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Solar Energy Legal Bibliography Second Update

Stephen Weiner

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Solar Energy Research Institute
A Division of Midwest Research Institute

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SOLAR ENERGY LEGAL BIBLIOGRAPHY--SECOND UPDATE

STEPHEN WEINER

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PREFACE

This update of the Solar Energy Legal Bibliography continues the solar information dissemination function of the Community and Consumer Branch Law Program of the Solar Energy Research Institute's Planning, Applications, and Impacts Division.

This edition provides those interested in solar energy with the latest developments in legal and policy aspects of solar energy. The update complements the existing bibliography (1) by including important materials not available at the time the first bibliography went to press, and (2) by searching out and abstracting new materials as they became available. Further updates will be published in the Solar Law Reporter, another SERI publication.

The concept of a Solar Energy Legal Bibliography originated with SERI legal analyst George Morgan. Organization, literature search, and abstracting were performed by Stephen Weiner, an editorial staff assistant with the Solar Law Reporter. Barbara Euser edited the abstracts. Pamela Howell and Diane Kedro assisted in editing and preparing the format of the update. Larry Preston conducted the computer literature searches.

Robert Odland

Robert Odland, Chief
Community and Consumer Branch

Approved for

SOLAR ENERGY RESEARCH INSTITUTE

J. Michael Davis

J. Michael Davis, Acting Division Manager
Planning, Applications, and Impacts Division

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SECTION 1.0

INTRODUCTION

This bibliography update contains abstracts of approximately 100 publications dealing with solar energy development and the law. Because most of the abstracts focus only on the legal issues presented in the publications, they may not reflect the complete contents of the documents abstracted.

Potentially relevant materials were culled from citations in standard subject indexes and computer-assisted data base searches. The search for documents included nonlegal and institutional literature. However, because of the proliferation of publications in the solar energy field, documents were closely scrutinized for their innovative contribution to legal policy. Those documents that merely review or summarize existing literature (e.g., articles in the popular press) were not included. Consequently, abstracts are weighted toward law review articles, case law, independent and government laboratory studies, academic publications, and government documents. The submission deadline for articles appearing in the update was July 1, 1980.

The search for publications produced many more documents than are cited here. Hundreds of documents were reviewed and of those approximately 100 were deemed to be within the scope of this update. At the time of publication, a number of documents on order had not been received. Consequently, some relevant materials that were slated for inclusion in the update were not received in time for publication. Future editions of the Solar Law Reporter will publish new abstracts of relevant publications reviewed after publication of this update. Users of the bibliography are encouraged to bring relevant materials to the attention of SERI so that such materials may be included in future updates. SERI also solicits readers' comments on errors and omissions. Comments should be addressed to: Solar Energy Legal Bibliography, Solar Law Reporter, Solar Energy Research Institute, 1617 Cole Boulevard, Golden CO 80401.

To aid the reader in the acquisition of these documents, availability sources follow each citation. In most cases, the documents may be located at local public, academic, or organization libraries. If such a library does not have the document, it may be able to borrow it from another library.

Purchase information is also provided. The two major sources are the Government Printing Office (GPO) and the National Technical Information Service (NTIS). Their addresses are:

Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

National Technical Information Service
U.S. Department of Commerce
5285 Port Royal Road
Springfield, VA 22161

Prices are current with the publication of this report and are subject to change. They are provided for both a printed copy (PC) and Microfiche (MF).

If a local library is unable to obtain the documents through its regular interlibrary loan channels, the library may submit the interlibrary loan request to:

Solar Energy Information Center
Solar Energy Research Institute
1617 Cole Boulevard
Golden, CO 80401

Each abstract is listed under the topic of primary concentration addressed by the article. It should be noted, however, that many of the articles abstracted touch upon a number of topics within the solar energy legal area. Additionally, there are fine distinctions between some topics, and the result is that many sources straddle subject areas. For example, most sources discussing ANTITRUST concentrate that discussion in the UTILITIES area; similarly, most articles dealing with SOLAR ACCESS RIGHTS also discuss LAND USE issues. Users of the bibliography should recognize the limitations inherent in classifying sources as broad in scope as many in the solar energy field. For these reasons, all abstracts are cross-referenced to other topic areas that are discussed in the article. To further aid the researcher, a cumulative author index is included. The index covers volume 1, Solar Energy Legal Bibliography Final Report (March 1979); volume 2, Solar Energy Legal Bibliography Update (June 1980); and volume 3, Solar Energy Legal Bibliography—Second Update (this volume). Topics included in all three volumes, but not necessarily in each, are:

ANTITRUST: An emerging solar industry will require legal scrutiny, especially where large utilities are concerned. Abstracted materials discuss legal problems and incentives in utility involvement, backup systems, peak-power pricing and regulations. See UTILITIES.

BIOMASS: Legal problems and incentives in obtaining energy from waste and biomass (material derived from growing organisms).

BUILDING CODES: Existing codes and model codes. Impediments to solar development because of a lack of or conflicting codes.

CONSUMER PROTECTION: Includes government efforts to protect solar product buyers through testing facilities, codes and standards, and promotion of an industry-wide code of ethics.

ENVIRONMENTAL ASPECTS: The solar energy impact on air quality, water quality, and land use.

FEDERAL LEGISLATION AND PROGRAMS: Federal legislation and policy concerning incentives to solar growth: creation of federal solar agencies (for regulation and promotion of solar energy), grants and subsidies, income tax deductions, low-interest and guaranteed loans, goverment insurance, demonstration programs, and deregulation of oil and gas. Included are reviews of solar legislation from the 93rd, 94th, and 95th Congressional sessions and reports from Congressional committees.

FINANCING/INSURANCE: Discussion of financial barriers and incentives to solar installation, including government subsidies, loans, mortgages, life-cycle cost estimates, and interest rates.

GENERAL SOLAR LAW: Abstracts of articles surveying solar energy development. Articles discuss legal issues in many of the previously listed subject areas. This section includes solar energy satellite systems.

INSTITUTIONAL ISSUES: Community, market, and institutional factors favoring and hindering renewable energy development.

INTERNATIONAL ISSUES: Descriptions of solar energy law and development programs outside the United States. Includes some case law and descriptions of existing international solar energy agreements.

LABOR: Labor considerations affecting solar development in the construction industry.

LAND USE: Cases and articles on the legality and feasibility of solar development through existing and proposed covenants and easements. Land use planning regulation and zoning. Nuisance law. See SOLAR ACCESS.

LOCAL LEGISLATION AND PROGRAMS: Existing and proposed local and municipal programs to accelerate and regulate solar energy installation.

OCEAN ENERGY: Legal, regulatory, financing, and political ramifications of energy production from OTEC and off-shore wind energy devices.

PASSIVE SOLAR HEATING AND COOLING: Legal and institutional issues specifically relating to passive solar heating and cooling.

PATENTS AND LICENSES: Potential patent and licensing problems in the development and manufacture of solar devices and systems.

PHOTOVOLTAICS: Commercialization problems and the relationship of photovoltaic systems to the electric utility industry.

SMALL-SCALE HYDRO: Legal, regulatory, and institutional issues specifically relating to low-head hydroelectric power.

