

SOLAR ENERGY CALENDAR

3-6 MAY 1978: Sun Day activities (see story front page), nationwide.

9-11 MAY 1978: Golden, CO. Annual DOE contractor review meeting in advanced thermal power technology, Holiday Inn West. Contact: Vicky Curry, Solar Energy Research Institute, 1536 Cole Boulevard, Golden CO 80401, 303-234-7201.

9-11 MAY 1978: Gatlinburg, TN. Second Solar Utilization Now Conference. Contact: Solar Utilization Now, PO Box 929, Kingsport, TN 37662.

11-12 MAY 1978: Washington, DC. First public meeting on development of a model building code for solar heating and cooling equipment. National Guard Memorial Auditorium, One Massachusetts Ave., N.W. Consumer representatives, the general public and representatives of the solar industry and standards organizations are invited to participate. Contact: David M. Pellish, Department of Energy, Office of Conservation and Solar Applications, 20 Massachusetts Ave., N.W., Room 3205, Washington, DC 20545, 202-376-9600.

11-13 MAY 1978: Boulder, CO. The Technical Design of Solar Thermal Systems for Buildings. Contact: Center for Management, Box 3253, Boulder, CO 80307.

23-25 MAY 1978: Hyannis, MA. The Control of Solar Energy Systems for the Heating and Cooling of Buildings. Contact: Francis de Winter, Altas Corp., 500 Chestnut St., Santa Cruz, CA 95060, 408-425-1211.

26-28 MAY 1978: Aspen, CO Humanistic Choices, Annual Aspen Energy Forum. Humanist choices for energy and resource development will be among the topics discussed. Contact: Roaring Fork Resource Center, 303-925-8885.

5-8 JUN 1978: Washington, DC. Thirteenth Institute of Electrical and Electronics Engineers Photovoltaic Specialists Conference. Contact: Werner Luft, TRW Defense and Space Systems Group, M1-1208 One Space Park, Redondo Beach, CA 90278.

16-22 JUN 1978: Amherst, MA. Toward Tomorrow Fair and World Game '78 Symposium. Contact: World Game '78, Hasbrouck Building, University of Massachusetts, Amherst, MA 01003, 413-545-0474.

18-24 JUN 1978: Cairo, Egypt. International Symposium-Workshop on Solar Energy sponsored by National Science Foundation. Contact: Dr. T. Nejat Veziroglu, Clean Energy Research Institute, University of Miami, P.O. Box 248294, Coral Gables, FL 33124.

20-22 JUN 1978: Troy, NY. Second Annual Fuels from Biomass Symposium. Contact: Dr. William Shuster, Department of Chemical Engineering, Rensselaer Polytechnic Institute, Troy, NY.

27-29 JUN 1978: San Diego, CA. Systems Simulation and Economic Analysis for Solar Heating and Cooling, workshop sponsored by DOE Solar Heating and Cooling Research and Development and Barriers and Incentives Branches. Contact: Bertie Denman, 5700, Sandia Laboratories, Albuquerque, NM 87115, 505-264-8032.

28-31 AUG 1978: Denver, CO. Annual Meeting, American Section, International Solar Energy Society. Contact: Engineering Research Center, Foothills Campus, Colorado State University, Fort Collins, CO 80523.

13-15 SEP 1978: New York, NY. Second National Conference on Standards for Solar Energy Use to be conducted on behalf of the American National Standards Institute by the American Society for Testing and Materials in cooperation with: American Society for Heating, Refrigeration Institute, Consumer Action Now, National Consumer League and Solar Energy Industries Association. The conference at the Roosevelt Hotel will survey standardization progress since the last conference three years ago and discuss future standards needs. Contact: Alvin Lai, American National Standards Institute, 1430 Broadway, New York, NY 10018, 212-354-3300.

* GPO : 1978 O - 264-626

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WASHINGTON, D.C. 20545

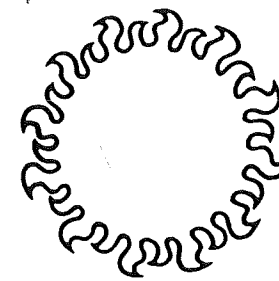
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Solar Energy Research & Development Report

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Department of Energy
Assistant Secretary for
Energy Technology
Division of Solar Technology

Assistant Secretary for
Conservation & Solar
Applications
Office of Solar Applications

May 1, 1978

DOE ACTIVITIES SET FOR SUN DAY NATIONWIDE

Dedications of new solar facilities, a "Sun Dial" telephone information service, radio and TV spots by celebrities and inauguration of a pilot daily Solar Index (similar to the Air Quality Index) are among the highlights of DOE participation scheduled for Sun Day, May 3.

