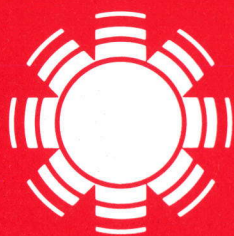


Education Data Base Semiannual Report

October 1, 1978 –
March 31, 1979

Kevin O'Connor



SERI

Solar Energy Research Institute

A Division of Midwest Research Institute

1536 Cole Boulevard
Golden, Colorado 80401

Operated for the
U.S. Department of Energy
under Contract No. EG-77 C-01-4042



SERI/PR-42-319

c.2

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SERI/PR-42-319

UC CATEGORY: UC-59,60,61,62,63,64

EDUCATION DATA BASE
SEMIANNUAL REPORT

OCTOBER 1, 1978 - MARCH 31, 1979

KEVIN O'CONNOR

SOLAR ENERGY RESEARCH INSTITUTE
Solar Energy Information Center

AUG 2 1979

GOLDEN, COLORADO 80401

JULY 1979

PREPARED UNDER TASK NO. 4231

Solar Energy Research Institute

1536 Cole Boulevard
Golden, Colorado 80401

A Division of Midwest Research Institute

Prepared for the
U.S. Department of Energy
Contract No. EG-77-C-01-4042

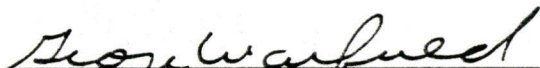
FOREWORD

This progress report was performed in compliance with DOE Contract Number EG-77-C-01-4042. This report represents the six-month effort of progress in the Education Data Base, Task 4231 in the Academic Programs Branch. In addition to myself, George Corcoleotes provided a major contribution to the performance of this task. The Data Base Systems Branch, especially Katherine Kramer, provided the main effort as liaison in the technical work of getting the information from coded forms to a searchable data base.



Kevin O'Connor
Academic Programs Branch

Approved for SERI:



George Warfield, Assistant Director
Academic and International Programs

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SECTION 1.0

INTRODUCTION

1.1 SCOPE

The Solar Energy Education Data Base (SEEDB) task was established as a high priority in the Academic Programs Branch to serve as an information dissemination tool and to identify the active people and organizations in the educational arena.

SERI's Information Systems Division is responsible for the development of the Solar Energy Information Data Bank (SEIDB), a national repository of solar information. The education data base is part of the SEIDB. Justification of the SEIDB stems from the fact that no centralized collection effort exists for educational institutions offering solar energy courses, programs, and curricula.

Work on this project began in April 1978. From April through September 1978 (FY78), several major tasks were accomplished. A data collection effort was coordinated with the cooperation of the Office of U.S. Congressman George E. Brown, Jr. and SERI. The education data base file definitions and structures were defined for building the data base at Stanford University using the SPIRES software system. Finally, a large effort was devoted to editing, coding, and verifying the data from the survey instruments. The original survey package utilized is found in Appendix A.

1.2 PURPOSE

The SEEDB was established to respond to the needs of a full range of users: academicians, industry, government agencies, research organizations, students, private individuals, etc. The data base will be updated periodically, it will contain information which is accessible to the public in a variety of published materials and will have the flexibility to be able to respond quickly to special requests.

The SEEDB is designed to facilitate information flow to the user community on technological developments in solar energy. In this manner, the education community can plan new programs which can be targeted to supplying projected manpower skills for emerging solar technologies.

SECTION 2.0

SUMMARY OF PROGRESS AND ACHIEVEMENTS

2.1 DATA BASE ESTABLISHMENT

The development of a computerized data base is a complex process of coordination among many people, and involves constant attention to minute details. Some of the events and tasks are itemized below:

- Forms Development and Revision. Included reaching concensus of all involved parties: Congressman Brown's Office; Academic Programs; Data Base Systems; and Computer Service Branches.
- Survey and Forms Printing.
- Survey Distribution. Generating mailing labels, stuffing, and mailing operation.
- Survey Preparation for Data Entry. Editing, coding, and solving survey return problems.
- Data Element and File Definitions. This task is needed for data base to be entered and retrieved intelligently.
- Initial System Creation. Two modes were employed here. Creation of data base was initially made using the Office of Education's National Center of Education Statistics file for selecting building institution name, address, and attribute information. The second mode was to test system's ability to build full records from survey returns and verify that data were stored appropriately and retrievable as expected.
- Final System Checkout. Used several hundred schools for verification of system.
- Report Definition. Publications to be created from system, especially National Solar Energy Education Directory (to be computer generated), needed to be precisely defined.
- Create System Flow Charts. Figure 2-1 shows the General System Operational Flowchart and Conceptual System Reporting procedures.
- Design of Update Mechanisms. Will occur in second half of FY79 when system changeover occurs. Other procedures for inputting changes, and for adding and deleting institutional data were defined.

The Task/Milestone Chart for the SEEDB is found in Fig. 2-2. Basically, all tasks were accomplished on schedule during the time period of the report.