SOLAR ACCESS RIGHTS: Case law dealing with legal issues involved in securing direct sunlight for solar collectors. Included are such issues as the doctrine of ancient lights, taxation of airspace, constitutional questions in federal legislation, the prior appropriation doctrine, and related issues. See LAND USE.

SOLAR HEATING AND COOLING: Standards, technology commercialization programs, the impact of solar heating and cooling systems on electric utilities, and legal issues in this area of solar technology.

SOLAR THERMAL POWER SYSTEMS: Legal impediments and incentives in this area of solar technology.

STANDARDS: Existing standards are examined and standards development programs are charted in the areas of health and safety, testing, and minimum levels of technical performance.

STATE LEGISLATION AND PROGRAMS: State legislative programs include the establishment of solar energy offices, state regulation of solar growth, tax incentives, retrofitting and building codes, and research and demonstration programs.

TAX LAW: Federal and state programs to provide incentives for installation of solar units.

TORT LIABILITY: Liability and fault for defective or nonperforming solar devices or solar systems.

UTILITIES: Legal, regulatory, antitrust ratemaking, and backup power issues needing resolution because of the close association of the utilities and the solar power industry.

WARRANTIES: Legal problems in protecting consumers of solar energy devices. See CONSUMER PROTECTION.

WIND RESOURCES: Legal issues regarding the utilization of wind-generated electric power, including zoning, building codes, aesthetics, and regulation of both land-based and offshore wind energy conversion systems (WECS).

SECTION 2.0

BIOMASS

Berger, Glenn J., The Legal and Regulatory Framework for the Interface of a Wood-Fired Power Plant and the Electric Power Grid in Vermont, Hanover, NH: Dartmouth College, December 1977.

Available from: Local library.

The report compares and contrasts four hypothetical models of a wood-fired power plant in Vermont. The models are differentiated by three different criteria: ownership of the facility, use of the electricity generated, and the extent to which each produces nonelectric energy such as steam or heat. The report also examines the impact of state and federal regulation on each model and the relationship of each to the New England power grid.

Rose, Dietmar W.; Olson, Karen, "Social, Economic and Environmental Impacts of a 25 MW Wood-fueled Power Plant," Journal of Environmental Management, vol. 9 no. 2, September 1979.

Available from: Local library.

The Minnesota Energy Agency funded the University of Minnesota's College of Forestry to conduct an impact analysis of potential wood energy production in the state. The Headwaters region in northwestern Minnesota was selected as the focus of the study for a variety of geographic and socioeconomic reasons. A 25-MW power plant was selected as the basis for analysis. Computer modeling systems were used to forecast social, economic, and environmental impacts of the plant. The report concludes that such a plant could provide electricity for almost half of the population of the Headwaters region and increase the tax base of this economically disadvantaged area. For these reasons, the report also recommends consideration of subsidies and tax incentives by the state government.

Scantland, D. A.; McClure, T. A.; Lipinsky, E. S., Carbohydrate Crops as a Renewable Resource for Fuels Production, Volume 2: Identification of Key Policy Issues, Alternatives, and Implications Relating to Energy from Biomass, Washington, DC: U.S. Department of Energy, May 1979, BMI-2031.

Available from: Local library; NTIS, Report No. BMI-2031, vol. 2.

Fuel from crops can potentially decrease America's reliance on petroleum. Carbohydrate crops (corn, sugarcane, sweet sorghum, and sugar beets) are especially important for biomass production. The research program described in this report sought to provide an assessment of carbohydrate biomass technologies and an economic analysis of agricultural policies and their impact on carbohydrate biomass crops, and to examine alternative biomass policies. Particular attention is paid to the Food and Agriculture Act of 1977, which allows the production of biomass crops if the Department of Agriculture believes that this will not hurt farm income or increase the cost of farm programs.

The study concludes that ethanol production from sugar crops or corn could significantly affect the price of agricultural products.

A number of incentive programs are discussed, including the Bedell Bill (which would provide loan guarantees to builders of ethanol plants), reduction or elimination of import restrictions on biomass crops (specifically raw cane sugar), elimination of sugar imports while allowing imports of ethanol made from sugar crops, and governmental purchase of biomass or biomass source fuels.

Solar Energy Research Institute; California Energy Commission; Western Solar Utilization Network, Biomass Energy Conversion Workshop for Industrial Executives, Claremont, CA, April 9-10, 1979, SERI/TP-62-299.

Available from: Local library; NTIS, Report No. SERI/TP-62-299.

This workshop was held to provide industrial managers with current information on use of residues and wastes as industrial energy sources. Managers from food processing and forest product industries presented case studies. Direct combustion and low-Btu gasification equipment was described. The conference concluded, among other things, that financial (tax credits) and institutional (PUC rate structures) incentives can make biomass energy conversion more attractive to industry but that these incentives must be evaluated on a case-by-case basis.

U.S. Congress, Office of Technology Assessment, Gasohol: A Technical Memorandum, Washington, DC: U.S. Congress, Office of Technology Assessment, September 1979.

Available from: Local library.

Technical, economic, environmental, social, and institutional aspects of gasohol production and use are considered in this volume. The institutional section, entitled "Current Federal Programs and Policies," deals with overlap and conflicts between Department of Energy and Department of Agriculture programs. It also lists major areas in which the Office of Technology Assessment has identified a need for R&D.

Commercial versus on-farm distillation is discussed, and gasohol as an automobile fuel is evaluated. The food versus fuel issue is addressed and the report concludes that ethanol production levels higher than one to two billion gallons per year, if derived from food cropland, may cause inflation in food and feed sectors. This potential problem may be alleviated in the 1990s if ethanol can be produced from crop residues and wood. Environmental impacts of gasohol will be determined largely by the use of the ethanol feedstock; corn use will have a substantial impact.

U.S. Department of Energy, The Report of the Alcohol Fuels Policy Review, Washington, DC: DOE, June 1979, DOE/PE-0012.

Available from: Local library; NTIS, Report No. DOE/PE-0012, PC $7.50, MF $3.00.

This report was prepared by the Alcohol Fuels Policy Review Task Force, established by the Under Secretary for Energy. As part of the study, the task force held public hearings. The report addresses policy issues (food versus fuel, raw material supplies, alcohol

production economics, small-scale operations, net energy balance, and others) and describes federal and state policy initiatives and incentives. These include the excise tax exemption, investment tax credit, and simplified tax regulation provisions of the Energy Tax Act. Also discussed are the development of an integrated approach to alcohol fuels by federal agencies, the appointment of an alcohol fuels resource manager, regional development, information dissemination, and research development.

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SECTION 3.0

BUILDING CODES

"Alternative Energy Sources," Real Estate Today, vol. 13 no. 5, May 1980, pp. 4-7.

See INSTITUTIONAL ISSUES for abstract.

Lamm, David, Photovoltaic Commercialization: An Analysis of Legal Issues Affecting a Government-Accelerated Solar Industry, Golden, CO: Solar Energy Research Institute, June 1980, SERI/TR-434-423.

See PHOTOVOLTAICS for abstract.

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SECTION 4.0

CONSUMER PROTECTION

Noun, Robert J., Legal Aspects of Coatings for Solar Collectors, Golden, CO: Solar Energy Research Institute, October 1979, SERI/TP-354-446.

