by Midwest Research Institute (MRI), an independent, not-for-profit organization headquartered in Kansas City, Missouri. The Solar Energy Research Institute formally opened on July 5, 1977. Three months later, ERDA's functions were assumed by the newly created Department of Energy (DOE).

SERI's successful start and rapid growth were due in large part to the experience and guidance of MRI, which, founded in 1944, has managed and conducted energy research for many years.

A small nucleus of staff, faced with the challenge of developing a national center of excellence for solar research, development, and demonstration, set out to build a unique organization which would bring many disciplines into one viable institution.



President of Midwest Research Institute John McKelvey (center) in an early planning session with SERI Director Paul Rappaport (left) and Deputy Director Mike Noland.

Building a Multidisciplinary Staff

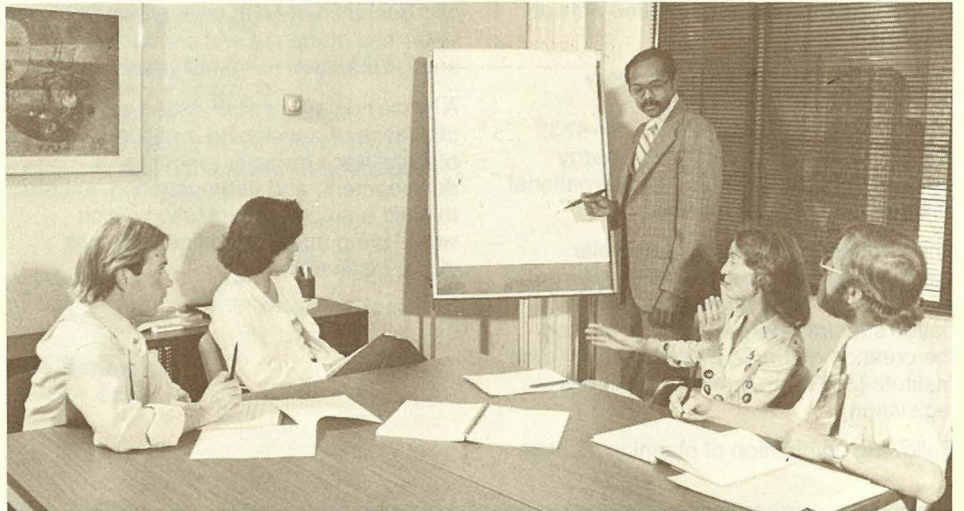
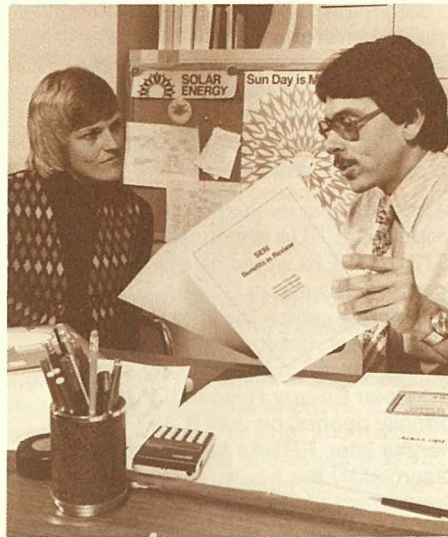
Much of the first year's effort went toward building a long-term capability to serve the multifaceted needs of the solar energy program.

Beginning operations in July 1977 with a staff of 40, SERI was highly successful the first year in attracting some of the nation's most qualified men and women from universities, government, research organizations and private industry.

By October 1978, the beginning of SERI's second fiscal year, the staff numbered 370, the largest group ever assembled for work devoted exclusively to the development of solar energy. The staffing plan calls for an organization of over 700 professionals and support personnel by the end of the second fiscal year.

SERI's organization reflects the realization that energy issues are not merely research problems, but involve a combination of economic, political, environmental, and social considerations as well. Thus, only one-third of the staff are scientists and engineers. The remainder of the organization is comprised of sociologists, economists, market analysts, lawyers, architects, and others. This diversity of staff creates a unique environment for objectively analyzing solar energy options, identifying realistic goals, and generating innovative solutions.

In the first year, the staff was organized into six main divisions with specific functions. However, to best utilize the multidisciplinary capabilities of the staff, many activities and programs performed by SERI and described in this report are the result of the combined efforts of staff from two or more divisions.



Research provides a strong in-house research program aimed at identifying and reducing technical and cost barriers to specific applications. It also provides advanced technical options for solar energy conversion and supplies the technical information needed to make appropriate selection among the various solar options.

Analysis and Assessment represents the economic and social science arm of SERI. Activities in this division complement the technological orientation of Research by investigating critical issues which underlie public and private decisions influencing the use of solar energy. The division uses the results of these investigations to support DOE planning of the national solar energy effort.

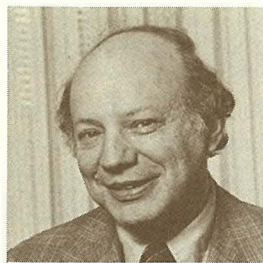
Academic and International Programs coordinates U.S. participation in international solar research and development programs, and focuses on utilizing the unique resources of the university community in supporting solar energy research.

Technology Commercialization assists in the national development of widespread and stable markets for solar technologies by providing information and other assistance to decision makers in the consumer, commercial, and industrial sectors, and in various levels of government.

Information Systems provides information and data to individuals and organizations who must make decisions concerning solar options. As part of this

effort, the Solar Energy Information Data Bank incorporates a major data bank, an information center, and an active dissemination program, all of which will utilize modern computer and communications techniques.

Administrative and Technical Services provides management of the Institute's business aspects and support services for the operating divisions. The division includes accounting, contracts, purchasing, publishing services, and facilities planning and management.