In addition, President Carter is scheduled to speak at the Solar Energy Research Institute in Golden, CO.

Virtually every office of DOE has been involved in planning DOE participation in Sun Day, and activities involving DOE are scheduled in every state plus Guam and the District of Columbia.

The Solar Index pilot test (see item elsewhere in this issue) is being inaugurated in seven cities.

The Sun Dial telephone service will provide answers to technical questions concerning local solar applications in 10 federal regional cities: Atlanta, Boston, Chicago, Dallas, Denver, Honolulu, Kansas City, New York, Philadelphia and San Francisco. Although Sun Dial will operate only three days (May 3-6), the localized information and contacts developed will be utilized to stimulate ongoing relations among DOE, state and local government, DOE field offices and interested citizen groups. Each regional center will have local and toll-free lines for easy access by the public. The permanent solar hot line at the National Solar Heating and Cooling Information Center in Rockville, MD will operate as usual.

In the nation's capital Sun Day will be marked by several events, including appearances by Ralph Nader, Robert Redford and Jackson Browne and exhibits on the Mall, where tens of thousands of Sun Day participants and tourists are expected to congregate.

Typical of local activities planned is the Baltimore Sun Day Fair at Southwestern High School, cosponsored by the Baltimore City Public Schools and the Solar Technology Transfer Program. The day's activities will include films, speeches, exhibits and workshops to acquaint elementary and secondary school teachers with solar-related curriculum materials for grades K-12.

Landmark events on Sun Day at major solar facilities include: ceremonies at the 400-kw central receiver at the Georgia Institute of Technology, groundbreaking for a 150-kw deep-well irrigation facility near Coolidge, AZ, open house at the 5-mw Solar Thermal Test Facility at Albuquerque, NM and groundbreaking for a 250-kw photovoltaic array at the Mississippi County (Arkansas) Community College, the largest photovoltaic experiment ever undertaken.

WHITE HOUSE REVIEW SET ON SOLAR ENERGY

A White House review is underway to develop an Administration strategy for accelerating implementation of solar energy power systems. The review will be conducted by the Domestic Policy Council, the President's body for addressing major problems government-wide.

Both the Department of Energy and the Council on Environmental Quality suggested the need for the review to the White House. This action coincided with issuance of a CEQ report in April on solar energy which estimated that the United States could provide up to one-fourth of its energy requirements from solar by the year 2000. The report also stated that prospects for solar energy development were brighter than had previously been determined.

It is expected that the Domestic Policy Council review will identify the actions needed to achieve the goals identified in the CEQ report.

DAILY SOLAR INDEX DUE PILOT TEST IN CITIES

How much hot water could the sun have provided to your home today?

A new Solar Index providing the answer to this question will be available starting May 3 (Sun Day, see story elsewhere in this issue) in major cities. The index scale of 1 to 100 will be used to indicate how much of the hot water heating load of a family of four (using 80 gallons per day in a single-family residence) solar equipment could have provided.

The seven test cities to be provided this data on a previous basis (along with radio stations and newspapers) are: Atlanta, Boston, Columbus (OH), Denver, New York, San Antonio and Washington, DC.

Another set of test cities will receive the index data on a same day basis. They are: Dallas-Fort Worth, Oklahoma City, Los Angeles, Phoenix, St. Louis and Albuquerque or Santa Fe, NM.

Information to compute the Solar Index comes from SOLCOST, a computer-based design method.

Working with DOE to test the concept are: International Business Services, National Oceanic and Atmospheric Administration, Solar Engineering Publishers, Solar Environmental Engineering Co. and Smithsonian Radiation Biology Laboratory. If the test is successful, distribution to other cities is expected.

SERI/REGIONAL CENTER RELATIONSHIPS DEFINED

Secretary James R. Schlesinger has defined mission assignments and reporting relations between the Solar Energy Research Institute (SERI), the four regional solar centers and DOE headquarters.

SERI, which is DOE's lead institution for solar research, development and demonstration activities, is assigned to the Office of the Assistant Secretary for Energy Technology. The centers, which will be concerned with regional commercialization of solar technologies and solar applications related to conservation, are assigned to the Office of the Assistant Secretary for Conservation and Solar Applications.

SERI, in carrying out its mission, will:

- undertake principal responsibility for the management and performance of assigned RD&D programs and projects;
- provide planning support to DOE on national solar energy policies, program plans and strategies;
- maintain a capability for market analysis and assessment of institutional barriers to solar technologies on a national and international basis;
- play a major role in U.S. participation in international solar technology programs, and
- collect and distribute solar energy information and conduct education and training in the application of this information.