See WARRANTIES for abstract.

Noun, Robert J., Product Liability and Small Wind Energy Conversion Systems (SWECS): An Analysis of Selected Issues and Policy Alternatives, Golden, CO: Solar Energy Research Institute, December 1979, SERI/TR-354-365.

See WIND RESOURCES for abstract.

Vittek, Joseph F., Jr., "How to Buy Without Getting Burned: A Consumer's Eye View of Solar Energy," Idea: The Journal of Law and Technology, vol. 19 no. 1, 1977, pp. 9-15.

Available from: Local library.

The author approaches the purchase of a solar installation from the consumer's point of view: what will solar energy do for me, how much will it cost, is the system safe, how do I get one? In this context, the author has several suggestions for would-be purchasers: hire a professional engineer, hire a lawyer, insist on a contract, insist on a performance bond, or hold part of the payment in escrow. Other suggestions include: insist that the company provide the name of its product liability insurer, never accept a contract that attempts to limit liability, search old listings to make sure that the company has been in business for some time, check the compatibility of the system with state and local business codes, and be certain that solar access is adequate.

Wright, Harry R., Jr., "The Sales-Service Dichotomy: A Roadblock to Consumer Acceptance of Domestic Solar Energy Devices," Mercer Law Review, vol. 30 no. 2, 1979, pp. 547-558.

See WARRANTIES for abstract.

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SECTION 5.0

ENVIRONMENTAL ASPECTS

Carter, Luther J., "House Gives a Nod to Solar Power Satellite," Science, vol. 206 no. 4422, November 30, 1979, pp. 1052-1054.

See FEDERAL LEGISLATION AND PROGRAMS for abstract.

Rose, Dietmar W.; Olson, Karen, "Social, Economic and Environmental Impacts of a 25 MW Wood-fueled Power Plant," Journal of Environmental Management, vol. 9 no. 2, September 1979.

See BIOMASS for abstract.

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SECTION 6.0

FEDERAL LEGISLATION AND PROGRAMS

Ain, Ross D., "PURPA: Federal Energy Policy Impacting on the State Regulatory Domain," Public Utilities Fortnightly, vol. 104 no. 8, October 11, 1979, pp. 69-73.

Available from: Local library.

Title I of the Public Utilities Regulatory Policy Act of 1978 (PURPA) involved some intrusion by the Federal Government into an area traditionally controlled by states: electric utility rate structures. The author seeks to demonstrate why the President and Congress felt it desirable to take this step. The article reviews efforts by both the Senate and the House and a House-Senate conference to draft legislation that would strike a balance between state and federal powers and concludes that Title I will not "federalize" the state rate-setting process and will promote energy conservation rates.

Beattie, Donald A., "Solar Energy: Where Are We Heading?", Mercer Law Review, vol. 30 no. 2, 1979, pp. 475-485.

Available from: Local law library.

A brief description of various solar technologies is combined with a history of federal efforts in the energy field, particularly solar programs. The history begins in 1952 with a report by the President's Materials Policy Commission predicting a doubling of the nation's energy demand over the next quarter-century. Since that time, a number of government agencies became involved in energy (chronologically): the National Science Foundation, the Office of Science and Technology, the Office of Management and Budget, the Atomic Energy Commission, the Federal Energy Administration, the Energy Research and Development Administration, and, most recently, the Department of Energy. The article also provides information on congressional-executive agency relationships, including the disruptive role that budget manipulations play in solar programs.

Beyard, Michael D.; Weiss, Stuart, "Guidelines and Criteria for Including Passive Systems in Federal Solar Incentive Programs," in Proceedings of the 3rd National Passive Solar Conference of the American Section of the International Solar Energy Society, vol. 3, San Jose, CA, January 11-13, 1979; Killeen, TX: American Section of the International Solar Energy Society, 1979, p. 357.

See PASSIVE SOLAR HEATING AND COOLING for abstract.

Carter, Luther J., "House Gives a Nod to Solar Power Satellite," Science, vol. 206 no. 4422, November 30, 1979, pp. 1052-1054.

Available from: Local library.

The House of Representatives passed a bill authorizing the spending of $25 million on Solar Power System (SPS) research and development in November 1979. However, opposition was stronger than in the previous year, and prospects for Senate passage were

uncertain. The article describes basic plans for SPS and notes that its potential cost may be as high as $1 trillion. Approximately 40 solar advocate and environmental groups oppose development of SPS, while a Washington lobbying group, including representatives of aerospace companies, supports it. The article concludes that, because of both environmental and fiscal concerns, Congress may wish to proceed slowly on SPS.

Chapman, Stephen, "Sunlight and Moonshine," The New Republic, vol. 181 no. 7, 1979, pp. 16-19.

Available from: Local library.

The best possible Federal Government approach to solar energy would be to cease controlling prices of domestically produced crude oil, gasoline, and natural gas. The author asserts that direct federal subsidies to solar development are often only boondoggles for professionals and major corporations. Some institutional barriers discussed in the article are utility opposition or indifference and building codes and zoning laws.

Committee on Nuclear and Alternative Energy Systems, National Research Council, Energy in Transition 1985-2010, Washington, DC: National Academy of Sciences, 1979.

Available from: Local library.

This report, prepared for the Department of Energy by the Committee on Nuclear and Alternative Energy Systems of the National Research Council, examines medium- and long-term prospects for oil and gas, coal, nuclear fission, nuclear fusion, geothermal, and solar energy, as well as the overall nature of the energy problem. Some conclusions and recommendations about solar energy are: the government should support solar technology R&D; the government should particularly provide support and incentives for passive technologies; market forces alone will be ineffective in promoting widespread use of solar technologies by 2010, and, therefore, the government should provide solar subsidies and other incentives; more emphasis should be placed on the development of solar technologies for fuels production; and decisions about which particular solar technologies to use should be left to the private sector and consumers.

Cone, Bruce W.; the Battelle Incentives Team, ed., Proceedings of the First Seattle Workshop on Incentives Used to Stimulate Energy Production, Seattle, WA, May 31-June 2, 1978; Washington, DC: U.S. Department of Energy, February 1979.

Available from: Local library; NTIS, Report No. CONF-7805161.

The workshop was based on a research report entitled An Analysis of Federal Incentives Used to Stimulate Energy Production. The report concluded that the Federal Government has provided incentives to various types of energy production for decades; thus, a precedent exists for it to spend large sums of money to promote solar energy production.

Included in the proceedings are a critique of the incentives report, alternative viewpoints on energy sources and incentives, a discussion of types of incentives, and state perspectives on incentives. Alternative viewpoints include the use of federally owned hydropower to encourage solar energy development and federal energy taxes and subsidies. Incentives discussed include disbursements, traditional government services,

nontraditional government services, marketing activity, taxation, and government reorganization and environmental requirements.

Donovan, William, "Creating Financial Incentives for the Development of a Commercial Solar Energy Industry," Idea: The Journal of Law and Technology, 1977, vol. 19 no. 1, pp. 17-23.

See TAX LAWS for abstract.

ECON, Inc., Political and Legal Implications of Developing and Operating a Satellite Power System: Final Report, Pasadena, CA: Jet Propulsion Laboratory, California Institute of Technology, August 1977.

Available from: Local library.

