Int. J. Heat Mass Transfer. Vol. 22, pp. 983–986
Pergamon Press Ltd. 1979. Printed in Great Britain

BOOK REVIEWS

National Program for Solar Heating and Cooling of Buildings. ERDA 76-6, Division of Solar Energy, Washington DC 20545 (November 1976).

THIS is the annual program report of the National Program for Solar Heating and Cooling of Buildings, as required by the Solar Heating and Cooling Demonstration Act of 1974, Public Law 93-409. The report is part of the overall Federal solar program described in "A National Plan for Energy Research, Development and Demonstration", ERDA 76-1, April 1976, and "Definition Report, Solar Energy Program", ERDA-49, June 1975.

The document (84 pages) is divided into five sections and contains five appendices. The first three sections are devoted to a presentation of the ERDA activities, goals and objectives, and summarizing projects in the solar heating and cooling of buildings and program management. Section IV assesses in particular, the extent of barriers and constraints to the development of a viable solar energy industry and to market growth and benefits.

Section V (46 pages) forming the bulk of the document, presents the major elements and key activities of the program plan and status. It also contains a lot of short information points about the program tasks and emphasis, development in support of demonstrations, system design and analysis, data collection, evaluation and dissemination, instrument, technical and non-technical data, building standards and codes, incentives, manpower and training.

Appendix I shows a summary of the interagency agreement in effect including the major participants. A complete discussion of ERDA Federal Building Program is found in Appendix II. The program involves all Federal agencies with buildings that can utilize solar energy applications for hot water and space heating and cooling. Appendix III gives lists of residential and commercial demonstration projects and identifies their sites and locations on maps. Both lists and maps are grouped accordingly to status of building; federal or non-federal. In appendix IV, a list of the solar heating and cooling research and development demonstration projects funded in FY 1976, and grouped under: collectors, thermal storage heat exchangers, heat pumps, air-conditioning, system analysis, controls and supporting projects. Appendix V gives a brief review of how to obtain information on solar heating and cooling and program activities.

The many tables and figures contained in this document may be of some interest to those engaged on residential and commercial applications of solar heating and cooling of buildings, although the reviewer feels that the document is intended mainly to provide interested persons with just a better understanding of the ERDA planned program actions, and if more full descriptions of the solar heating and cooling program, other published ERDA documentations of individual projects are needed, reference could be made to ERDA 76-44 "National Program Plan for Research and Development in Solar Heating and Cooling".

A-M. A. REZK

Solar Energy in America's Future—A Preliminary Assessment. DSE-115/1, Division of Solar Energy, ERDA, Washington DC 20545 (March 1977).

THIS report (104 pages) is prepared as an account of work sponsored by the U.S. Government, and conducted by Stanford Research Institute (SRI) under a contract with the Energy Research and Development Agency (ERDA). It documents a study of the social and economic implications of the U.S. solar energy program, based on the potential roles that solar energy technologies could have for meeting the nation's energy needs over the coming years. The study is only based on computer simulations of different energy supply projections as developed by varying the input parameters of energy demand and costs. Only three of the projections are chosen to be developed into broader sort of scenarios, and four identified issues: economic, socioeconomic, sociopolitical and environmental issues are compared among the three scenarios. As regards societal, only six major issues are synthesized from an analysis of these scenarios, and the evaluation of these issues and three scenarios from the individuals in different perceptual frames of references are presented in the report.

About half of the report documents a study of solar energy market share, the energy scenarios, and the impacts and implications of these scenarios. Those who are interested in the solar energy future will find some points of interest, e.g. market analysis for solar residential water-heating, residential and commercial space heating, industrial/agricultural space heating, resources and process cost projections, as well as some ideas about closing the cost gap. Also in this part of the report, the reader will find some sort of analysis of the environmental, economical/institutional implications of the scenarios, stakeholder response to the scenarios and the solar emphasis case. The conclusions of the study and policy implications for solar energy development are given.

The last chapter in the report deals with sources of uncertainty in policy analysis and with the consequent implications for policy. It shows, in particular, some ideas about the broader issues regarding energy inter-relationship with broader societal issues, representative views of social reality and the longer-term future.

Finally, the study documented is a type of technology assessment; based on systematically examining the effects on society that may occur when a technology, such as solar energy utilization, is to be introduced, developed or delayed. In this respect, the report is undoubtedly of use as a research agenda of unresolved issues whose resolution is critical to the economic and social future of the nations, though the primary contribution in this report is to provide a framework for discourse about U.S. national energy future.

A-M. R. REZK

National Program Plan for Research and Development in Solar Heating and Cooling. Interim Report, ERDA 76-114, Division of Solar Energy, Washington DC (November 1976).

THIS interim report has been prepared by the Research and Development Branch of the Division of Solar Energy of the Energy Research and Development Administration (ERDA), as an account of work sponsored by the United States Government as a national program for research and development in the utilization of Solar Energy for heating and cooling applications. The report is based on a thorough assessment of the present status in the use of solar energy for heating and cooling buildings and industrial process applications. Representatives from universities, industry and the Government took part in the preparation of the report.