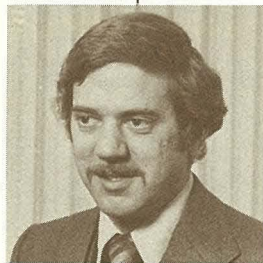


Dr. Paul Rappaport
Director

Public Information

Intergovernmental & Regional Programs

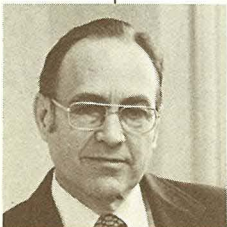
Personnel Services



Dr. Michael Noland
Deputy Director

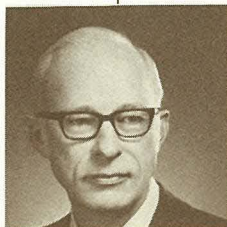
Plans & Operations

Special Programs



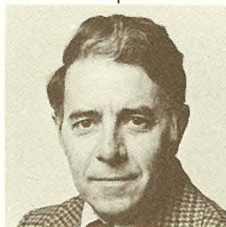
Dr. F.V. Morris
Assistant Director
Administrative & Technical Services

Accounting, Finance, & Budget
Contracts
Procurement & Laboratory Services
Publications Services
Facilities Planning



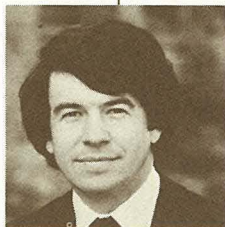
Dr. J.C. Grosskreutz
Assistant Director
Research

Materials
Photovoltaics
Photovoltaics Program Office
Bio/Chemical Conversion
Thermal Conversion
Systems Analysis
Energy Resource Assessment
Test & Measurements



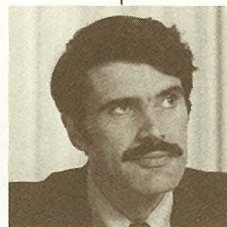
Dr. George Warfield
Assistant Director
Academic & International Programs

Academic Programs
International Programs
Saudi/U.S. Joint Program
Conferences



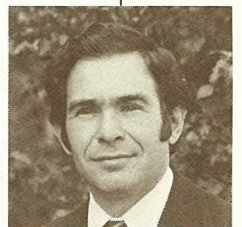
Dr. Melvin Simmons
Assistant Director
Analysis & Assessment

Policy Analysis
Economics & Market Analysis
Institutional & Environmental Assessment
Program Evaluation
Program Planning



Joseph Carlson
Assistant Director
Technology Commercialization

Commercial Readiness
Market Development
Passive Technology
Communications



Herbert Landau
Assistant Director
Information Systems

Information & Database Systems
Library Services
Computer Services
Output Services

Golden, Colorado, just 20 minutes from downtown Denver, is an ideal site for the Institute's headquarters, offering one of the most suitable locations in the nation for maximum days of sunlight and variety of climate.

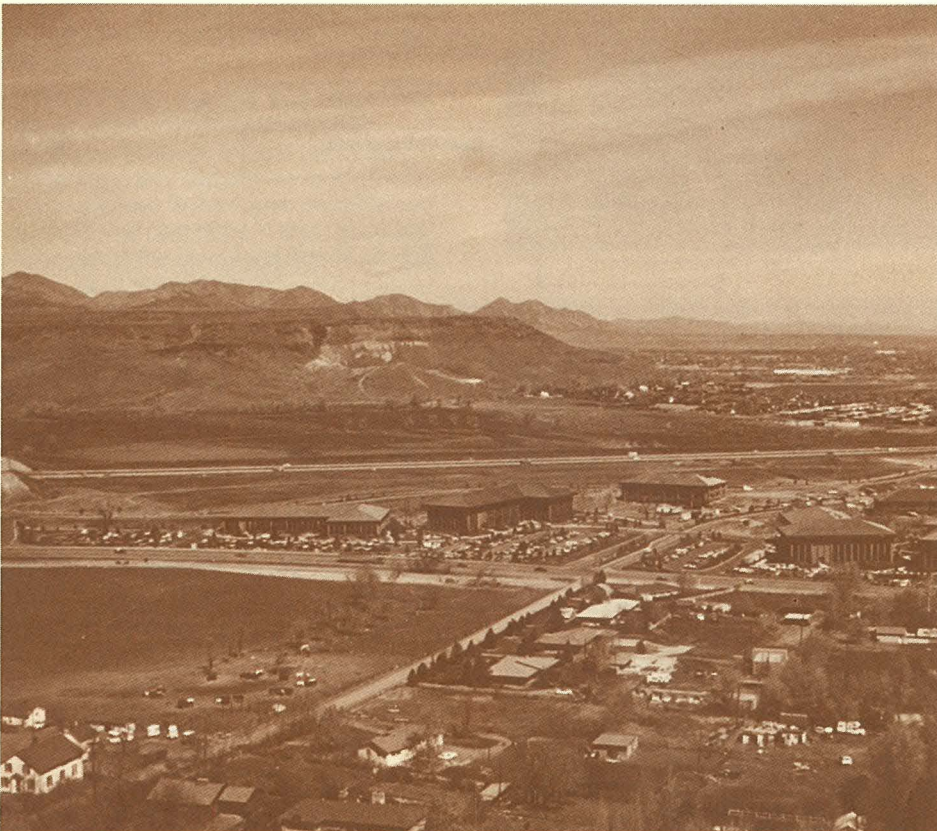
SERI moved into interim facilities in the Denver West Office Park in July 1977. Additional interim facilities offering laboratories, computer center, and administrative offices were under construction during the first year. This center will be SERI's home until the early 1980's, when permanent facilities are completed atop nearby South Table Mountain. Both the interim and future facilities will provide areas for outdoor field experiments, testing collector and materials performance.

Design of laboratories and field experiment facilities was completed during the first year, and the interim laboratories in the present office park were designed so that almost all components can be removed and reinstalled on South Table Mountain. The interim laboratory, which will be operational by early 1979, will house 60,000 square feet of research facilities

for all the solar technologies under one roof.

In 1978, SERI began the process of selection of an architect/engineer to prepare the conceptual design and master site plan for the permanent facility on South Table Mountain. The permanent facility will be a national showpiece of innovative solar energy design and energy conservation techniques, and will complement the special environmental and geographic features of the site. The headquarters will include — in addition to offices — research laboratories, conference facilities, field experimentation facilities, an information data bank, a library, and a public visitors' center. Construction will begin in late 1979 or early 1980, and is expected to span about two years.

During its first year of organization-building and preparation of facilities, SERI also moved forward as an operating and contributing organization.



The Denver West Office Park (foreground) will be SERI's home until permanent facilities are constructed on South Table Mountain (mesa in background).



Laboratory facilities were under construction the first year for completion in early 1979.

SERI's mandate, as stated by Congress, is to perform research, development, and related functions in support of the national solar energy program. ERDA further defined the mandate in the request for proposals by calling for SERI to contribute to the establishment of a solar energy industrial base that will foster the widespread use of solar technology.

Thus, the SERI mission is a comprehensive one. It involves all of the solar energy technologies and all aspects of the process of moving a technology through initial research stages to utilization in the commercial marketplace.