Legal issues involved in creation of the Satellite Power System (SPS) fleet include: use of a geostationary orbit by SPS, effect of the 1967 Outer Space Treaty on SPS, the legal status of deployment of SPS by the private sector, and the legality of providing orbital military protection for SPS.

Four policy recommendations are offered: establishment of research programs on environmental hazards associated with SPS that will lead to international standards; preparation of a statement for presentation at the 1979 World Administrative Radio Conference on frequency allocation; establishment of an international forum to discuss and resolve questions of international law; and creation of a plan for involving federal agencies in an SPS program.

Hayes, Gail Boyer, "The Quid Pro Quo for Sunshine," Idea: The Journal of Law and Technology, vol. 19 no. 1, 1977, pp. 35-43.

See SOLAR ACCESS for abstract.

Holton, John K., "Establishing Technical Standards for Solar Installations," Idea: The Journal of Law and Technology, vol. 19 no. 1, 1977, p. 25.

See STANDARDS for abstract.

Horovitz, Bruce, "Budget Cuts May Slow Solar Electricity Push," Industry Week, vol. 205 no. 4, May 26, 1980, pp. 106-111.

Available from: Local library.

In early May 1980, the House Appropriations Committee rescinded $36.5 million of the fiscal 1980 appropriation for the Barstow, California, experimental solar-generating station, which had been expected to generate electricity by December 1981. The budget cut, which may be Congress' deepest cut of DOE funding, would leave the project with no funding this year. A fight on the House floor was expected at the time the article went to press. Solar industry reaction to the cut was negative, with fears expressed about the quality of federal commitment to solar development.

IIT Research Institute, Policy Strategies for the International Marketing of U.S. Photovoltaics, vol. 1, Pasadena, CA: Jet Propulsion Laboratory, California Institute of Technology, August 1979, JPL Contract No. 955463.

See PHOTOVOLTAICS for abstract.

Johnson Environmental and Energy Center, University of Alabama; New Mark Consulting Group, Inc., The Final Proceedings of the Solar Export Issues Workshop, Bethesda, MD, August 12-14, 1979; Washington, DC: U.S. Department of Energy, October 1979.

Available from: Local library; NTIS, Report No. CONF-790890.

Analyses and recommendations in four general areas were made by the conference participants (representatives from industry, government, and academia): information requirements and handling, communications and resource utilization, trade promotion, and financial incentives and arrangements. Information recommendations include: Department of Energy (DOE) development of a comprehensive index of solar information; solar industry and U.S. government development of industry standards; and a global solar market survey, to be undertaken within two years. Some communications and resource utilization recommendations are: DOE and the Department of Commerce (DOC) should inform industry about government programs and coordinate U.S. solar export policies; DOE and DOC should hold solar export workshops; and DOE/DOC information should include background material on legal and economic conditions in foreign countries affecting U.S. exporters.

Trade promotion should involve eduational programs, including films, seminars, and manuals (particularly for U.S. representatives abroad); trade shows; and solar demonstrations. Financial incentives and arrangements should involve a variety of U.S. government agencies (including the Export-Import Bank, the Small Business Administration, and the Treasury Department). Arrangements may also be made within the Tokyo Round of the Multilateral Trade Negotiations and may include partial government ownership of U.S companies.

Linky, Edward J., "Lead Agency Designation and Proposed Licensing Procedures for Ocean Thermal Energy Conversion Facilities," in Gordon L. Dugger, ed., Proceedings of the 6th Ocean Thermal Energy Conversion Conference: Ocean Thermal Energy for the 80's, vol. 2, Washington, DC, June 19-22, 1979; Washington, DC: U.S. Department of Energy, 1979, p. 14.4.

See OCEAN ENERGY for abstract.

Loftness, Vivian, "The Future of the HUD Passive Residential Design Competition," Proceedings of the 3rd National Passive Solar Conference of the American Section of the International Solar Energy Society, vol. 3, San Jose, CA, January 11-13, 1979; Killeen, TX: American Section of the International Solar Energy Society, 1979, p. 22.

See PASSIVE SOLAR HEATING AND COOLING for abstract.

McDonald, Stephen L., "The Energy Tax Act of 1978," Natural Resources Journal, vol. 19 no. 4, 1979, pp. 859-869.

See TAX LAWS for abstract.

McGuigan, Leigh, Legal Issues Affecting the Development of Low-Head Hydroelectric Power, Golden, CO: Solar Energy Research Institute, June 1980, SERI/TR-434-373.

See SMALL-SCALE HYDRO for abstract.

McIntyre, Thomas J., "Solar Energy Development: Defining the Proper Federal Role," Idea: The Journal of Law and Technology, vol. 19 no. 1, 1977, pp. 3-8.

Available from: Local library.

The article (originally a speech) begins by reviewing environmental, legal, and technological problems concerning nuclear power and coal. Then-U.S. Senator McIntyre describes several solar energy advances in New Hampshire and reviews the history of displacement of solar systems by cheap natural gas. He lists three problem areas in solar development: solar access, patent rights, and taxes. The article concludes with a description of three bills introduced by Senator McIntyre regarding tax refunds and family and small business loans.

Miller, Alan S.; Stambler, Barrett, "Plugging Into the Sun," Solar Age, vol. 5 no. 8, August 1980, pp. 99, 100.

Available from: Local library.

The Federal Energy Regulatory Commission (FERC) recently finalized rules concerning rates and conditions under which utilities buy and sell electricity from small power producers. The power may come from hydro, wind, biomass, photovoltaics, and cogeneration (the production of power from surplus industrial heat). The rules are mandated by Section 210 of the Public Utilities Regulatory Policies Act (PURPA) of 1978. PURPA regulations require utilities to interconnect with small power producers and cogenerators and purchase excess power at a fair and reasonable price. Current issues involve definition of "avoided costs," which means the cost of producing electricity that the utility avoids by purchasing the electricity from the small power producer. This is the basis for determining rates to be paid by utilities to small power producers. Another issue involves reliability of the power generated by the small producers. Readers are urged to assist in implementation of the rules by contacting state public utilities commissions.

Nanda, Ved P., "Legal and Institutional Aspects," in Gordon L. Dugger, ed., Proceedings of the 6th Ocean Thermal Energy Conversion Conference: Ocean Thermal Energy for the 80's, vol. 2, Washington, DC, June 19-22, 1979; Washington, DC: U.S. Department of Energy, 1979, p. 14.2.

See OCEAN ENERGY for abstract.

Nyhart, J. D., "Legal Aspects of Siting OTEC Plants Offshore the United States, On the High Seas, and Offshore Other Countries," in Gordon L. Dugger, ed., Proceedings of the 6th Ocean Thermal Energy Conversion Conference: Ocean Thermal Energy for the 80's, vol. 2, Washington, DC, June 19-22, 1979; Washington, DC: U.S. Department of Energy, 1979, p. 14.1.

See OCEAN ENERGY for abstract.

Rice, Michael, An Analysis of PURPA and Solar Energy, Golden, CO: Solar Energy Research Institute, March 1980, SERI/TR-434-484.

Available from: Local library; NTIS, Report No. SERI/TR-434-484, PC $6.50, MF $3.00.

