DOE/R4/10305

FINAL REPORT ON SOLAR-ENERGY WORKSHOPS HELD AT
MIAMI-DADE PUBLIC LIBRARIES, 1981 - 1982
(Grant No. DE-FG4480R4)

DOE/R4/10305--T1

DE84 000419

SUMMARY:

FB44-80R410305

Over a two year period, the Miami-Dade Public Library System gave 12 free solar energy programs throughout Dade County in its various branches; Solar Water Heater Workshops, where registered participants actually took part in building or putting together a solar water heater. "Kick-off" programs were also given free-of-charge by a number of local solar companies, to inform the audience about solar energy in general and the solar workshops in particular. Average registered attendance at these workshops was twenty, not including the crowds of onlookers at the outdoor building sessions or the earlier 'kick-off' programs, which often had an audience of sixty or more.

A later phone check of ten workshop participants picket at random revealed four who had built or were building their own solar systems, three who were considering the purchase of - or had already bought - a domestic solar water heater, one who was reported to be 'no longer interested' by his son, and two who could not be reached. One of the completed heaters has been donated to a local Girl Scout troop, where it is on permanent exhibit; another will be placed in a new library branch, with appropriate publicity about its source. Florida Power and Light, which formerly viewed our early workshops with suspicion, sent a speaker to our final program to announce financial assistance to those who wanted to buy a solar hot water heater.

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Project Objectives:

As stated in our Grant application, the purpose of our workshops was two-fold -to acquaint as many people as possible with the energy-saving advantages of solar systems in a time of rising utility bills and diminishing natural resources, and to make known to them some of Dade County's good Solar Energy companies.

There had been some excellent workshops given by a local college, but these workshops were not free, and involved generally persons at the college level. The free public library system, therefore, provided staff, publicity and a network of locals throughout Dade County that reached all kinds of people, of all ages.

Planning, Procedures, and Methods (Conduct of the Workshops):

Before we received our Grant, the Program Corrdinator had the privilege of attending several of the solar workshops given by Prof. MacGregor Smith at Miami-Dade Community College. He gave us invaluable advice and assistance during the period of our early workshops and, with his permission we made use of his printed instruction and illustrations for making a solar thermosyphon water heater - a 'hand-out' which proved enormously popular with many of our workshop engineers for 1981. Mr. Abbass Khonsary, who was the leader for many of the MDCC workshops and the owner of a well established solar firm in Coral Gables. Our second workshop engineer was Richard Pearlson, one of Solar Energy's most enthusiastic and charismatic promoters, also the owner of a blossoming new company for "Solar and Appropriate Technology'.

Khonsary and Pearlson worked long hard hours, giving up most their Saturdays to the workshops. Without these two excellent leaders, the programs would never have been a success. We noted that our 'hand-outs' were important to the workshop audiences. Besides the instruction sheets for building solar thermosyphon water heaters, the Library purchased expressly for this program hundreds of copies of Mike Toner's The Solar Solution, a reprint from the Miami Herald of his thorough, hard-hitting articles on the present and future situation of solar energy in the U.S. and Florida in particular. The reprints were handed out at all the programs as long as they lasted. Both workshop leaders also distributed packets of informative materials on solar systems, tax aids, basic solar facts, etc. mostly from the Florida Solar Energy Center, DOE, and Florida Power and Light, the latter contributing brochures on how to save energy and cut down electric bills with fans, insulation, etc. At each workshop we also made available for examination truckloads of current books on solar and alternate energies, most of which could be borrowed and taken home by those interested, Pearlson, who was a computer engineer, also drew up a form, Domestic Solar Hot Water Analysis, which was filled out by each member of his workshops who wanted to know what going solar would cost him, given his individual needs. The forms were fed to a computer on the spot, and each participant had his answer immediately. This proved to be one of the most popular features of the program.