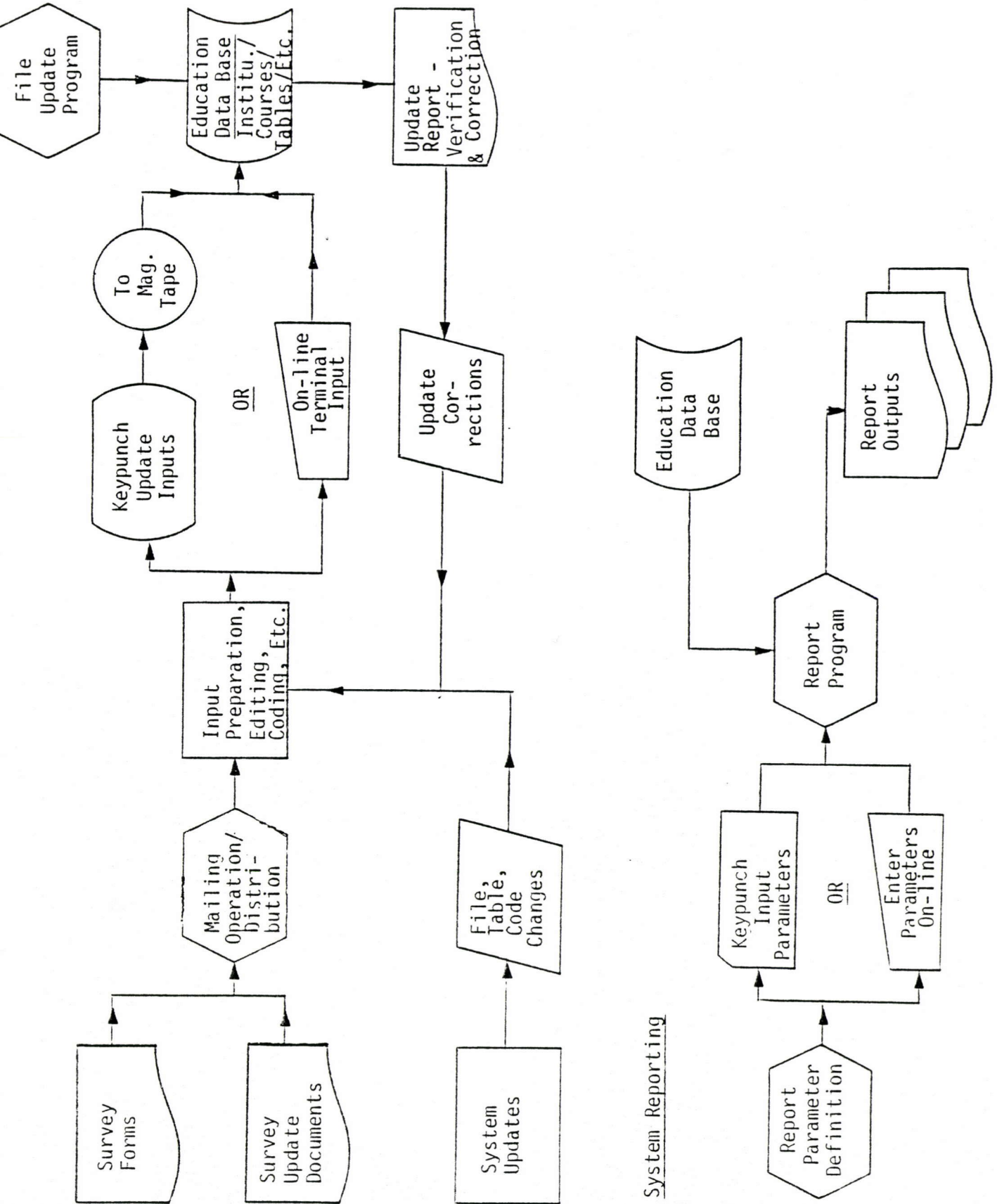
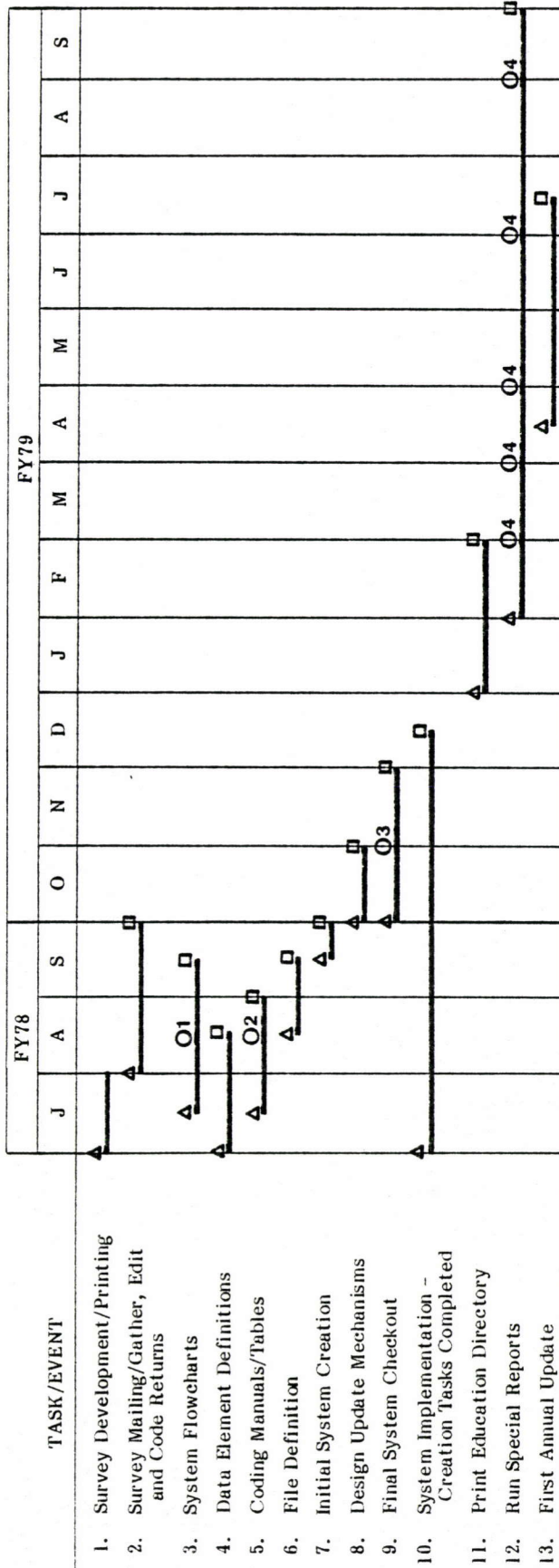


Figure 2-1. SOLAR ENERGY EDUCATION DATA BASE: GENERAL SYSTEM OPERATIONAL FLOWCHART



Symbol Meaning

- ▲ Milestone Beginning
- Intermediate Task/Report Complete
- Milestone Complete

Footnotes

- 1 - Preliminary Flowchart Complete
- 2 - Coding Schemes Gathered, Reviewed
- 3 - Initial System Creation - Small Sample
- 4 - Special Reports Produced