The Public Utility Regulatory Policies Act of 1978 (PURPA) mandates the Federal Energy Regulatory Commission (FERC) to encourage electricity production by small power producers and the cogeneration of heat and electricity. Particularly important is interconnection of the small power producers and cogenerators with utility grids. The author maintains that standards to determine whether these producers qualify for grid interconnection could be improved if qualification were established on a generic rather than case-by-case basis; no minimum size for qualification were required; small power production facilities were allowed to use more fossil fuel; and the status of mixed cogeneration-small power production facilities were clarified to favor qualification. The report recommends rates based on a time-differentiated energy charge that subsumes a demand charge but includes a series of suggestions to mitigate negative consequences of demand/energy rates.

The report proposes specific modifications to PURPA to allow qualifying facilities to make final sales and allow FERC to require utilities to transfer power to other utilities or subsidiaries; to allow self-generators to make net energy purchases; and to provide for generation capacity subsidies by utilities to qualifying facilities.

Scantland, D. A.; McClure, T. A.; Lipinsky, E. S., Carbohydrate Crops as a Renewable Resource for Fuels Production, Volume 2: Identification of Key Policy Issues, Alternatives, and Implications Relating to Energy from Biomass, Washington, DC: U.S. Department of Energy, May 1979, BMI-2031.

See BIOMASS for abstract.

Streb, Alan G.; Bornstein, Gary; et al., Commercialization Strategy Report for Cogeneration, Washington, DC: U.S. Department of Energy, February 1979, draft, TID-28853.

See INSTITUTIONAL ISSUES for abstract.

"Tax Credits That Could Save Industry Billions," Business Week, no. 2631, April 7, 1980, pp. 107-110.

See TAX LAWS for abstract.

Tefft, R. Clark; Kelly, Ratus L.; et al., "Research in OTEC Institutional and Legal Matters," in Gordon L. Dugger, ed., Proceedings of the 6th Ocean Thermal Energy Conversion Conference: Ocean Thermal Energy for the 80's, vol. 2, Washington, DC, June 19-22, 1979; Washington, DC: U.S. Department of Energy, 1979, p. 14.3.

See OCEAN ENERGY for abstract.

Terry, Robert M. (BDM Corp.), Photovoltaic Incentives Options Preliminary Report, Washington, DC: U.S. Department of Energy, August 1978, HCP/CS-0023.

See PHOTOVOLTAICS for abstract.

U.S. Congress, Office of Technology Assessment, Gasohol: A Technical Memorandum, Washington, DC: U.S. Congress, Office of Technology Assessment, September 1979.

See BIOMASS for abstract.

U.S. Department of Energy, The Report of the Alcohol Fuels Policy Review, Washington, DC: DOE, June 1979, DOE/PE-0012.

See BIOMASS for abstract.

Yokell, Michael D., The Role of the Government in the Development of Solar Energy, Golden, CO: Solar Energy Research Institute, April 1979, SERI/TP-52-138R.

Available from: Local library; NTIS, Report No. SERI/TP-52-138R.

Presented to the Annual Meeting of the American Association for the Advancement of Science in Houston in January 1979, the paper takes the position that the Federal Government should subsidize solar energy for social welfare reasons. One section discusses federal solar programs concerning research and development, demonstrations, federal installation, purchasing, and federal tax credits. The author concludes that "the major omission in the federal solar energy program is the failure to systematically and thoroughly provide a mechanism to compensate for the substantial underpricing of conventional sources of energy."

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SECTION 7.0

FINANCING AND INSURANCE

Berkowitz, M. K., "Incentive Schemes for Encouraging Solar Heating Applications in Canada," Journal of Business Administration (Canada), vol. 10 no. 1-2, Fall 1978-Spring 1979, pp. 373-381.

Available from: Local library.

The article asserts that incentives from the Federal Government are necessary for large-scale adoption of solar heating in Canada. After considering a variety of incentives, the author concludes that a lump-sum grant of $800 would be the best incentive choice among the one-time incentives studies. The paper also recommends a declining lump-sum incentive scheme that would provide the largest incentives during the first few years of the solar investment.

Beyard, Michael D.; Weiss, Stuart, "Guidelines and Criteria for Including Passive Systems in Federal Solar Incentive Programs," in Proceedings of the 3rd National Passive Solar Conference of the American Section of the International Solar Energy Society, vol. 3, San Jose, CA, January 11-13, 1979; Killeen, TX: American Section of the International Solar Energy Society, 1979, p. 357.

See PASSIVE SOLAR HEATING AND COOLING for abstract.

Horovitz, Bruce, "Giving Cogeneration the Cold Shoulder," Industry Week, vol. 205 no. 1, April 14, 1980, pp. 32-42.

Available from: Local library.

Although cogeneration (the simultaneous production of electricity and heat) might cut industrial electricity costs by more than one-third, it has not been extensively used. Ignorance of the concept is a relatively minor problem; economic and legal obstacles appear to be more significant. For instance, in some states, sale of cogenerated electricity is taxed twice as heavily as is the sale of utility-generated electricity. Another factor is that the pay-back period for cogeneration equipment may seem too long to utility executives. Passage of the windfall profits tax bill has increased the appeal of cogeneration systems by doubling the tax credit for installation.

Kiphut, A.D.; Philbrick, D.; Isaak, D., "Oregon's Solar Tax Credit Program: Actual Cost and Estimated Performance of Passive Solar Installation," in Proceedings of the 3rd National Passive Solar Conference of the American Section of the International Solar Energy Society, vol. 3, San Jose, CA, January 11-13, 1979; Killeen, TX: American Section of the International Solar Energy Society, 1979, p. 73.

See PASSIVE SOLAR HEATING AND COOLING for abstract.

Lish, G. Rex; Marks, Barry R., "Survey of the Attitude of Appraisers Toward Solar Energy Systems," The Appraisal Journal, vol. XLVII no. 1, January 1979, pp. 106-109.

Available from: Local library.

Real estate appraisers from West Texas and New Mexico were surveyed in the fall of 1977 to determine their attitudes toward residential (single-family residence) solar systems. Results indicated that the appraisers were more favorable to passive systems than to active systems, and that most appraisers used the cost approach rather than the market data approach when valuing solar systems.

Nichols, Wayne; Nichols, Susan, "Presenting a Passive Solar Project to a Lender or Appraiser," in Proceedings of the 3rd National Passive Solar Conference of the American Section of the International Solar Energy Society, vol. 3, San Jose, CA, January 11-13, 1979; Killeen, TX: American Section of the International Solar Energy Society, 1979, p. 387.

Available from: Local library.

The two most important factors in estimating the value of a passive solar system are incremental costs and projected energy cost savings. To determine incremental costs, the authors recommend dividing the home design into two types of construction elements: those specifically used in the solar system and those more generally involved with energy conservation. They also recommend use of the life-cycle costing method of translating energy savings into real estate value.

Ruegg, Rosalie, "Calculating the Solar Dollar Gains: Ins and Outs of Life Cycle Costing," Solar Engineering, vol. 4 no. 7, July 1979, pp. 11-14.

Available from: Local library.