Responsibilities for R&D projects sponsored by any part of DOE in either the national SERI or the regional centers are divided as follows:

- R & D projects in the regional centers must be reviewed by SERI (to prevent duplication and assure conformance to DOE policy) and have the approval of the Assistant Secretary for Conservation and Solar Applications.
- Projects in SERI must have the approval of the Assistant Secretary for Energy Technology.

SERI also will have the responsibility of assuring that local R&D done by the regional solar centers is consistent with national planning. In carrying out its assigned responsibilities, and within the framework of DOE policies and programs, SERI is also authorized to interact with: federal departments and agencies; regional state and local governmental bodies, and the private sector, universities and foreign governmental and non-governmental entities.

In carrying out their responsibilities, and within DOE policy, the regional centers can interact with: federal departments and agencies, regional state and local governmental bodies, the private sector and the university community.

SERI is operated by Midwest Research Institute under DOE contract and is located in Golden, CO.

Currently, each of the four regional centers is operated under a grant from DOE.

STUDENTS TO TEST SOLAR TRAINING

A solar installer training class sponsored by the Solar Technology Transfer Program and the Connecticut Department of Corrections will commence in May at the Somers Correctional Institution.

The class will be based on the correspondence course *Fundamentals of Solar Heating*, developed by the Sheet Metal and Air Conditioning Contractors National Association (SMACNA) and the Northamerican Heating and Airconditioning Wholesalers Association (NHAW). This is the first test of the course in a correctional facility. If successful, other correctional institutions will initiate similar classes.

BRIEFS

- Two publications designed for those involved in local solar applications have been released: *Solar Radiation Data Sources Applications and Network Design* (discusses the need for networks and how to go about establishing one) and *On the Nature and Distribution of Solar Radiation* (presents a model for calculating direct, diffuse and total radiation at any particular location and contains solar radiation maps). Both are available from: Technical Information Center, P.O. Box 62, Oak Ridge, TN 37830.

- Two more industrial process heat projects funded by DOE were dedicated in April: the first solar energy system at a food processing plant, a can-washing facility developed by Acurex Corp. for a Campbell Soup Co. plant in Sacramento, CA, and a prune- and raisin-drying system developed by California Polytechnic State University for Lamanuzzi & Pantaleo in Fresno, CA.

- The 200-kw wind machine run by NASA in Clayton, NM was turned over this month to the city for use in its municipal system. As of April 9, the machine had operated a total of 587 hours and generated 56,770 kwh of electricity since its dedication on January 28.

- Winners of the small power systems design competition are General Electric, Ford-Aernutronics and McDonnell Douglas. Each will be given a contract of approximately \$600,000. On completion of their designs, one or two will be selected for detail design.

GE DESIGN PLANS ADVANCE

The General Electric Company, nearing the end of preliminary design of a large-scale solar total energy system for a knitware manufacturing company in Shenandoah, GA, has been given a final increment of \$1.6 million. The funds will cover completion of the preliminary design (expected by the end of July) and FY 1978 work on detail design. Ground-breaking is planned for mid-June.

NO FAILURES FOUND IN SOLAR CELL TEST

The first failure-free inspection of a 2,200 module solar cell array at Mead, NB has been recorded. The results from an inspection conducted in late March are encouraging after initial failures found in the modules installed last July.

The array, operated by the University of Nebraska, provides 25 kilowatts of power for crop drying and irrigation. The cells were manufactured by Sensor Technology, Inc. and Solarex Corporation.

INDIAN VILLAGE TO GET PHOTOVOLTAIC POWER

The first photovoltaic installation in an Indian village is set for this summer. A 3-kw system will provide electricity for lights, refrigeration, water pumping and washing and sewing machines at the Papago tribe's village of Schuchuli, AZ.

An agreement for managing the project has been signed between DOE, the Bureau of Indian Affairs (Interior Department) and the Papago tribe. If the project is successful, the tribe plans to introduce photovoltaic systems into other villages.

FEDERAL ENERGY INCENTIVES \$134 BILLION SINCE 1918

The federal government has spent \$123.6 to \$133.7 billion for incentives to stimulate energy production, according to a study just published by Battelle Pacific Northwest Laboratories for DOE.

The Battelle report concludes that past federal incentives for other energy sources provide a precedent for spending or foregoing large sums of potential tax revenues to increase production of solar energy.

"If it is socially desirable and technologically feasible to increase solar energy's share of the national energy budget, the paramount policy question is one of selecting an incentive strategy and determining the government's level of investment in it," the study adds.