2.2 SUMMARY OF ACHIEVEMENTS

- October 1978
- Education Data Base created from Office of Education tape. Initial data entry of coded, verified surveys begun.
 - 2,200 Surveys received from 3,200 educational institutions.
- November 1978
- All initial response data entered and verified.
 - National Solar Energy Education Directory report rules agreement reached.
- December 1978
- First draft of National Solar Energy Education Directory produced. Contained 679 institutions.
 - Initiated new survey update for 2nd iteration of data base update.
- January 1979
- Final version of National Solar Energy Education Directory (NSEED) sent to regional Government Printing Office for reproduction.
 - Education Data Base demonstrated at National Energy Education, Business, and Labor Conference in Washington, D.C.
- February 1979
- Received 1,175 copies of NSEED. Cover wording questions were noted. Report was returned to printer for recovering.
 - Initial draft of state solar energy education directories is prepared.
 - Many more iterations of survey update form occur. Staff review and Survey Review Committee interactions take place. This is a complex, time-consuming procedure.
- March 1979
- NSEED finally printed. Superintendent of Documents order 9,600 for sale to public. Congressman Brown's Office makes Press Release to 160,000 people using National Solar Heating and Cooling Information Center mailing lists. Copies may be obtained from Superintendent of Documents, U.S. GPO, Washington, D.C. 20402 Price: \$4.75. Stock #061-000-00210-3.
 - Camera-ready copies of state solar energy education directories sent to printers.
 - Survey Update Form - Finalized and sent to printer. See Appendix B for new survey package.
 - Rough draft of Solar Energy Technical Training Directory prepared.

SECTION 3.0

SIGNIFICANT UPCOMING ACTIVITIES

3.1 NEAR TERM - FY79 (APRIL - SEPTEMBER)

- Print and distribute individual State Solar Energy Education Directories (SSEED). Distribution of SSEEDs will be handled by the Dissemination Systems Group in Information Systems.
- Print and advertise National Solar Energy Technical Training Directory.
- Produce a summary report of the Solar Energy Education Data Base.
- Conduct Education Data Base update in cooperation with Congressman Brown's Office.
- Switch over Data Base from SPIRES to INQUIRE. Enter all new data.

3.2 FY80 ACTIVITIES

- Print 2nd Edition of National Solar Energy Education Directory.
- Print updated State Solar Energy Education Directories.
- Print updated Technical Training Directory.
- Expand data base to include non-educational and international institution information.
- Produce data base summary and other special reports as necessary.
- As part of the education data base task, produce a directory of research activities in the nation's colleges and universities using the Smithsonian Science Information Exchange Service.

APPENDIX A**FIRST NATIONAL SOLAR ENERGY EDUCATION SURVEY PACKAGE**

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Solar Energy Education Survey Instructions	A-3
Educational Data Base - Educational Institutions	A-4
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GEORGE E. BROWN, JR.
2342 HOUSE OFFICE BUILDING
WASHINGTON, D.C. 20515
(202) 225-6161

COMMITTEES:
AGRICULTURE

SCIENCE AND TECHNOLOGY
CHAIRMAN, SUBCOMMITTEE ON
ENVIRONMENT AND THE ATMOSPHERE

TECHNOLOGY ASSESSMENT
BOARD

Congress of the United States
House of Representatives
Washington, D.C. 20515

PLEASE
REPLY
TO

36TH DISTRICT OF
CALIFORNIA

DISTRICT OFFICES:

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290 NORTH D STREET
SUITE 717
SAN BERNARDINO, CALIFORNIA 92402
(714) 825-2472

MISSION INN ROTUNDA
3616 MAIN STREET, SUITE 500
P.O. Box 71
RIVERSIDE, CALIFORNIA 92502
(714) 686-8863

WASHINGTON OFFICE

FIRST NATIONAL SOLAR ENERGY EDUCATION SURVEY

July, 1978

TO: Presidents of Educational Institutions, Institute Heads, Deans and Department Directors offering Educational Programs in Solar Energy

FROM: U.S. Rep. George E. Brown, Jr. U.S. Senator Charles H. Percy
U.S. Rep. James M. Jeffords U.S. Senator Thomas J. McIntyre
U.S. Rep. James J. Blanchard

The Congressional Solar Coalition is interested in your participation in a cooperative effort to create a data base of all solar energy-related programs and courses currently being offered by our nation's post-secondary educational institutions.

Two organizations have agreed to work with the collected information. The Solar Energy Research Institute (SERI) in Golden, Colorado will have responsibility for the creation of a computerized data base which will become part of the legislatively mandated Solar Energy Information Data Bank (SEIDB). SERI's Information Systems Branch will receive the survey returns, edit and process the data into a computerized data base, and create the appropriate retrieval, reporting, updating, and analysis mechanisms. The compilation of collected material will be made available in a published Solar Energy Educational Directory. As an interim measure, before the computerized data base at SERI is fully operational, the National Solar Heating and Cooling Information Center (NSHCIC) will have the capability of providing a listing of solar educational offerings on a state-by-state basis free of charge to anyone by calling their toll-free number: (800) 523-2929.

The suggested deadline for returning the survey is September 15, 1978. For the purpose of this survey, wind, biomass conversion, and ocean thermal energy conversion should also be considered as solar technologies. New courses, curricula, and updates will be accepted any time following the September 15th date. However, this is not preferred. Even if you do not offer solar courses, please complete and return the first page of the form.

We appreciate your participation and, for your help, the Solar Energy Research Institute will be sending you a listing of the programs in your state. We hope you will be able to use the compiled information for your own course and/or curriculum development.

We would also like to use this opportunity to make sure that you are aware of the Higher Education Act Amendments of 1976. Of particular importance is an amendment introduced by Sen. Thomas J. McIntyre, (N.H.), that allows Federal Funds to be used for solar education programs in post-secondary vocational education schools. You might want to investigate your own possible uses of federal funds for the development of new or additional solar energy curricula.

Solar Energy Educational Survey Instructions

If your institution is not offering any solar related programs, please complete only the first page of the survey, so indicating. If solar offerings are made by your institution, we would be happy to receive any additional information which you feel would be helpful.