Life-cycle costing of construction projects is not a single method of analysis but can be applied in a variety of ways. The life-cycle measure can be expressed as the total of all significant dollar costs of the project; the dollar difference between fuel savings and all of the nonfuel owning and operating costs; a ratio of savings-to-operating costs; or a percentage rate of return on the investment. Any of these methods may be appropriate in a given circumstance. The article includes an example of solar life-cycle costing, using the approach of the Federal Building Solar Demonstration Program.

"Solar Seen Accepted by Insurers," The National Underwriter, vol. 83 no. 41, October 12, 1979, pp. 53, 54.

Available from: Local library.

Although insurance underwriters have accepted solar energy as a method of home heating, remaining questions indicate a need for educational programs.

Early in 1979, insurance groups, financial institutions, and others co-sponsored with the Department of Energy two series of workshops designed to acquaint members of the financial community with criteria for evaluating solar-heated buildings. Fifty conferences were scheduled countrywide.

The Department of Housing and Urban Development sponsored a survey of companies that insured homes as part of the Residential Solar Demonstration program. The responses revealed that these insurance companies do not distinguish between solar and conventional heating. The HUD survey indicated that policyholders should inform their agents of the presence of solar equipment and that a solar system installed by a professional contractor will probably be insured routinely.

State Solar Energy Incentives Primer: A Guide to Selection and Design, Golden, CO: Solar Energy Research Institute, December 1979.

See STATE LEGISLATION AND PROGRAMS for abstract.

Taul, James W., Jr.; Moncrief, Carol Y.; Bohannon, Marcia L., "The Economic Feasibility of Passive Solar Space Heating Systems," in Proceedings of the 3rd National Passive Solar Conference of the American Section of the International Solar Energy Society, vol. 3, San Jose, CA, January 11-13, 1979; Killeen, TX: American Section of the International Solar Energy Society, 1979, p. 186.

See PASSIVE SOLAR HEATING AND COOLING for abstract.

U.S. Department of Energy, Solar Heating Workshop for the Financial Community, Washington, DC: DOE, May 1979, DOE/CS-0083.

Available from: Local library; NTIS, Report No. DOE/CS-0083.

This workshop manual for lenders, appraisers, insurers, and tax consultants discusses federal, state, and local programs, including legislation and regulatory policies. Legal issues addressed include access, easements, covenants, and policies. The report is divided into five sections covering solar-heated buildings, domestic hot water systems, barriers and incentives, methods of appraisal, and evaluation, and it is written in nontechnical language.

Webb, James R., "The Influence of Solar Energy Systems on the Value of Dwellings: Theory Vs. Practice," The Real Estate Appraiser and Analyst, vol. 46 no. 1, January-February 1980, pp. 4-6.

Available from: Local library.

Equations for valuation of solar energy systems are presented in this technical article. A brief survey of current practice in solar energy system appraisal is included. The author suggests that, in the current absence of market data, appraisers adopt the "stop-gap" method of appraisal that the article details.

White, Sharon Stanton, Municipal Bond Financing of Solar Energy Facilities, Golden, CO: Solar Energy Research Institute, December 1979, SERI/TR-434-191.

See LOCAL LEGISLATION AND PROGRAMS for abstract.

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SECTION 8.0

GENERAL SOLAR LAW

Becker, Arto, "Solar Rights and Restrictive Covenants: A Microeconomic Analysis," The Fordham Urban Law Journal, vol. 7 no. 2, 1978-79, pp. 283-304.

See LAND USE for abstract.

Berryhill, W. Wade; Parcell, William H. III, "Guaranteeing Solar Access in Virginia," University of Richmond Law Review, vol. 13 no. 3, 1979, pp. 423-454.

See SOLAR ACCESS for abstract.

Danielson, Luke, "Legal Obstacles Blocking Solar Power," "Lifting the Shades on Solar Power," The National Law Journal, vol. 2 no. 46, November 19, 1979; vol. 2 no. 47, November 26, 1979.

Available from: Local library.

Published in two parts, this article deals both with factors inhibiting widespread acceptance of solar energy and various attempts made to ease a transition to renewable energy. One of the main negative factors, according to the author, is that conventional energy supplies are priced artificially low because of price controls; subsidies; and hidden, externalized social costs. Another problem is the uncertain relationship between solar energy and utilities, including both the prohibition of utility financing of residential solar equipment [Ed. note: This provision has been modified] and rate structures that may render residential solar installations uneconomical. Still other obstacles are found in financing, such as private lending practices that do not take energy expenses into account. Some common hindrances to solar development are restrictive convenants in subdivisions, zoning restrictions, warranty problems, and uncertainties concerning competition in the industry. Strategies to encourage widespread utilization of solar energy include mandatory solar energy use, retrofit legislation, incorporation of solar energy into local planning, and a variety of approaches to ensure solar access.

Gergacz, John William, "Solar Energy Law: Easements of Access to Sunlight," New Mexico Law Review, vol. 10 no. 1, 1979-80, pp. 121-168.

See SOLAR ACCESS for abstract.

Goble, Dale D., "Solar Access and Property Rights: Reply to a Maverick Analysis," Connecticut Law Review, vol. 12 no. 2, 1980, pp. 270-294.

See SOLAR ACCESS for abstract.

Grout, Deborah, "Access to Sunlight: New Mexico's Solar Rights Act," Natural Resources Journal, vol. 19 no. 4, 1979, pp. 957-968.

See SOLAR ACCESS for abstract.

Jones, Nancy Lee, "Aesthetic Restrictions and the Use of Solar Devices," Boston College Environmental Affairs Law Review, vol. 8 no. 1, 1979, pp. 33-58.

See LAND USE for abstract.

Kraemer, Sandy F., Solar Law Means Energy, Washington, DC: The World Peace Through Law Center, September 1979.

Available from: Local library.

This brief working paper was presented at the Madrid Conference on the Law of the World. It deals with the depletion of nonrenewable energy sources and the need for a transition to renewable energy. The role of solar law in facilitating the transition is discussed, and the author lists ten goals for solar law.

Noun, Robert J., Legal Aspects of Coatings for Solar Collectors, Golden, CO: Solar Energy Research Institute, October 1979, SERI/TP-354-446.

See WARRANTIES for abstract.

People Ex Rel. Hoogasian v. Sears, Roebuck and Company, 52 Ill. 2d 301, 287 N.E. 2d 677 (1972).

Available from: Local law library.

Defendant proposed to erect a 110-story building on its property. The building would interfere with television reception in surrounding areas. The Illinois Supreme Court, affirming a lower court decision, held that, in the absence of legislation to the contrary, defendant had the proprietary right to construct the building to any height and that interference with television reception is not in and of itself an actionable nuisance. The decision could set legal precendent in cases where windmills interfere with television reception.

White, Sharon Stanton, Municipal Bond Financing of Solar Energy Facilities, Golden, CO: Solar Energy Research Institute, December 1979, SERI/TR-434-191.

See LOCAL LEGISLATION AND PROGRAMS for abstract.

SECTION 9.0

INSTITUTIONAL ISSUES

"Alternative Energy Sources," Real Estate Today, vol. 13 no. 5, May 1980, pp. 4-7.

Available from: Local library.

Alternative energy sources as defined in this article include conservation as well as renewable energy sources and synfuels. Building energy conservation performance standards are discussed, as are applications of specific solar technologies.