For an opener at almost all of our workshops and 'kick-offs' we showed Robert Redford's prize-winning movie, The Solar Film, an exceedingly effective fifteen minute apology for the use of Solar Energy. This film and the usual preliminary serving of morning coffee and donuts, generally warmed and opened

up even the bleakest of the participants, so that they were ready to take part in the brisk question-and-answer period following the lecture and black-board demonstration by the group leader. The morning part of the workshop which began at 9:00 or 10:00 in the morning was often drawn out until noon while knowledgeable members of the audience discussed at length collector sizing, position, materials, etc. After a lunch break of one hour (often enlivened by a solar 'cook-out' with cookers, hot dogs, bread and cheese, provided by Pearlson and activated by his young staff), the group reformed outside the library where they helped to build or put together a working solar water heater.

The actual building of the collector took anywhere from two to four or even five hours, depending on the number of enthusiastic members who had to be given their turn at hammering, gluing or welding. This often meant that the Library doors closed behind them and the solar heater was not set up and functioning before the workshop ended. Since the high point of the program was the sight of boiling water pouring from the heater's faucet, each engineer solved the problem, differently. Mr. Khonsary generally had his solar system set up and functioning before the workshop ended because he produced finished pieces, very like the later 'kit' collectors, ready to be put together after some polishing, gluing, hammering, and the always satisfying job of welding the tubing to its copper backing - enjoyed by all but the most timid of participants. Mr. Pearlson's staff arrived while their chief was giving his opening Solar Basics' lecture with a kit type solar water heater set up in the company's truck. It needed only to be attached to the library's water main, and, given our usual luck with the sun, was generally

producing hot water by the time the workshop had lunched and were ready to come outside and put their own system together. The collector parts were neatly laid out, waiting for the class. The workshops, in '82, also worked with the parts of a kit heater, a special system introduced by Mr. Pearlson that year.

At our last workshop, however, on August 14, 1982, in response to the large number of persons who wanted to build their own systems from scratch, there were three demonstration collectors: one kit model set up in a truck and producing hot water, one similar kit model to be put together by those of the group who were more interested in a quicker job, and the 'raw' materials for a collector to be made from scratch.

Another innovation made by Mr. Pearlson in 1982 besides his introduction of kit models was his use of slides, good ones, describing graphically solar basics and the step by step making of a solar collector. While we did not feel that the slides were as effective as the leader's lecture and blackboard demonstration, other workshops might not be as fortunate in their instructors as we have been; the slides in that case would be more important. The slides also served in the series of introductory programs (not workshops) which Pearlson and his staff gave during the summer of '82, before the final workshop. In these short (one and a half hour) demonstrations, a staff member gave the slide presentation and Mr. Pearlson commented later and answered questions, also displaying parts of a solar water heater, solar cookers, and a series of panels depicting patents of solar devices as far back as the nineteenth century.

Other supplementary, introductory programs, which we called 'Kick-offs' are fully described in our separate quarterly reports for 1981. They were given free of charge by four local solar companies, and all four of the engineers representing the firms spent considerable time and effort on their presentations, using models, slides, and displaying their own hot water heaters for home and pool, which attracted a great deal of interest and possible sales. The audiences for the '81 Kick-Off' programs were larger than the workshops but many of the participants came expecting to build a solar water heater. Two of these companies, U.S. Solar and Ecotherm Solar Systems, although they showed enthusiasm for the introductory programs, firmly refused to give any of the workshops. This left the burden of the program on the two engineers we have mentioned, Khonsary and Pearlson.