The three-page survey form is designed to elicit information on solar-related programs, courses, and/or curricula currently being offered or planned to be offered by educational institutions. Your assistance in making the form entries as complete as possible will be greatly appreciated. There are two sections to be completed: (1) Educational Institutions and (2) Course Information (2 pages). Some detailed instructions may help in answering certain questions. Note that for the purpose of this survey wind, biomass conversion, and ocean thermal energy conversion should also be considered as solar technologies.

I. Educational Institutions

- Q. 4. If your institution offers or plans to offer a solar curriculum or program, answer "yes" to question 4 and complete questions 5 through 12 for each curriculum or program offered or planned. Duplicate the form if necessary.
- Q. 5-12. In questions 5 through 12, information relative to solar curricula and programs is requested, as distinguished from single course offerings. A curriculum is a set of integrated courses leading toward a degree or certificate. A program is loosely defined as a formal academic experience usually combining course-work and research in applied solar technology, but not necessarily leading to a degree in solar expertise. Specialized summer programs and research institutes are examples. The answer to Q. 8, Head of Prog./Curr., should be the main contact person for someone desiring more information about the program or curriculum. Question 12 estimates the proportion of students successfully placed in solar-related jobs.
- Q. 13-14. Please answer question 14, regardless of the answer given in question 13. If your institution is presently offering solar courses ("Yes" to question 13), it may also be developing additional courses.

II. Course Information

Please complete the Course Information Section (2 pages) for each separate, solar-related course, either presently offered or planned to be offered. Duplicate the Course Information Section if necessary to cover all solar courses offered. Any questions you may have concerning the survey form may be answered by Kevin O'Connor at SERI: (303) 234-7235.

Using the envelope provided, please return all completed surveys by September 15, 1978. A further update or correction may be returned at any time to:

Solar Energy Research Institute
Attn: Educational Data Base
1536 Cole Boulevard
Golden, Colorado 80401

Thank you very much for your participation.

I. Educational Data Base — Educational Institutions

1. Institution Name: _____

2. Address: _____
Street City State Zip

3. Institution Type:

- | | |
|--|---|
| <input type="checkbox"/> 4 Yr. Coll./Univ./Grad. School
<input type="checkbox"/> Community/Junior College | <input type="checkbox"/> Vocational/Technical School
<input type="checkbox"/> Other (describe) _____ |
|--|---|

4. Does your institution offer/plan a Solar Curriculum or Program? Yes No
 If "No", go to Question 13.

Please complete Questions 5-12 for each solar energy Curriculum or Program offered or planned. If more than one Program/Curriculum is offered/planned please make copies of this section and attach.

5. Is the offering a Program? Currently Offered? or Planned?
 or Curriculum? Currently Offered? or Planned?

6. Program/Curriculum Name: _____

7. College/Dept. offering Program/Curriculum: _____

8. Head of Prog./Curr.: _____ Phone: () _____

9. What Degree/Title/Certificate, if any, does graduating student receive?
 Ph.D. MA MS BA BS Associate Degree None
 Other (specify) _____

10. Name of Degree/Title/Certificate: _____

11. Students completing Program/Curriculum would generally be classified as (check as many as apply):

- | | |
|--|---|
| <input type="checkbox"/> Architect
<input type="checkbox"/> Educator
<input type="checkbox"/> Researcher
<input type="checkbox"/> Solar Engineer

<input type="checkbox"/> Mech./Elec. Contractor
<input type="checkbox"/> General Contractor —
Specializing in solar
design/installation
<input type="checkbox"/> Do-it-yourselfer/Homeowner

<input type="checkbox"/> Other (specify) _____ | <input type="checkbox"/> Solar System Installer:
<input type="checkbox"/> Residential
<input type="checkbox"/> Industrial/Commercial
<input type="checkbox"/> Solar Technician — one trained in instrumentation,
controls, design, maintenance, etc.

<input type="checkbox"/> Person specializing in solar from one of the
following trades/skills:
<input type="checkbox"/> Electrical <input type="checkbox"/> Plumbing <input type="checkbox"/> Sheet Metal
<input type="checkbox"/> Other (specify) _____ |
|--|---|

12. Estimate what percentage of graduates of the above Prog./Curr. enters the job market in the field for which they are specifically trained: _____%

13. Is your institution presently offering solar courses? Yes No

14. Are any (additional) solar courses being developed? Yes No

For all courses, existing or planned, please complete the 2-page Course Information Section. Make extra copies of the section if needed. If no solar-related courses are offered or planned, complete this page only and return.

Thank you very much.

II. Educational Data Base — Course Information

1. Name of Institution: _____
2. Course Title: _____
3. Course Number: _____ 4. Is Course Currently Offered? Or Planned?
5. Course Instructor/Contact: _____ Phone: (____) _____
6. College/Dept. Offering Course: _____
7. Is Course also taught in conjunction with other Colleges/Depts.? Yes No
8. Most of the students in course are from what Colleges/Depts.? (Please List)
- a. _____ b. _____ c. _____
- d. _____ e. _____ f. Don't Know
9. Number of Times Course Taught to Date: _____ 10. Average Enrollment _____
11. Number of Students Completing Course:
- 1973 or earlier _____ 1974 _____ 1975 _____ 1976 _____
- 1977 _____ 1978 (est.) _____ 1979 (est.) _____
12. Is Course Offered for Academic Credit? Yes No 13. # Credit Hours _____
14. Typical Academic Level of Student Taking Course: All Levels
- High School Grad. Fresh/Soph Jr/Sr College Grad. Postdoctoral
15. Duration of Course: (# of Weeks _____ Hrs./Week _____) OR (# of Days _____ Hrs./Day _____)
16. Contract Hours: Total _____ Classroom/Lecture _____ Laboratory _____
- On-the-job-training _____ Other _____ (Specify) _____
17. To what extent are the following topics covered in your course? Check only those that apply. Please specify topics not listed, but included in the course.