Duffey-Armstrong, Marilyn; Armstrong, Joe E., Community Impediments to Implementation of Solar Energy, Berkeley, CA: Lawrence Berkeley Laboratory, June 1979, CRESS Report No. 99.

Available from: Local library; NTIS, Report No. DOE/EV-0059.

Intended to supply information for a technology assessment of solar energy conducted by the Department of Energy, the six-month-long research project involved preparing a description of seven institutional sectors considered relevant to solar technology implementation, constructing a hypothetical city of 100,000 population, and conducting workshops and telephone interviews.

Survey results are presented in two ways: first, delay categories of 10 years or more, 6 to 8 years, and 3 to 5 years are constructed, with institutional barriers assigned to each category according to their potential for causing difficulty over time; second, difficulties involved with implementing each technology at the community level are described.

Milne, Murray; Adelson, Marvin; Corwin, Ruthann, Three Solar Urban Futures: Characterization of a Future Community Under Three Energy Supply Scenarios, Berkeley, CA: Lawrence Berkeley Laboratory, October 1979, DOE/EV-0052/1.

Available from: Local library; NTIS, Report No. DOE/EV-0052/1, PC, $7.25, MF, $3.00.

As part of the Technology Assessment of Solar Energy Systems (TASE) project supported by the Department of Energy, the study sets up a hypothetical city of 100,000 people in the year 2025. Three energy supply scenarios are applied to the city: in Future 1, approximately 6% of the city's energy demand is met by solar technologies; in Future 2, the figure is approximately 25%; Future 3 involves seeking maximum use of solar technologies. Residential, commercial, and industrial sectors of the city are examined, and no major environmental, socioeconomic, or life-style changes are required or implied by the solar technologies.

Packer, Michael B., "Reducing Institutional Barriers to Solar Energy Through the Use of Cooperatively-Owned Solar Energy Systems," Energy-Pergamon, vol. 4 no. 3, June 1979, pp. 383-392.

Available from: Local library.

Institutional barriers to solar system diffusion may be avoided by solar energy cooperatives in which many people share a few solar systems. The "product fit" concept, which determines which type of system or product would best mesh with external conditions, would be employed. Benefits of cooperatively owned systems include bypassing solar access problems where solar users collectively own the entire area to be served by the system; reducing capital costs for individuals, bypassing the problem that many individual buildings cannot support collectors; and using existing buildings whenever possible. Some drawbacks are that zoning boards might consider the systems' commercial activity in residential areas and that the systems might be considered utilities, subject to state commission regulation.

Roessner, J. David; Posner, David, et al., Application of Diffusion Research to Solar Energy Policy Issues, Golden, CO: Solar Energy Research Institute, March 1979, SERI/TR-51-194.

Available from: Local library; NTIS, Report No. SERI/TR-51-194.

Diffusion research deals with the transmission of innovation in a social system over time and space. Government agencies fund diffusion research in a variety of situations. In the context of solar energy policy issues, diffusion research is applied to cost reduction and performance improvement and to barriers and incentives to solar development. Investigations of diffusion have dealt with individual adopters' decision processes, influences on individuals and organizations, diffusion rates and patterns, characteristics of innovators, and the role of information in diffusion.

Schiffel, Dennis; Posner, David; et al., Solar Incentives Planning and Development: A State-of-the-Art Review and Research Agenda, Golden, CO: Solar Energy Research Institute, August 1978, SERI/TR-51-059.

Available from: Local library; NTIS, Report No. SERI/TR-51-059.

The report constructs a four-element framework for designing incentives. These are: a diagnostic element (does a problem exist that should cause policies of the private sector to be changed?); a second diagnostic element (what is the source of the problem?); a prescriptive element (can any incentive be effective, and which would be most effective?); and a monitoring and evaluative element (how well did the incentive work, and what would have worked better?). The report also includes results of a literature review and a research agenda, intended to identify gaps in solar incentives literature and provide information to close those gaps and construct effective solar energy incentives.

Streb, Alan G.; Bornstein, Gary; et al., Commercialization Strategy Report for Cogeneration, Washington, DC: U.S. Department of Energy, February 1979, draft, TID-28853.

Available from: Local library; NTIS, Report No. TID-28853.

This report describes cogeneration (production of electrical or mechanical power and useful thermal energy from the same primary energy source) and provides an assessment of commercial readiness (evaluation of technical, economic, environmental, and institutional readiness; benefits analysis; and commercialization strategy). Appendices delineate commercialization barriers, potential initiatives to surmount those barriers,

methods for determining the costs to end users for the various cogeneration technologies, and ways of defining the potential for cogeneration market penetration and development.

Some potential initiatives to overcome barriers include demonstrations of advanced cogeneration systems, economic incentives, and streamlining of the environmental permit process. Methods for determining potential cogeneration market penetration and development involve estimating potential cogeneration development without additional governmental actions, with additional governmental involvement, and with utility participation and other federal incentives.

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SECTION 10.0

INTERNATIONAL ISSUES

Ashworth, John H., "Renewable Energy for the World's Poor," Technology Review, vol. 82 no. 2, November 1979, pp. 42-49.

Available from: Local library.

Renewable energy assistance programs in the Third World should incorporate four criteria: definition of development objectives, information collection and exchange, quasi-experimental project designs (which provide information in the course of project operation), and learning from prior experience. All four criteria should be utilized to avoid a result too often experienced—the failure of villagers to adopt alternative energy systems selected for them by development experts.

The article also provides an overview of Third World alternative energy development projects.

Ashworth, John H.; Meunier, Richard E., International Development Assistance for Renewable Technologies: Current Programs and Institutional Requirements, Golden, CO: Solar Energy Research Institute, May 1979, SERI/TP 51-256.

Available from: Local library; NTIS, Report No. SERI/TP-51-256.

Although the number of projects and donors in renewable energy assistance programs has increased dramatically in the past few years, renewable energy projects are only gradually being assimilated into existing development structures. The paper briefly discusses the major international donor agencies and activities and calls for linkages between donor agencies, researchers, and entrepreneurs in developed and developing countries.

The authors believe that the greatest problem facing renewable energy assistance programs is fragmentation of the international development assistance system as a whole.

Berkowitz, M. K., "Incentives Schemes for Encouraging Solar Heating Applications in Canada," Journal of Business Administration (Canada), vol. 10 no. 1-2, Fall 1978—Spring 1979, pp. 373-381.

See FINANCING AND INSURRANCE for abstract.

Christol, Carl Q., (PRC Energy Analysis Company), Satellite Power System (SPS) International Agreements, Washington, DC: U.S. Department of Energy, October 1978, HCP/R-4024-08.

Available from: Local library; NTIS, Report No. HCP/R-4024-08.

Both public and private international organizations cooperate in governing space objects orbiting at geostationary heights. The public institutions include the United Nations, particularly the Committee on the Peaceful Uses of Outer Space, and the International

Telecommunication Union. An important private organization is the Committee on Space Research of the International Council of Scientific Unions. The United Nations has been instrumental in preparing two international agreements that deal with SPS use of space: the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and other Celestial Bodies; and the 1972 Convention on International Liability for Damage Caused by Space Objects. The Liability Convention has established international tort law rules. The United States is a party to both agreements; both are in force. In 1976, eight equatorial nations issued the Bogota Declaration, in which they claimed sovereignty over space superjacent to their territorial areas, potentially affecting satellite power systems.