To accomplish this broad mission, SERI performs these major roles:

SERI helps the U.S. Department of Energy develop national solar energy program plans and strategies.

SERI serves as objective evaluator and analyst of the content, progress, and direction of the national solar energy effort.

SERI conducts and manages national and international solar research, development, and demonstration projects.

SERI conducts lead programs in solar information dissemination, education and training, and technology utilization and application.

The following pages describe some of SERI's activities which addressed these roles during the Institute's first year.

SERI helps the U.S. Department of Energy develop national solar energy program plans and strategies.

The SERI Mission

8

Priorities Developed

As staff was being developed and facilities occupied, SERI established priorities for its solar research. An ambitious plan of work for the new organization was created for implementation during fiscal year 1979 to address the unattended needs of the national solar program. This program is aimed at complementing and supplementing the research and development activities now in progress at many institutions, public and private, around the nation.

SERI programs are targeted to yield real, measurable progress geared to the objectives of the nation's solar energy effort. This progress must be measurable in the near-term, to 1990, and for sustained long-term programs after 1990. During its first year, SERI concerned itself with numerous analyses in establishing priorities for concentration in research projects, development programs, and national technology commercialization.

Thus, solar research priorities were established within the areas of photovoltaics, biological and chemical conversion, wind, passive techniques, storage, industrial process heat, centralized and decentralized systems.

In conjunction with these technology research and development programs, SERI has established programs in basic and applied research, economic and social science research, planning and analysis, the national Solar Energy Information Data Bank, international projects, education and training, program management, and quality assurance and standards.

SERI's program priorities are developed on the basis of its charter and DOE program plans, and in cooperation with other solar researchers, DOE contractors, and the public-at-large. All of SERI's

programs are designed to build on the foundation laid by previous efforts, and to work with current and future solar energy programs.

Specific National Programs Designed

SERI's role in developing national solar programs was exemplified by activities during the first year. In 1978 SERI generated, for the Department of Energy, national R&D program plans for absorber coatings, reflector coatings, polymer applications, open-cycle OTEC (ocean thermal energy conversion), and desiccant cooling. These plans were created after extensive interaction with other experts in the field and the user community. Personal visits, planning workshops, and joint efforts with other laboratories were among the techniques used to obtain objective and balanced program plans.

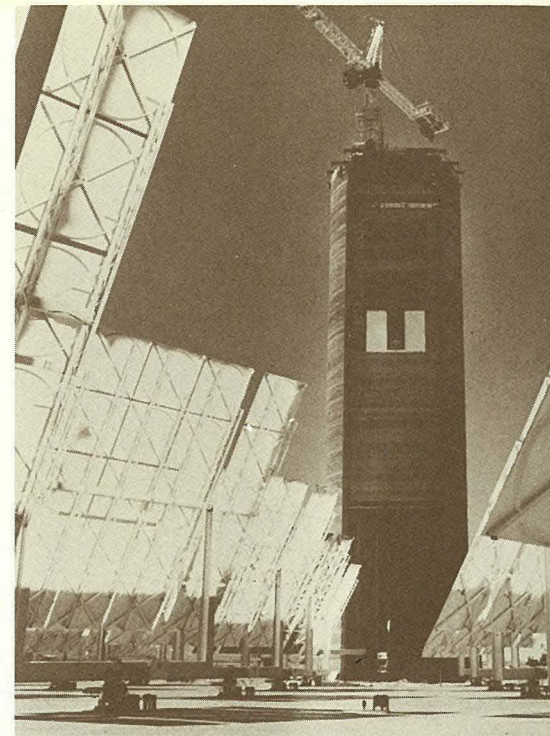
SERI also helped DOE and the American Institute of Architects draft a national program plan for Passive Solar Heating and Cooling. It is anticipated that SERI will play a major role in implementing the national plan.

Solar energy encompasses a variety of technologies and applications, as illustrated on these pages:

- A) Passive systems such as the solar greenhouse can reduce a structure's energy consumption.
- B) The central receiver or "power tower" consists of tracking mirrors (heliostats) which concentrate the sun's rays onto a boiler located in the tower.
- C) Wind energy, once used extensively to generate electricity, is again being tested by DOE.
- D) Photovoltaic cells convert sunlight directly into electricity.
- E) Solar energy can be used for industrial applications, such as this solar hot water system demonstration for commercial laundries.
- F) Digesters can convert plant matter (biomass) into methane gas for fuel.



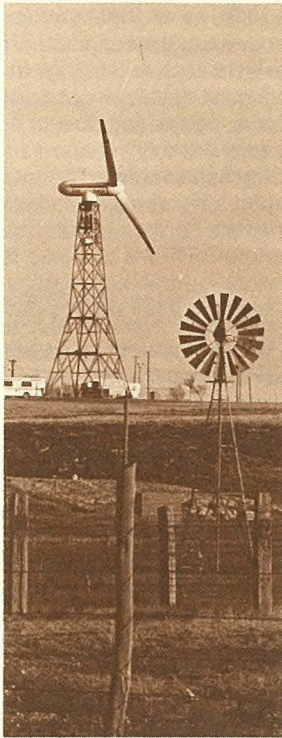
A)



B)



D)



c)

The Domestic Policy Review

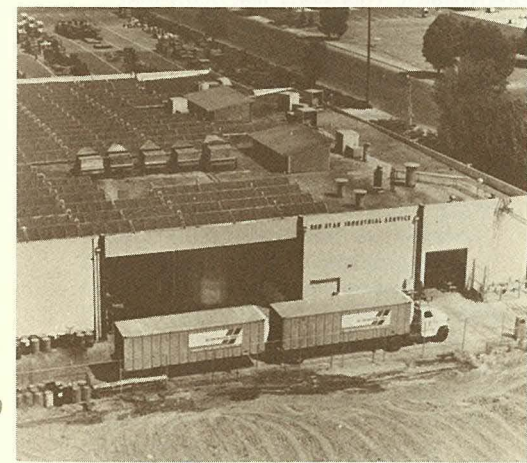
An example of SERI's role in helping develop future energy programs and strategies was the Institute's participation in the Domestic Policy Review, called for by President Carter in his visit to SERI on Sun Day, May 3, 1978.

"Today I'm asking for a domestic policy review of all my departments in the federal government . . . to go into more ways how every agency of government can help solar energy become a part of the everyday life of American citizens," the President said. This review was conducted by an inter-agency task force in Washington, with support by SERI and many other organizations.