Extensively	Somewhat	Course Topics
<input type="checkbox"/>	<input type="checkbox"/>	1. Alternate Energy Sources
<input type="checkbox"/>	<input type="checkbox"/>	2. Appropriate Technology
<input type="checkbox"/>	<input type="checkbox"/>	3. Biomass Conversion
<input type="checkbox"/>	<input type="checkbox"/>	4. Energy Conservation
<input type="checkbox"/>	<input type="checkbox"/>	5. Energy Conversion
<input type="checkbox"/>	<input type="checkbox"/>	6. Energy Storage
<input type="checkbox"/>	<input type="checkbox"/>	7. Heat and Energy Transfer
<input type="checkbox"/>	<input type="checkbox"/>	8. Intro. to Solar Energy
<input type="checkbox"/>	<input type="checkbox"/>	9. Marketing/Market Analysis
<input type="checkbox"/>	<input type="checkbox"/>	10. Materials Research
<input type="checkbox"/>	<input type="checkbox"/>	11. Passive Solar Technology
<input type="checkbox"/>	<input type="checkbox"/>	12. Photovoltaics
<input type="checkbox"/>	<input type="checkbox"/>	13. Plumbing Techniques
<input type="checkbox"/>	<input type="checkbox"/>	14. Solar Energy Policy Development
<input type="checkbox"/>	<input type="checkbox"/>	15. Sheet Metal Techniques
<input type="checkbox"/>	<input type="checkbox"/>	16. Solar System Components
<input type="checkbox"/>	<input type="checkbox"/>	17. Solar Economics
<input type="checkbox"/>	<input type="checkbox"/>	18. Solar Home Construction
<input type="checkbox"/>	<input type="checkbox"/>	19. Solar Law/Legislation
<input type="checkbox"/>	<input type="checkbox"/>	20. Solar Collector Evaluation/Design

Extensively	Somewhat	Course Topics
<input type="checkbox"/>	<input type="checkbox"/>	21. Solar Systems Design
<input type="checkbox"/>	<input type="checkbox"/>	22. Solar Systems Installation
<input type="checkbox"/>	<input type="checkbox"/>	23. Solar Systems Maintenance
<input type="checkbox"/>	<input type="checkbox"/>	24. Solar Systems Testing and Evaluation
		Solar Applications
<input type="checkbox"/>	<input type="checkbox"/>	25. Domestic Hot Water
<input type="checkbox"/>	<input type="checkbox"/>	26. Swimming Pool Heating
<input type="checkbox"/>	<input type="checkbox"/>	27. Elec'l Generation, Central
<input type="checkbox"/>	<input type="checkbox"/>	28. Elec'l Generation, Small Scale
<input type="checkbox"/>	<input type="checkbox"/>	29. Process Heat, Agricultural
<input type="checkbox"/>	<input type="checkbox"/>	30. Process Heat, Industrial
<input type="checkbox"/>	<input type="checkbox"/>	31. Space Heating
<input type="checkbox"/>	<input type="checkbox"/>	32. Space Cooling
<input type="checkbox"/>	<input type="checkbox"/>	33. Wind Power, Central Systems
<input type="checkbox"/>	<input type="checkbox"/>	34. Wind Power, Small Systems
		Other (specify)
<input type="checkbox"/>	<input type="checkbox"/>	35. _____
<input type="checkbox"/>	<input type="checkbox"/>	36. _____

Please complete back of form for this course. Thank you.

II. Educational Data Base — Course Information (Continued)

Materials Used or Proposed for Use in this Course

18. Is a text used in this course? Yes No

19. Name of text _____ 20. Author _____

The following are used in this course:

21. Slides: Yes No 22. Films: Yes No 23. Demonstrations: Yes No

24. List sources of above materials or describe demonstrations.

25. Course Prerequisites (May be copied from catalog, etc.):

26. Course Description (May be copied from catalog, etc.):

Thank you very much for your participation.

APPENDIX B
SECOND NATIONAL SOLAR ENERGY EDUCATION INFORMATION
UPDATE PACKAGE

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Part III - Solar Energy Course Information	B-7

Congress of the United States

House of Representatives

Washington, D.C. 20515

NATIONAL SOLAR ENERGY EDUCATION INFORMATION UPDATE

April 1979

TO: Institutions Offering Educational Activities

FROM: U. S. Rep. George E. Brown, Jr. U. S. Sen. Charles H. Percy
U. S. Rep. James M. Jeffords U. S. Senator Paul E. Tsongas
U. S. Rep. James J. Blanchard U. S. Senator Gary Hart
U. S. Rep. Timothy E. Wirth

The Congressional Solar Coalition is interested in your continued participation in a cooperative effort to update the data base of all solar energy related programs and courses being offered by our nation's post-secondary educational institutions.

The Department of Energy's Solar Energy Research Institute (SERI) in Golden, Colorado has created a computerized data base as part of the Congressionally mandated Solar Energy Information Data Bank (SEIDB). SERI will receive returns, edit and process the data, and create the appropriate retrieval, reporting, updating and analysis mechanisms. The compilation of the material from the first data collection effort in the summer of 1978 was made available in the first edition of the National Solar Energy Education Directory (March 1979). In addition, the National Solar Heating and Cooling Information Center (NSHCIC) and the regional Solar Energy Centers provide listings of solar educational offerings on a state-by-state basis free of charge to anyone calling their toll-free number: (800) 523-2929; in Pennsylvania, (800) 462-4983; and in Hawaii and Alaska, (800) 523-4700.

The National Solar Energy Education Directory is a comprehensive, 300-page up-to-date listing of solar-related courses, programs and curricula offered at institutions nationwide. Copies of the first edition of the Directory may be obtained from the Superintendent of Documents, U. S. Government Printing Office, Washington DC 20402, Stock Number 061-000-00210-3, Price \$4.75.