Workshop Results - Anticipated and Unexpected:

We had addressed these workshops primarily to adults, but even at the adult programs there were always a few children, quite young (8 - 10) but full of enthusiasm and astonishingly knowledgeable. We accordingly gave two special childrens' programs (see our separate reports) - one a childrens' workshop at the Hispanic Library, conducted by a Dade County official for special (energy) projects. Each child constructed his own small model solar water heater and took it home with him. The second program, given by Richard Pearlson, was an informal lecture and a solar hot dog cook-out, which drew a large crowd of children and their parents on a Saturday morning - afternoon at the Coral Gables branch library. After our successful first year a university professor asked for a copy of our Grant Application form and questioned us closely about our methods, hoping to set up a similar program.

at his university. (Not, of course, free). And several high schools also showed interest in having workshops for their students. The Library had an upsurge of interest in solar energy; as fast as the books are put on exhibit, they disappear; we have been asked by patrons for more workshops. Because of our own increased knowledge of the subject, we have been able to point in the right direction people from other countries - an official from the Bahamas, an engineer from Venezuela - who wanted to find technical information on solar energy, and reputable solar companies.

We feel that our two primary objectives - to help s.e. Floridians to know and use Solar Energy, and to make known to them some of the good Solar Companies available in Dade County - were well accomplished by these workshops. As a means of checking further, a simple survey by telephone of ten of the registered workshop members showed that 7 out of the 10 had made or bought, or were in the process of doing so - solar systems, a few months after their attendance at the workshop.

We do not claim sole credit for two of the major victories for solar in Dade County (!) but perhaps our workshops, which received some notice from the press and television, did aid in the switch-over of the many usually conservative Floridians who have now begun to replace or add solar collectors to their homes. Formerly, when electricity was cheap, they had ripped out the collectors, preferring, until their utility bills mounted, to pay for their hot water. Now collectors are blossoming anew on Dade County homes of all types of Floridians, new and old.

Also, as mentioned in our Summary, there was a significant change of heart on the part of our giant electric utility, Florida Power and Light, whose position of on solar energy, as quoted by Mike Toner in one of his 1980 articles which we distributed in reprint form at our workshops, was as follows: '... our general philosophy is that it is not going to be a big contributor in this century'. Notwithstanding, FPL made it known by a speaker sent to our last big workshop in 1982 that it was ready and willing to subsidize in part approved solar water heaters purchased by its customers.

Conclusions and Recommendations:

The old image of the Public Library, full of books only, jealously guarded and reluctantly handed out to reader by sour-faced females who hiss 'Silence!' if anyone dares to open his mouth - dies hard. But after the success of Grant no. DE-FG4480R4, we hope the image has faded for good. It has surely proved the usefulness of using a network of free public libraries, dedicated to giving information in many new as well as bookish forms - to further energy programs. Americans have always been Library users and, particularly in hard times, welcome any good free programs that might benefit them financially. They shy away, however, from this same information if it is given without the emphasis on its free quality this we learned when one of our engineers tried to advertize the workshops on his own, giving his own phone number as a source of information, rather than the Library's.

Being new at the job, we originated the Kick-Off programs with the thought that they would give us an idea of how much interest there was in going solar. If we were to do it again, (when we are removed to our new and beautiful main library building) perhaps one large opening 'Kick-off' with solar displays by local companies and a panel discussion by leading experts in the field, during which those interested would sign up for the actual workshops - would be enough. We might well consider having workshops for pollution control, featuring for example, how to build a solar still; how to adjust your car for methanol fuel, etc. The possibilities are all worthwhile, and limitless! Special workshops for young children, as noted in the body of this report, should also play a larger part in the programs, and there should be more effectual attempts to find and bring into the program, Black solar companies and engineers. (The only company with a Black owner had, unfortunately, gone out of business when we made an early effort to bring him into our series).

(6) A selective list of reading materials used in the Workshops:

In the packets distributed to the workshop audiences by both engineers were helpful pamphlets from the Florida Solar Energy Center, - Solar Water Heating Options in Florida, illustrating five different types of possible solar water heaters; Converting a Conventional Electric Water Heater to a Solar Storage Tank, and Solar Water Heating; a questions and answer primer.