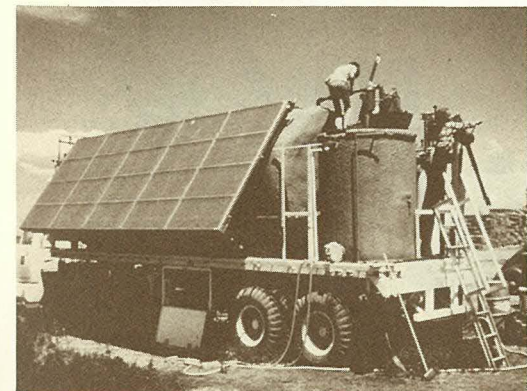
Almost immediately following the President's address, a series of well-attended forums was conducted across the country. Participation involved the general public, Congressional representatives, state and local government officials, industry, labor organizations, public utilities, and special interest groups. SERI staff participated on the panels in the ten major hearing cities.

A SERI social science research effort evaluated the hearings themselves as a social phenomenon. The analysis was to provide information to policymakers on the effectiveness of public hearings on the development of national solar energy policies. Another purpose was to identify citizen groups interested in solar energy development, and to determine how social movements can be enlisted to provide positive influences on social aspects of the transition to solar energy.

One SERI staff member was assigned to each of the inter-agency panels that worked in Washington during the summer of 1978 on the issues being considered by the DPR process: Solar Impacts, Financial and Economic Incentives, Federal Operations, Institutional Barriers and Incentives, and Research and Development. SERI staff also made contributions to and provided comments on the DPR document released in late August for public review, and the Response Memorandum prepared for President Carter's consideration.



E)



F)



The Domestic Policy Review, called for by President Carter, included a series of regional forums to assure broad national involvement.

SERI serves as objective evaluator and analyst of the content, progress, and direction of the national solar energy effort.

The SERI Mission

Informed decisions about new program plans and strategies must be supported by a comprehensive and ongoing effort of analysis and evaluation. SERI is constantly assessing current effectiveness and potential impacts of existing and alternative programs to identify problems and affect program decisions in the future. This is a role that was specified in the original request for proposals to operate SERI. During the first year, SERI performed numerous such analyses on all facets of solar energy activity — from research programs to market readiness of the technologies. Some highlights of this activity follow.

The Annual Review of Solar Energy is a comprehensive report which will be issued by SERI every year, utilizing resources from the entire staff, in support of the role of objective evaluator. The Annual Review is intended to provide a comprehensive overview of the U.S. solar energy effort, and to synthesize and report evaluations (by SERI and others) of the effectiveness of this effort in responding to long-term national goals and needs. The first review, completed in March 1978, is predominantly descriptive. It details not only federal solar energy programs, but international, industry, university, state and local government solar programs as well. It also provides a synopsis of all major solar energy technologies, including current R&D projects, significant breakthroughs, and problems. The second Annual Review of Solar Energy, already

underway, will be more analytical, focusing on specific issues, trends, technological problems and social options relevant to the future development of solar energy.

Another analysis that was begun during SERI's first year that will be an ongoing project with immediate application is the **State Solar Incentives Study**. This study evaluates the implementation of 23 different solar incentive programs in 11 states — including what strategies were used in their implementation, what part of government was responsible for them, which went smoothly, which had problems, and how those problems can be avoided in the future. The Regional Solar Energy Centers assisted in identifying the incentive programs to be studied, and have an ongoing role in collecting information on the successes and failures of these programs.

Like many of the studies that SERI has undertaken, the approach is new. Heretofore, studies of state solar programs and legislation have been only catalogs of statutes. SERI's work evaluates how the statutes are translated into programs that reach people. In 1979, SERI will work with the Regional Centers to compare the same 23 programs in terms of actual results — evaluating their effect on the consumer. The results of the study will go to the states, to the Regional Centers, and to DOE for use in future implementation of federal incentive programs.

A report of **Economic Feasibility and Market Readiness** of ten solar technologies was also prepared by SERI

in 1978, as an initial step in a continuing program of assessment. The SERI study reviews each technology in terms of technical development and economic status, comparing cost of delivered energy with conventional fuels and other solar technologies. The market readiness report also identifies institutional and financial barriers to solar commercialization. SERI will continue to review and assess commercial readiness as progress is made in solar energy development.

A different type of study performed at SERI during the first year was the **Photovoltaic Venture Analysis**. This extensive study, performed at the request of the Department of Energy, investigates a proposed eight-year, \$380 million program under consideration by DOE, in which the federal government would offer a temporary subsidy for the manufacture and purchase of photovoltaic systems. The primary objective of SERI's venture analysis is to estimate the costs and benefits of DOE's proposal and to compare a number of alternative government approaches to accelerating the commercial development of photovoltaics. This study, like many that SERI will perform, is directed toward specific and impending federal decisions on solar energy programs.



The analysis of political, economic, social, and commercial aspects of solar energy is an ongoing SERI activity.

SERI conducts and manages national and international solar research, development, and demonstration projects.

The SERI Mission

Conducting Research

While interim laboratory facilities were designed and constructed during SERI's first year (for occupancy in early 1979) SERI identified areas of immediate priority. Research projects were initiated at borrowed laboratory facilities nearby, and subcontracts were let to major institutions to support this early in-house research.

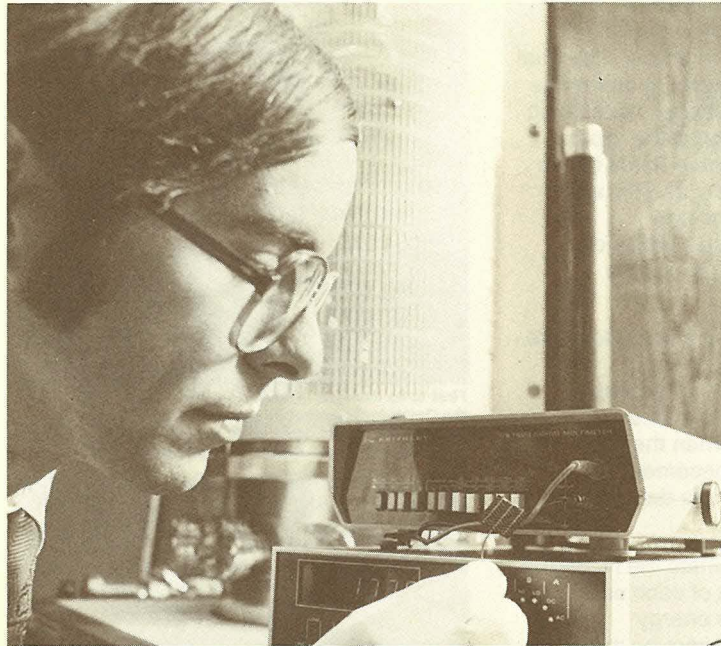
SERI-initiated contributive research focused on three solar energy conversion processes: photovoltaics (direct conversion of sunlight into electricity); biological and chemical conversion (including conversion of biomass into fuels and chemicals, and photoconversion); and thermal conversion (including solar heating and cooling and industrial process heat). Research on materials limitations related to solar energy conversion was also begun.