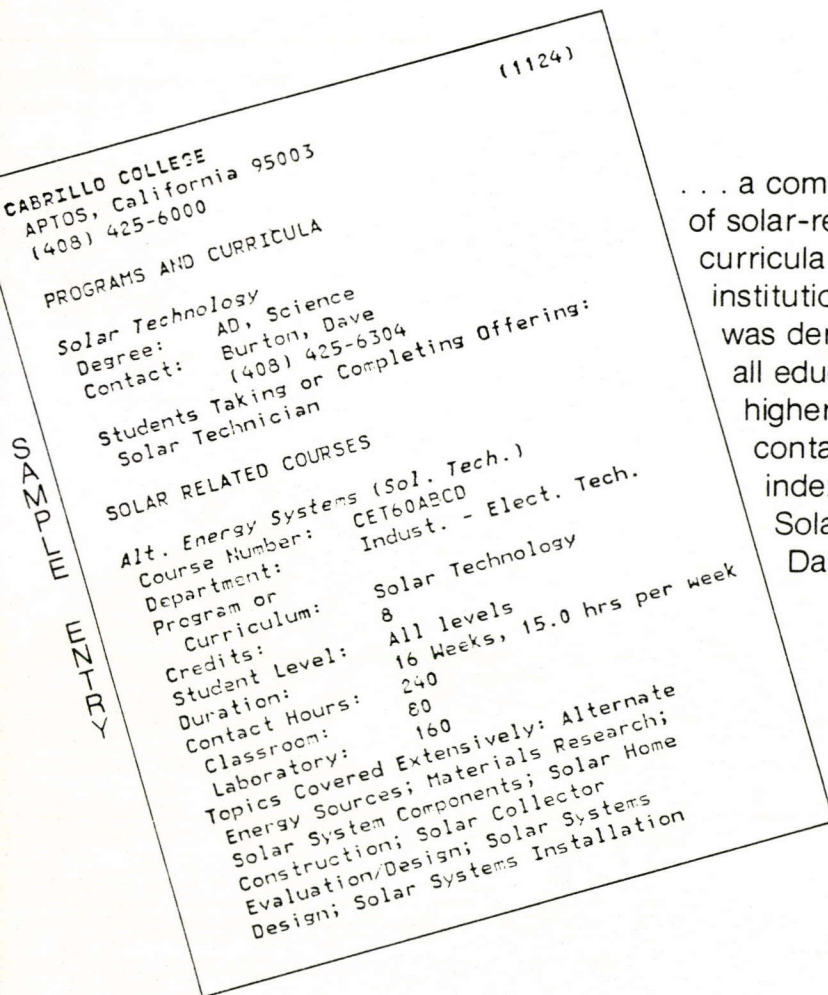
To insure that all new and updated information is included in the next Directory, the deadline for returning the form is June 15, 1979. New courses and other program updates will be accepted at any time following the June 15th date. Even if you do not offer solar courses, please complete the first page and return the form.

We appreciate your participation and hope you will be able to use the compiled information. Your institution will receive notices of all publications created from the solar energy education data base.

Available Now!

National Solar Energy Education Directory

First Edition
a cooperative effort of the
Solar Energy Research Institute*
the office of
U.S. Rep. George E. Brown, Jr.
and the
Congressional Solar Coalition



... a comprehensive, up-to-date list of solar-related courses, programs, and curricula offered at 700 post-secondary institutions nationwide. Information was derived from a national survey of all educational institutions of higher education. The Directory contains 279 pages, including indexes. Produced from the Solar Energy Information Data Bank.



1536 Cole Boulevard
Golden, Colorado 80401

For a copy, write:
Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402
Stock Number: 061-000-00210-3
Price: \$4.75

* Operated for the U.S. Department of Energy under Contract Number EG-77-C-01-4042 by the Midwest Research Institute

Instructions
National Solar Energy Education Survey
a cooperative effort of
The Solar Energy Research Institute*
The Office of U.S. Congressman George E. Brown, Jr.
The Congressional Solar Coalition

The Solar Energy Research Institute, in cooperation with the office of U.S. Congressman George E. Brown, Jr. and the Congressional Solar Coalition, is requesting information about your institution's activities in solar energy. Our goal is to provide a comprehensive guide to education and training efforts related to solar energy throughout the world. Your participation in this task is appreciated.

The enclosed survey form is designed to obtain information about solar-related courses and programs offered by institutions during 1979 or 1980. Your assistance in making the entries as complete as possible is of great value. This information will be used to update the Educational Data Base which is part of the Solar Energy Information Data Bank (SEIDB).

If your institution responded to the 1978 survey and is included in the National Solar Energy Education Directory**, First Edition, we have enclosed a computerized printout of the information that was submitted. Please review the printout, make corrections where necessary, and supply information where none is present. Also, please complete the provided survey sections with information on your institution's solar energy education offerings which are not listed on the computer printout.

If your institution is not presently listed in the National Solar Energy Education Directory, or if the Directory listing is created from a secondary source of information, we request that you complete the survey form provided.

If you offer no solar-related courses or programs, please complete only Part I of the survey.

On all solar-related courses and programs, we would appreciate receiving any additional information which you feel would be helpful.

Please observe the following guidelines in completing the survey:

Solar Technologies

- In addition to the more commonly recognized applications of solar heating, cooling, and electrification, consider wind, biomass conversion, and ocean thermal energy conversion as solar technologies.

Program Definitions

- A Solar Curriculum is a program in which the student receives a degree or diploma in a solar field — doctorate, master's, bachelor's, associate; e.g., "Master's in Solar Engineering"; "Associate Degree in Solar Installation".
- A Curriculum with Solar Study is a program in which the student receives solar education while working on a related degree or diploma — doctorate, master's, bachelor's, associate; e.g., "Doctorate in Physics" with solar emphasis; "Bachelor's in Architecture" with solar design experience.
- Solar Technical Training (Non-Academic Degree) is a program in which the student receives a certificate for study in solar energy or a solar-related field; e.g., solar technician.

Solar Course Definition

- A Solar Course or Solar-Related Course is a lecture, workshop, seminar, research project, laboratory, on-the-job training experience, or other educational experience where the solar content is equal to one-third (1/3) or more of the total course contact hours.