For the period 1918-1976, the study estimates the cost (in 1976 dollars) to the federal government of various incentives as follows (percentage of total in parentheses):

Nuclear — \$15.3 - 17.1 billion (13 percent)

Hydro — \$9.2 - 17.5 billion (10 percent)

Coal — \$6.8 billion (5 percent)

Oil — \$77.2 billion (60 percent)

Gas — \$15.1 billion (12 percent).

Six types of incentives were examined: exemption from or reduction of taxes; direct use of Federal funds; legal requirements; services that regulate and enhance commerce; exploration, research, development and demonstration of technology, and marketing assistance.

For copies of *An Analysis of Federal Incentives Used to Stimulate Energy Production* (PNL2410), write: National Technical Information Service, 5285 Port Royal Rd., Springfield, VA 22151. Cost: \$13.

SOLAR CONTRACT DEADLINES

- Agricultural and Industrial Process Heat, RFP EM-78-R-03-1882, for low- or intermediate-temperature (300 - 550 degrees F) industrial process steam applications (May 26). Contact: Susan O'Brien, Department of Energy, San Francisco Operations Office, 1333 Broadway, Wells Fargo Bldg., Oakland, CA 94612.

- Thermal Power Systems, RFP ET-78-R-03-1887, for plant integration and solar facilities subsystems for the 10-mwe solar thermal central receiver pilot plant in Barstow, CA (May 19). Contact: James Corcoran, Department of Energy, San Francisco Operations Office, 1333 Broadway, Wells Fargo Bldg., Oakland, CA 94612.

The solar energy programs of the Department of Energy maintain a computerized mailing list of professionals in the solar industry and research community. These individuals receive mailings of the *Solar Energy Research and Development Report* covering an occasional compendium of DOE program information, notification of workshops and conferences and other events of professional interest. Specific mailings are targeted to categorized audiences, reflecting the professions and subject interests of those listed. For inclusion in this listing, request DOE Form ET-631SE from: U.S. Department of Energy, Division of Solar Technology, Washington, DC 20545. Attention: Solar Energy Information Request.

CONSUMER PROTECTION AIM OF APPLICATIONS PROGRAM

A broad range of consumer protection measures are being developed and promoted by the Division of Solar Applications. The goal is to ensure safe, reliable and efficient solar heating and cooling systems.

Development of codes, standards and criteria for solar energy systems is being accelerated in accordance with the Solar Heating and Cooling Demonstration Act of 1974 and other recent legislation.

Among the protection measures (their status is shown in parentheses):

- interim performance criteria for heating and cooling systems in residential and commercial buildings (being utilized in current demonstration programs);
- standards for heating and domestic hot water systems (incorporated as the intermediate supplement to the HUD/FHA Minimum Property Standards), and
- a model code for solar heating and cooling of buildings (a first draft will be ready for public comment by the end of this year).

SOCIETAL CHANGES SEEN IN SOLAR CONVERSION

Full realization of solar energy's potential implies great societal changes, Division of Solar Technology director Henry H. Marvin told a recent seminar sponsored by the Institute for Humanistic Studies.

Achieving the goal of having solar energy supply 25 percent of the nation's energy is possible but implies great changes within our societal structure, Marvin said. These changes require attention from the humanist more than from the technologist.

Solar and other technologies provide options, for instance, to modify existing centralization of production, a system which was built around low energy costs.

While solar appeals to those who dream of individually controlled energy supply facilities (e.g., windmills, photovoltaic arrays, solar heating and cooling), Marvin said, present life styles depend on instant availability of power.

Solar is adaptable for both small and large energy conversion systems and is "a very human technology," the director added. Among its humanistic virtues: it is labor intensive, involves community participation and "appeals to the tinkerer in us — to the do-it-yourselfer who can conceivably match his own energy production to his energy use."

In elaborating on societal changes surrounding development of solar energy, Marvin said: "Without doubt, we are entering an era of change in society—an era of change which is not without precedent in man's history . . . There is abundant evidence that the traditional national goals of material progress, which seemed so meritorious and unconfusing to our grandparents, do not command the same commitment from today's citizens.

"There is more emphasis on *creative work* as an end in itself, and less on work to *gain economic goals*. There is now emerging greater emphasis on the fitness of the social environment for human growth and development, and less on technological and economic growth as ends in themselves.

"The tension between old and new is evident, and we see it in every energy related issue. The basic point is that energy is a *means*, not an end.

"But institutions resist change. And when goals change, there is a challenge to structure, and to social and political institutions. Thus, we may expect continuing tensions as change may come."