These areas were selected for early work because of their high potential for significant results and the need for additional research in areas where a void in research seemed to exist. At the same time, SERI initiated analytical research and program management efforts involving all the solar technologies.

Following are some highlights in the four research areas named above.

The photovoltaics work at SERI focuses on photovoltaic device research in technologies with potentially high payoff. Initial emphasis is placed on research activities designed to yield progress toward the development of moderate cost, high efficiency (30%) single crystal cells, and low cost, intermediate efficiency (10%) thin-film devices, with the intention of achieving these objectives within five years. During the first year, one of the research projects initiated was the purification of silicon to reduce the cost of the raw material presently used most often in the production of photovoltaic cells.

Early efforts to accomplish meaningful use of biomass energy were undertaken in the SERI-administered Mid-South Project for the development of biomass energy in Arkansas, Louisiana, and Mississippi. A gasifier research contract was awarded under SERI administration, and a comprehensive assessment was made of biomass availability for energy production on a large scale.



Examination of silicon solar cell device after metallization process.



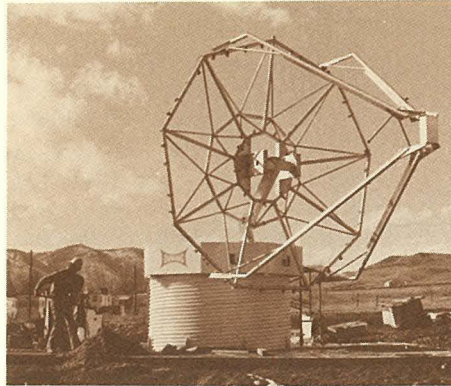
An example of biomass projects being funded by the Department of Energy is this experimental plantation of locust and sycamore trees being grown on short rotation for use as an energy source.

Steinbeck, University of Georgia

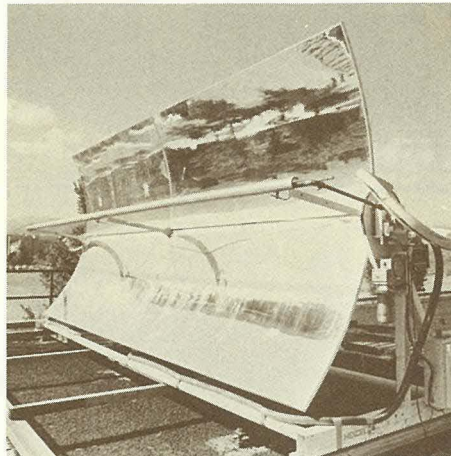
In the area of thermal conversion, SERI researchers have identified a potential use of solar energy in the field of industrial process heat (IPH). Industry is one of the largest single users of energy, consuming approximately 40 percent of the gross national energy. Almost two-thirds of this amount is applied directly as IPH, and most of the IPH is for low and intermediate temperatures, which can easily be supplied by today's solar collectors.

In 1978, SERI completed a study to make an efficient match between solar collectors and the IPH requirements of specific industries in designated geographic locations. When the SERI outdoor testing facility becomes operational in 1979, on-site data will be available.

SERI is working to eliminate the materials barriers to the progress of each solar technology. Long-range energy investment decisions cannot be made without data on how long systems will last in actual field operation. Early materials research at SERI investigates general surface physics, selective absorber surfaces, and degradation of glazings and other widely used materials in solar equipment. In cooperative research with several universities, the characteristics of materials not presently being produced in large quantity, such as black chrome and black cobalt, were investigated by SERI for use in solar collectors.



First to be installed in SERI's outdoor testing facility was the Omnium-G paraboloid dish collector, which is capable of concentrating solar energy 10,000 times and can generate temperatures in excess of 5000°F.



In cooperation with the University of Colorado, SERI is collecting performance data on this parabolic trough collector, representative of the type most attractive for many industrial applications.



Researchers are making electrochemical measurements to determine corrosion rates of materials used in solar collectors.

Managing National Research

SERI is responsible for two types of solar research projects: (1) those initiated in-house as previously discussed, and (2) management of research programs for the Department of Energy. As the SERI organization is completed, a greater role in program management on behalf of DOE will be assumed. The SERI staff will be called upon to provide information coordination, technical direction and support, and managerial expertise.

During the first year of operations, SERI assumed the management of several major DOE contracted programs, including the solar electric options regional assessment studies for the North Central, South Central, and "dispersed systems" Southwest regions; research in absorber surfaces; projects on photoelectrolysis and directed photosynthesis hydrogen production; and the wind energy innovative systems program. SERI was also assigned the responsibility of managing the Solar Thermal Test Facility User Association subcontract with the University of Houston.

Contracts actively managed for DOE by SERI during the first year totaled approximately \$2.5 million; and in 1979, it is expected that SERI will be responsible for management of research contracts totaling over \$60 million.

Also during 1978, SERI assumed management of the nation's lead effort in photovoltaic materials research and development. DOE assigned the responsibility, and SERI responded by establishing the Photovoltaic Program Office (PVPO) which will have the responsibility for managing all outside materials R&D contracts let by DOE in photovoltaics work.

University Research

SERI is working to assure that all applicable resources of the academic community are involved in the development of solar energy. In order for any consumer industry to evolve and flourish, it must be supported by a vigorous conceptual research program. Thousands of new ideas must be generated and compete openly if the industry is to become vital. Historically, one of the most fertile sources of new concepts has been the academic community.

In 1978, SERI formed a University Advisory Council, consisting of research administrators and professors from throughout the country, to help develop fruitful interaction between SERI and the academic community and encourage innovative solar research programs.

International Research and Development

SERI is not only serving in a coordination role in contract management with other research institutes, industry, and universities, but also has a significant role in guiding U.S. participation in international solar programs.