To insure accurate information in future publications, please return all surveys in the envelope provided by June 15, 1979. A further update or correction may be returned at any time to:

SERI, Academic Programs
Attn: George Corcoleotes
1536 Cole Boulevard
Golden, Colorado 80401

Call SERI, Academic Programs Branch, at (303) 231-1831 if you have any questions about this survey.

THANK YOU VERY MUCH FOR YOUR PARTICIPATION

* SERI (Solar Energy Research Institute) is a Division of Midwest Research Institute.

** Copies of the National Solar Energy Education Directory may be obtained from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. SN 061-000-00210-3. Price: \$4.75

Part I — Institution Information (1979-1980)

Please type or print legibly.

FOR OFFICE USE ONLY

Institution Name _____
 Address _____
 City _____ State _____ Zip _____

IMPORTANT

We request the following information of the person filling out or coordinating the response to this survey.

Name _____ Position _____
 Department _____ Phone () _____ Ext. _____

Institution Type (Circle single most appropriate response):

- | | |
|---|--|
| <input type="checkbox"/> University/College/Graduate School | <input type="checkbox"/> Industrial Organization |
| <input type="checkbox"/> Junior/Community College | <input type="checkbox"/> Government Organization |
| <input type="checkbox"/> Vocational/Technical School | <input type="checkbox"/> Adult/Community Education |
| <input type="checkbox"/> Research Institute/Laboratory | <input type="checkbox"/> Political Action Group |
| <input type="checkbox"/> Trade Association | <input type="checkbox"/> Professional Association |
| <input type="checkbox"/> Labor Organization | <input type="checkbox"/> Other _____ |

What is your institution's total educational enrollment? _____

Control or affiliation of your institution (Circle one):

- 1 Public 2 Private 3 Combination—Public/Private

What is the minimum admission level for students attending your institution? (Circle one)

- | | |
|--|---|
| <input type="checkbox"/> 1 Only the ability to profit from attendance | <input type="checkbox"/> 5 Four-year college graduate |
| <input type="checkbox"/> 2 High school graduate or equivalent | <input type="checkbox"/> 6 Other (Specify) _____ |
| <input type="checkbox"/> 3 High school graduate and superior academic aptitude | _____ |
| <input type="checkbox"/> 4 Two-year college graduate | _____ |

How is your school year divided? (Circle one)

- S Semester Q Quarter T Trimester N Not Applicable O Other (Specify) _____

If you have no solar-related programs or courses, circle the response, stop here, and return this part of the survey. Thank you. N No solar programs or courses.

If you have solar-related programs or courses, please go to Part II.

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1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

Part II — Solar Energy Program Information (1979-1980)

NOTE: If more than one solar program is offered during 1979 or 1980, please make copies of this part for each.

Which of the following programs does your institution offer or plan to offer during 1979 or 1980? NOTE: Please see Program Definitions on instruction page.

- SC** Solar Curriculum, Awarding a Degree or Diploma in a Solar Field
- SS** Curriculum with Solar Study, Awarding a Degree or Diploma in a Solar-Related Field
- ST** Solar Technical Training, Awarding a Certificate for Study in Solar Energy or a Solar-Related Field

If you have not circled one of the above program types, go to Part III.

Program Name: _____

Department Offering Program: _____

Head of Program: _____

5. Phone: () _____ Ext. _____

What degree does the student receive? (Circle appropriate responses)

- D** Doctorate **B** Bachelor's **C** Certificate
- M** Master's **A** Associate **O** Other (Specify) _____

7. What is the discipline or subject area of the above degree type? _____

Estimate the number of students completing the above program for the years indicated:

1973: _____ 1974: _____ 1975: _____ 1976: _____
 1977: _____ 1978: _____ 1979: _____ 1980: _____ 1981: _____

As a result of having completed the above program, students will be trained in the following area(s) (Circle as many as apply):

- | | |
|---|--|
| <input type="checkbox"/> ARC Architecture—Solar Specialization | <input type="checkbox"/> INR Solar System Installation—Residential |
| <input type="checkbox"/> EDU Solar Energy Education | <input type="checkbox"/> INI Solar System Installation—Industrial/Commercial |
| <input type="checkbox"/> ADM Solar Energy Administration/Policy | <input type="checkbox"/> SOT Solar Technology—Training in Instrumentation, Controls, Design Maintenance, Etc. |
| <input type="checkbox"/> RES Scientific Research and Development in Solar Energy | <input type="checkbox"/> ELE Electricity—Solar Specialization |
| <input type="checkbox"/> ENG Engineering—Solar Specialization | <input type="checkbox"/> PLB Plumbing—Solar Specialization |
| <input type="checkbox"/> MEC Mechanical/Electrical Contracting Solar Specialization | <input type="checkbox"/> SHM Sheet Metal—Solar Specialization |
| <input type="checkbox"/> CON General Contracting—Specialization in Solar Design/Installation | <input type="checkbox"/> HOM Do-It-Yourself/Home Installation |
| <input type="checkbox"/> HVC Heating, Ventilation, Air Conditioning—Solar Specialization | <input type="checkbox"/> OTH Other Solar Specialization (Specify) _____ |

Does your institution offer a job placement service? **Yes** **No**

Does your institution have any procedures for following student employment after program completion? **Yes** **No**

12. If yes, what is the estimate of the percentage of students who find employment in the field for which they are specifically trained as a result of having completed the above program: _____ %

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- 1. _____
- 2. * _____
- 3. * _____
- 4. * _____
- 5. * _____
- 6. _____
- 7. * _____
- 8. '73 _____
'74 _____
'75 _____
'76 _____
'77 _____
'78 _____
'79 _____
'80 _____
'81 _____
- 9. _____

- 10. _____
- 11. _____
- 12. _____ %

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Part III — Solar Energy Course Information (1979-1980)

NOTE: If more than one solar course is offered during 1979 or 1980, please make copies of this part for each.