FSEC's Floridians Guide to Solar Energy, published in 1976 was one of our early, most popular acquisitions; numerous copies were placed on the library shelves some time before we had applied for the workshop grant - as was the often reprinted How to Build a Solar Water Heater - neither of these two titles remain long on the shelves. Other FSEC titles which disappear almost as soon as they are placed in the circulating collection are "A Guide to Collector Sizing and System Design Considerations for Solar Pool Heating in Florida", published by the Center in 1977 and "A Guide to System Sizing and Economics of Solar Water Heating in Florida Residences", also published by the Center at that time.

The briefer but still helpful energy brochures from Florida Power and Light and DOE (i.e., Low Cost - No Cost) were included in the workshop packets. The Workshop Coordinator also found the paper back, Reaching Up, Reaching Out: A Guide to Organizing Local Solar Events, published by SERI both interesting and useful. Several copies were placed in the Library collection and made available to branch libraries giving workshops. Some of the current books on Solar Energy bought by the Library and made available for examination and borrowing by the workshop audiences, follow:

Solar Energy Handbook, By the Power Systems Group of AMTEK, Inc. Radnor Pa., 1979. 179pp. Illus. (621.47 A514s)

Passive Solar Energy; The Homeowners Guide to Natural Heating and Cooling by Bruce Anderson... 197pp. Illus. Andover, Mass., Brick House Pub. Co., 1981. (621.47 A545p)

Solar Architecture; Proceedings of the Aspen Energy Forum... Ann Arbor, Mich., Ann Arbor Science Publishers, 1978. 331pp. Illus. (621.47 A838s)

A Golden Thread: 2500 years of solar architecture and technology, by Ken Butti and John Perlin. New York, Van Nostrand Reinhold, 1980. 289pp. illus. (621.4709 B988g)

Sun Up to Sun Down; Understanding Solar Energy, by Shawn Buckley. New York, McGraw-Hill, 1979. 166pp. illus. (621.47 B924s)

At Home in the Sun; an open-house tour of solar homes in the United States, by Norah Deakin Davis and Linda Lindsey. Charlotte, Vt., Garden Way Pub., 1979. 236pp. illus. (697.78 D263a)

The Solar Cookery Book: Everything Under the Sun, by Beth Halacy. Culver City, Calif. Peace Press, 1978. 105pp. illus. (641.5 H157s)

Solar Energy Heating and Cooling; Active and Passive Design, by Jan F. Kreider and Frank Kreith. 2nd ed. Washington, Hemisphere Pub.; New York, McGraw Hill, 1982. 479pp. illus. (697.78 K92so)

The Passive Solar Energy Book. Expanded professional ed., by Edward Mazria. Emmaus, Pa., Rodale Press, 1979. 687pp. illus. (621.47 M476p)
(A laymen's edition of this title is also in the collection)

Solar Cell Array Design Handbook: The Principles and Technology of photovoltaic energy conversion, by H.S. Rauschenbach. New York, Van Nostrand, 1980. 549pp. illus. (621.47 R248s)

The Solar Boat Book, by Pat Rand Rose. Miami, Acqua-Sol Enterprises, 1979. 266pp. (621.47 R797s)

Solar Cooling and Heating: architectural, engineering, and legal aspects. Proceedings of the Solar Cooling and Heating Forum, Miami Beach, Florida, 1976. Edited by T. Nejat Veziroglu. Washington, Hemisphere Pub., 1978. 3 vols., illus. (697.78 S684s)

Solar Energy: Technology and applications, by J. Richard Williams. Ann Arbor, Mich., Ann Arbor Science, 1977. 2d ed. 180pp. illus. (621.47 W724s)

The periodicals of most use to the workshop program were: Solar Age, a well illustrated monthly, the official magazine of the American Solar Energy Society, Rodale's New Shelter, a monthly published by the Rodale Press at Emmaus, Pennsylvania, which, like Mother Earth News - also a favorite with Do-it-Yourself enthusiasts, generally features solar projects to build. We purchased extra copies of the ASHRAE Journal's Annual Solar Technology Update for our solar engineers, which were much appreciated.

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