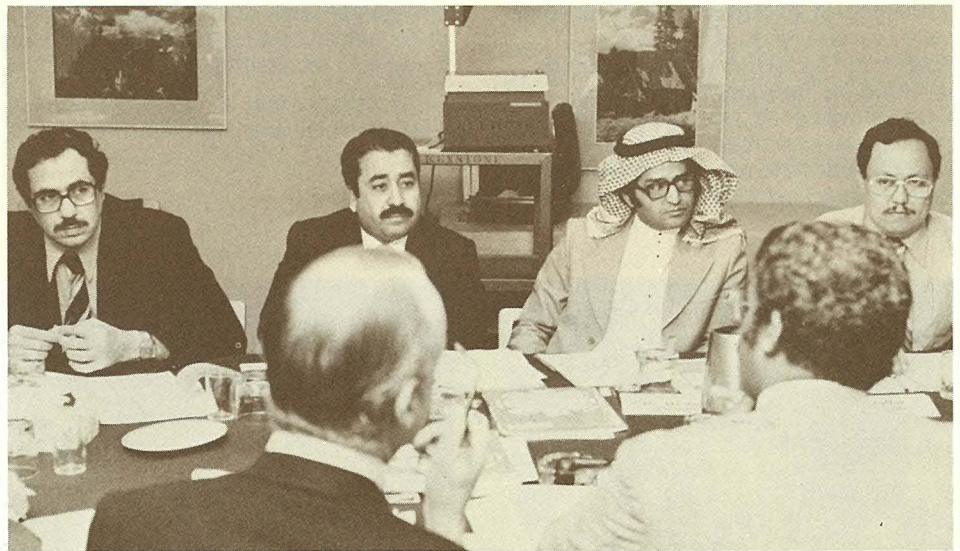
The major activity in this area during SERI's first year was the U.S.-Saudi Arabian agreement. In October 1977, the U.S. and Saudi Arabian governments signed a \$100 million agreement calling for a jointly-funded research and development program in solar technologies of mutual interest to the two countries. SERI participated in the original negotiations and in March 1978 was assigned the lead role in developing the management plan. In June, SERI staff visited Saudi Arabia and reached an agreement on a management structure and technical approach for the programs.

In September 1978, SERI representatives met with the Saudi Arabians and officials from the Treasury Department and DOE, and agreed on several priorities for immediate implementation. It was agreed that a U.S. survey team would be sent to Saudi Arabia in October to select a site for a solar village and to prepare a program plan for solar data collection. Another priority project will be to design, install, and test an advanced cooling system in Saudi Arabia. It is anticipated that solar applications will be demonstrated that will be of considerable interest in other developing countries.

Although the project agreement with Saudi Arabia is the largest of the cooperative solar agreements involving the United States, there are many others in which SERI plays an important, ongoing role. Exploratory exchanges of solar scientists between the United States and Israel, Japan, and the Soviet Union have been carried out or planned for under SERI auspices. Some of the current active projects involve the International Energy Agency, Spain, Iran, and India.

In 1977-78, SERI hosted 144 visitors from 41 foreign countries to exchange ideas on solar research and development.

Such collaborations should enhance the U.S. solar energy program, provide opportunities for growing international solar industrialization, and advance the time when solar energy will take its place as a major contributor to the supply of clean, inexpensive, and dependable energy.



SERI is serving as operating agent and program director for the \$100 million U.S./Saudi Arabian agreement for solar research and development.

SERI conducts lead programs in solar information dissemination, education and training, and technology utilization and application.

The SERI Mission

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To be effective, SERI's efforts in research, development, and demonstration must provide useful information to those who need it to use solar energy. Establishing the methods and channels for information dissemination was a major effort undertaken during SERI's first year.

Solar Energy Information Data Bank

One of the principal methods for fulfilling this role is the Solar Energy Information Data Bank (SEIDB), which was mandated by the Congress in the public law creating SERI. Major demands for information and data about solar energy are being made, not only by the technical community, but by federal, state, and local offices and legislative bodies, architects, manufacturers, the financial community, builders, and homeowners.

SERI, during its first year, began the establishment of the SEIDB to provide a centralized and comprehensive resource directed toward furnishing valid information and data in usable formats, in a prompt and efficient manner to meet the varied requirements of this diverse audience. The SEIDB will be a network involving the Regional Solar Energy Centers (with prime responsibility for meeting state and local information requirements) and the existing National Solar Heating and Cooling Information Center.

In 1978, SERI established computer capabilities and began programming existing information on solar energy. The initial project was a data base of solar energy manufacturers.

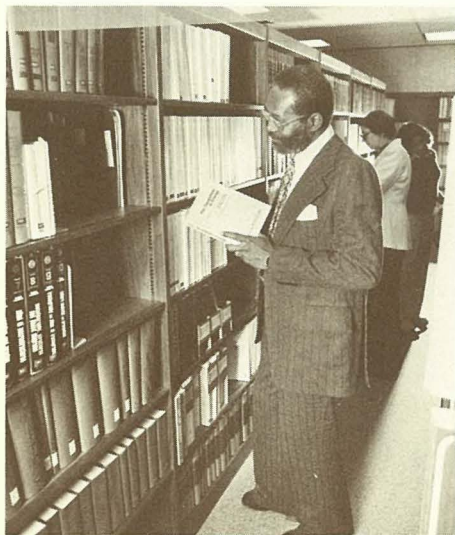
SERI also began acquiring publications for the Solar Energy Information Center, a part of the SEIDB, which is planned to be the most complete solar energy document collection in the world.

At the same time, SERI initiated a Solar Users' Requirements Study, a survey of all groups affected by solar, to be used in planning the SEIDB's growth. Also, based on this information on the needs of the solar community, computer analysts began planning work on the computer hardware necessary for the system, which is planned for installation in 1980. In addition to providing storage and processing of information and data, the SERI computer system will also facilitate the production of special publications, handbooks, bibliographies, and directories, some of which were published during the first year and widely distributed throughout the country.