Course Title: _____

2. Course No.: _____

Instructor or Contact Person: _____

4. Phone: (____) _____ Ext. _____

Department Offering Course: _____

Is course also taught in conjunction with other departments/schools? Yes No

Is course part of a program described in Part II of this survey? Yes No

8. If yes, give program name: _____

Number of times course taught to date: _____

Average enrollment per class: _____

Estimate the number of students completing the course for the years indicated:

1973: _____ 1974: _____ 1975: _____ 1976: _____

1977: _____ 1978: _____ 1979: _____ 1980: _____ 1981: _____

Is the course offered for academic credit? Yes No

13. If yes, how many credits? _____

Are continuing education units offered for this course? Yes No

15. If yes, how many units? _____

Level for which course is offered:

Academic Level

Non-Academic Level

AL All Levels

MA Managerial

CG College Graduate

PR Professional

JS College Junior/Senior

SK Skilled labor

FS College Freshman/Sophomore

LA Layperson

OA Other (Specify) _____

ON Other (Specify) _____

Duration of Course:

No. of weeks _____

No. of Days _____

Hours per week _____

Hours Per Day _____

Total Course

Total Course

Contact Hours _____

Contact Hours _____

Detailed Course Contact Hours for Duration of Course:

Lecture/Discussion _____ Hrs. Seminar _____ Hrs.

Research/Independent Study _____ Hrs. Workshop _____ Hrs.

On-the-Job Training _____ Hrs. Laboratory _____ Hrs.

Other (Specify) _____ Hrs.

When is this course offered? (Circle as may as apply):

Day Evening Weekend

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- 1. * _____
- 2. * _____
- 3. * _____
- 4. * _____
- 5. * _____
- 6. _____
- 7. _____
- 8. * _____
- 9. _____
- 10. _____
- 11. '73 _____
- '74 _____
- '75 _____
- '76 _____
- '77 _____
- '78 _____
- '79 _____
- '80 _____
- '81 _____
- 12. _____
- 13. _____
- 14. _____
- 15. _____
- 16. _____
- 17. W _____ D _____
- H _____ H _____
- T _____ T _____
- 18. D _____ S _____
- R _____ W _____
- J _____ L _____
- O _____
- 19. _____

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0. Tuition and fees for a full-time student for one term: \$ _____ Resident
\$ _____ Non-resident
1. Tuition and fees for a student taking just this course: \$ _____ Resident
\$ _____ Non-resident

2. What are the principal texts used in this course?

<u>AUTHOR</u>	<u>TITLE</u>
1. _____	_____
2. _____	_____

3. Are there any prerequisites for taking this course? Yes No

4. To what extent are the following topics covered in this course? Circle a 1 or 2 using the following code definitions:

- 1-Topic Covered Extensively (Major course topic or concept)
2-Topic Covered In Some Detail (Minor course topic or concept)

Do not code topics covered superficially.

- | | |
|--|---|
| <input type="checkbox"/> <input type="checkbox"/> ALTE - Alternate Energy Sources | <input type="checkbox"/> <input type="checkbox"/> SSPS - Satellite Solar Power Systems |
| <input type="checkbox"/> <input type="checkbox"/> APRT - Appropriate Technology | <input type="checkbox"/> <input type="checkbox"/> SHMT - Sheet Metal Techniques |
| <input type="checkbox"/> <input type="checkbox"/> BIOM - Bioconversion | <input type="checkbox"/> <input type="checkbox"/> SHAC - Solar Cooling |
| <input type="checkbox"/> <input type="checkbox"/> CENT - Centralized Solar Power Systems | <input type="checkbox"/> <input type="checkbox"/> HOTW - Solar Domestic Hot Water |
| <input type="checkbox"/> <input type="checkbox"/> COMP - Components—Solar | <input type="checkbox"/> <input type="checkbox"/> POLD - Solar Energy Policy Development |
| <input type="checkbox"/> <input type="checkbox"/> DIST - Distributed Solar Power Systems | <input type="checkbox"/> <input type="checkbox"/> SHAK - Solar Heating |
| <input type="checkbox"/> <input type="checkbox"/> CNSV - Energy Conservation | <input type="checkbox"/> <input type="checkbox"/> CNST - Solar Home Construction |
| <input type="checkbox"/> <input type="checkbox"/> STOR - Energy Storage Systems | <input type="checkbox"/> <input type="checkbox"/> LAWL - Solar Law/Legislation |
| <input type="checkbox"/> <input type="checkbox"/> GRHT - Greenhouse Techniques | <input type="checkbox"/> <input type="checkbox"/> MRKT - Solar Marketing/Economic Analysis |
| <input type="checkbox"/> <input type="checkbox"/> HETR - Heat and Energy Transfer | <input type="checkbox"/> <input type="checkbox"/> SWPL - Solar Swimming Pool Heating |
| <input type="checkbox"/> <input type="checkbox"/> HYBR - Hybrid Systems | <input type="checkbox"/> <input type="checkbox"/> SSYD - Solar Systems Design |
| <input type="checkbox"/> <input type="checkbox"/> INTR - Introduction to Solar Energy | <input type="checkbox"/> <input type="checkbox"/> INST - Solar Systems Install./Maintenance |
| <input type="checkbox"/> <input type="checkbox"/> MATR - Materials | <input type="checkbox"/> <input type="checkbox"/> TEST - Solar Systems Testing/Evaluation |
| <input type="checkbox"/> <input type="checkbox"/> SEAS - Ocean Systems | <input type="checkbox"/> <input type="checkbox"/> CHEM - Thermochemical Conversion |
| <input type="checkbox"/> <input type="checkbox"/> PASS - Passive Solar Systems | <input type="checkbox"/> <input type="checkbox"/> WIND - Wind Energy Conversion Systems |
| <input type="checkbox"/> <input type="checkbox"/> PHOT - Photoconversion | <input type="checkbox"/> <input type="checkbox"/> OTHR - Other (Specify) _____ |
| <input type="checkbox"/> <input type="checkbox"/> PHVC - Photovoltaics and Solar Cells | |
| <input type="checkbox"/> <input type="checkbox"/> PLMB - Plumbing Techniques | |
| <input type="checkbox"/> <input type="checkbox"/> PROC - Process Heat | |

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20. R _____ NR _____

21. R _____ NR _____

22. * _____

23. _____

24. * _____

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