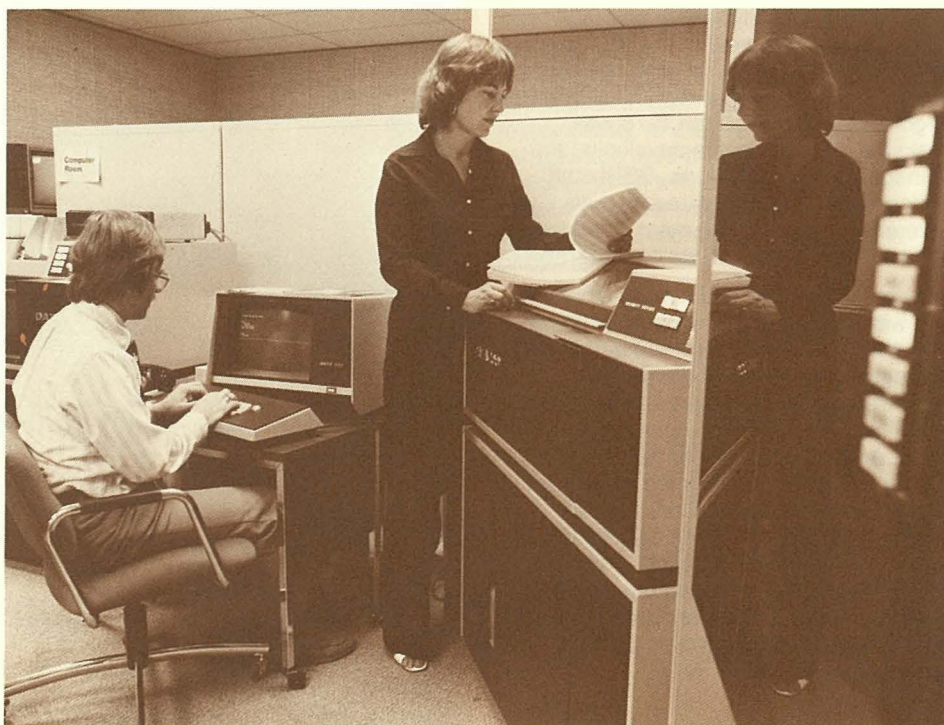
The SEIDB is complemented and supplemented by many other information dissemination activities at SERI. The Institute has established special capabilities for dissemination of information to special interest groups — including lawyers, universities, architects, labor, and industry. About 50 conferences and workshops for these groups were conducted across the nation during SERI's first year, and this program remains one of the Institute's most effective methods of bringing together the diverse interests, problems, and needs of the nation's solar community.

Involving the Academic Community

SERI will serve in a coordination role to ensure the orderly development of the manpower base needed for the commercialization of each solar technology. The Institute will conduct workshops for university faculty and vocational school teachers to develop new curricula and training programs. In 1978 SERI participated in a national effort to establish a computerized data base of all educational institutions offering solar-related courses. After review of this information, SERI will provide colleges and universities direction and assistance in establishing needed new courses to train the solar experts of the future.



The Solar Energy Information Center is planned to be the most complete solar energy document collection in the world.



Computerization of existing information on solar energy was begun as an early step in the development of the Solar Energy Information Data Bank.

This year, SERI also established a program of sabbatical visits and summer internships, which gives faculty and students an opportunity to interact with SERI staff on a variety of solar-related subjects. Fifteen students interned at SERI in the summer of 1978 in the fields of law, research, and social science, and this program is expected to expand as SERI grows.

Conferences, Workshops, and Seminars

In addition to the academic community, SERI's conference and workshop program reached many of the other groups interested in the development of solar energy. Following are some of the highlights of this activity during SERI's first year.

A Market Penetration Workshop was held to review analytical models projecting the market penetration of solar technologies.

A Solar Repowering Workshop addressed the question, "Is repowering the best emphasis for a federal solar thermal program aimed at penetrating the U.S. grid electricity market?"

The Labor Leadership Workshop on Solar Technology brought together representatives of 12 international unions to discuss the relationship of organized labor

to the future of solar energy — its installation, production, and distribution.

A workshop on warranties was sponsored by SERI to bring together individuals concerned with the solar warranty issue and provide them with information which would protect consumers and support the evolution of a healthy industry.

A workshop for members of the American Bar Association was held at SERI to acquaint lawyers with solar legislation and evolving legal problems in the emerging field of solar law.

SERI was a co-sponsor of the annual meeting of the American Section of the International Solar Energy Society held in Denver, August 1978. During the convention, more than 2,000 people visited the new SERI exhibit, which will travel to major conferences around the nation as an educational aid to introduce the SERI organization to the public.

Also launched in 1978 was a series of workshops for architects and builders to provide them with design tools for new and retrofit solar construction.

To keep staff informed of the technical, social, and economic developments and

issues in solar, approximately 70 in-house seminars were conducted by guest lecturers.

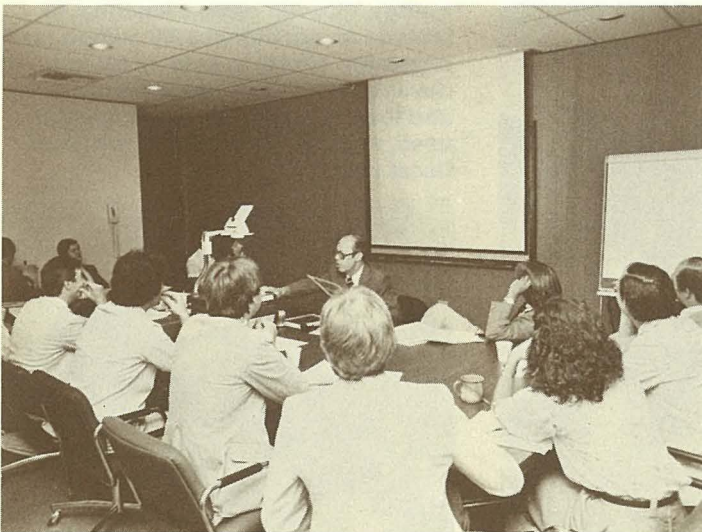
In the coming year, the entire conference program will be expanded, with approximately 80 workshops and conferences planned for coordination of interests, idea exchange, and program review.

The Message of Sun Day

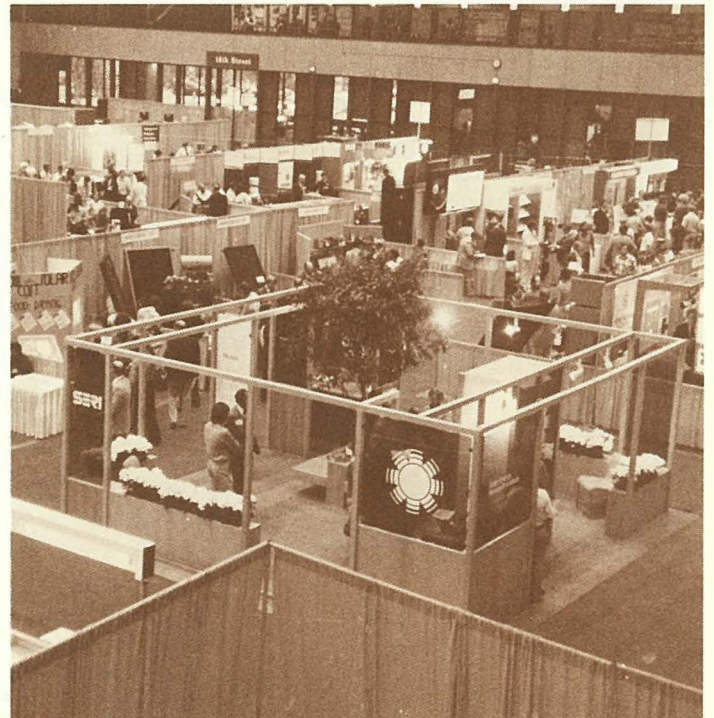
An unprecedented coordination of effort and enthusiasm for the potential of solar energy took place during SERI's first year on May 3, 1978, Sun Day. SERI played a major role in information dissemination in support of the national and international Sun Day effort. A SERI-produced slide show was distributed throughout the nation, and the Institute provided technical support to the Sun Day committee in their efforts to generate large volumes of public information on solar energy.

The highlight of this national endeavor was the visit of President Carter to the Solar Energy Research Institute. This event focused the attention of the nation on SERI and placed new emphasis on the importance of solar in the country's coming energy transition.

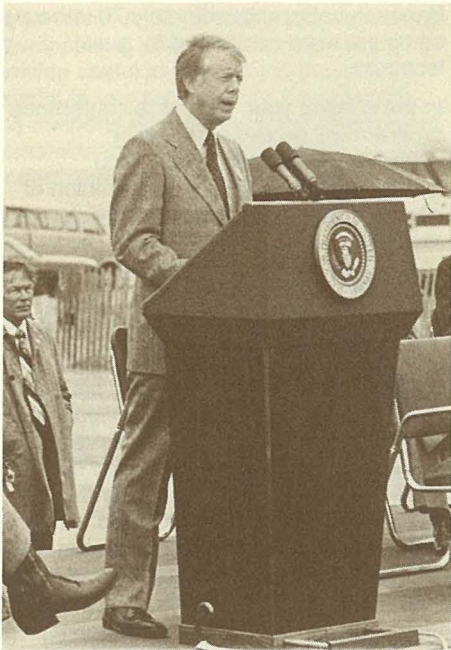
It is up to SERI to begin to meet the challenge of the future now.



A major program of workshops and conferences brings together the diverse groups interested in solar energy development.

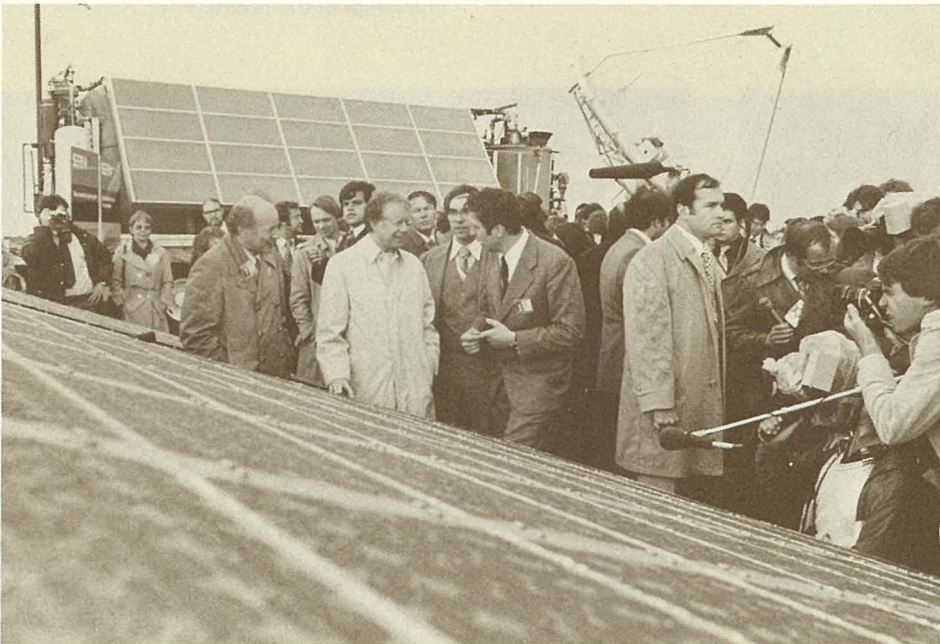


An exhibit travels to conferences around the country to disseminate information on SERI and solar energy.



“No matter how good a job of conservation we do, the world’s supply of oil and gas will dwindle, become more expensive and finally, run out.”

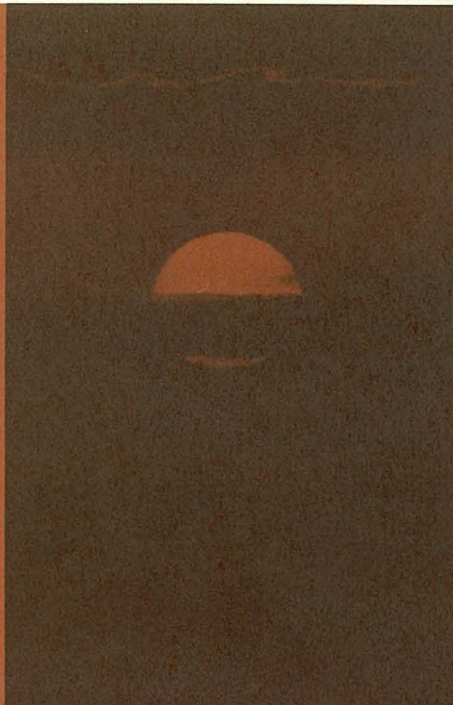
“America’s hope for energy to sustain economic growth beyond the year 2000 rests in large measure on the development of renewable and essentially inexhaustible sources of energy.”



“We’ve been researching our energy needs in the last few months and I have just instructed the Department of Energy, through reprogramming, to provide an additional \$100 million for expanded efforts in solar research, development, demonstration projects, and the development of commercial uses, such as windmills, in the next fiscal year.”



“The question is no longer whether solar energy works. We know it works. The only question is how to cut costs so that solar power can be used more widely and so that it will set a cap on rising oil prices.”



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Solar Energy Research Institute**

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