Cohan, Marc, "The Right to Light: A Comparative Approach to Solar Access," Brooklyn Journal of International Law, vol. 4, 1978, pp. 221-245.

See SOLAR ACCESS for abstract.

Costello, Dennis; Posner, David; et al., Objectives and Strategies of the International Photovoltaic Program Plan, Golden, CO: Solar Energy Research Institute, July 1979, SERI/TR-52-2500.

See PHOTOVOLTAICS for abstract.

Donovan, Hamester and Rattien, Inc., Caribbean Region Solar Cooperation Study, Golden, CO: Solar Energy Research Institute, January 1979.

Available from: Local library; NTIS, Government Contract Number EG-77-C-01-4042.

The report was written to provide the Solar Energy Research Institute with recommendations on how best to participate in solar energy development efforts in the Caribbean. The research for the study consisted of a conference, visits to six islands, and a review of statistical data and other sources of information.

The conclusion isolates adverse factors, positive factors, and varied effect factors influencing solar development. Adverse factors include: lack of comprehensive energy plans; lack of fundamental data collection efforts; greater strength of familiar market penetration barriers; poor communications and lack of education programs; and lack of trained professionals and skilled workers. Positive factors include: an excellent alternative energy resource base; the existence of a number of alternative energy initiatives; the existence of a few private Caribbean solar energy manufacturing companies; and a beginning alternative energy effort by the Commonwealth Science Council (for English-speaking countries). Varied effect factors include: a local belief that foreign technology is superior to locally developed technology; levels of development and expectation that differ widely; belief that petroleum will continue to be the main energy source for decades; and the fact that solar energy will have to be approached on both a large-scale and small-scale systems basis.

ICF, Inc., Technical, Institutional, and Economic Analysis of Alternative Electric Rate Designs and Related Regulatory Issues in Support of DOE Utility Conservation Programs

and Policy, Vol. II. Foreign Rate Survey, Washington, DC: U.S. Department of Energy, May 1979.

See UTILITIES for abstract.

IIT Research Institute, Policy Strategies for the International Marketing of U.S. Photovoltaics, vol. 1, Pasadena, CA: Jet Propulsion Laboratory, California Institute of Technology, August 1979, JPL Contract No. 955463.

See PHOTOVOLTAICS for abstract.

Johnson Environmental and Energy Center, University of Alabama; New Mark Consulting Group, Inc., The Final Proceedings of the Solar Export Issues Workshop, Bethesda, MD, August 12-14, 1979; Washington, DC: U.S. Department of Energy, October 1979.

See FEDERAL LEGISLATION AND PROGRAMS for abstract.

Mead, Brad, "The Sun Never Sets on the International Market," Solar Age, vol. 5 no. 1, January 1980, pp. 61-62.

Available from: Local library.

The author, manager of International Energy Programs at Grumman International Company, believes that foreign markets could make up the largest share of the U.S. solar industry business in the 1980s. Developing nations will give higher priority to solar energy than in the past and are starting to implement programs. Developed countries are working on incentives. The author believes that the traditional American strategy of seeking short-term export sales must be supplanted by a policy of providing technology transfer through licensing or joint ventures, with the American company probably as a minority partner. Negotiations, however, will be a formidable obstacle to this process, and American companies must have patience.

Nanda, Ved P., "Legal and Institutional Aspects," in Gordon L. Dugger, ed., Proceedings of the 6th Ocean Thermal Energy Conversion Conference: Ocean Thermal Energy for the 80's, vol. 2, Washington, DC, June 19-22, 1979; Washington, DC: U.S. Department of Energy, 1979, p. 14.2.

See OCEAN ENERGY for abstract.

Nyhart, J. D., "Legal Aspects of Siting OTEC Plants Offshore the United States, On the High Seas, and Offshore Other Countries," in Gordon L. Dugger, ed., Proceedings of the 6th Ocean Thermal Energy Conversion Conference: Ocean Thermal Energy for the 80's, vol. 2, Washington, DC, June 19-22, 1979; Washington, DC: U.S. Department of Energy, 1979, p 14.1.

See OCEAN ENERGY for abstract.

Ontario Ministry of Energy, Perspectives on Access to Sunlight, Toronto, Ontario, May 1978.

See SOLAR ACCESS for abstract.

Tefft, R. Clark; Kelly, Ratus L.; et al., "Research in OTEC Institutional and Legal Matters," in Gordon L. Dugger, ed., Proceedings of the 6th Ocean Thermal Energy Conversion Conference: Ocean Thermal Energy for the 80's, vol. 2, Washington, DC, June 19-22, 1979; Washington, DC: U.S. Department of Energy, 1979, p. 14.3.

See OCEAN ENERGY for abstract.

SECTION 11.0

LAND USE

Becker, Arto, "Solar Rights and Restrictive Covenants: A Microeconomic Analysis," The Fordham Urban Law Journal, vol. 7 no. 2, 1978-79, pp. 283-304.

Available from: Local law library.

Using Kraye v. Old Orchard Association as a case study, the author proposes the application of microeconomic welfare economics theory to cases in which restrictive covenants prohibit the use of solar collectors (primarily on aesthetic grounds) by individual landowners. Welfare economics propose that, since private action by landowners often creates "externalities" (beneficial or harmful effects on others that are not directly borne by the landowner), ways should be found to internalize the externalities (the landowner should be subsidized for positive externalities and should directly pay for negative externalities). In Kraye, the positive externality created by the solar landowner (the plaintiff) was the beneficial use of solar energy; the negative externality was the possible lowering of neighbors' property values.

The author examines and criticizes the three contentions of the plaintiff: covenants designed to protect aesthetic values are invalid; the covenant could not be enforced to bar installation of the solar device because this was not the specific intent of the parties to the covenant; and changed conditions since the covenant was agreed upon invalidate the prohibition against the solar device.

Recommended is a solution in which the solar user would both be compensated for the positive externalities (which is already occurring in the form of tax credits and other government incentives) and penalized for the negative externalities (in the form of paying damages to neighbors). The author maintains that the difference between the subsidy and the damage payment should be small.

Central Naugatuck Valley Regional Planning Agency, Overcoming Land Use Barriers to Solar Access: Solar Planning Recommendations for Local Communities, Waterbury, CT: Central Naugatuck Valley Regional Planning Agency, February 1980.

Available from: HUD Library, Library of Congress.

Two events prompted this report: the Connecticut General Assembly passed an act that included energy as a consideration in land-use planning, and an award was granted to the Naugatuck Agency by the Northeast Solar Energy Center. Concentrating on incentive regulations rather than urging mandatory use of solar energy, the report distinguishes between legal and institutional barriers and deals with solar access questions. Specific problems or issues are discussed, such as setback requirements, fence heights, lot orientation, pitch of roof, and discretionary powers of building inspectors, and recommendations are made. An appendix includes a proposed planned solar residential development ordinance, proposed zoning regulations, and definitions.

Engel, David, "Developing Solar Land-Use Plans," Idea: The Journal of Law and Technology, vol. 19 no. 1, 1977, pp. 45-51.

Available from: Local library.

The author asserts that the solar access concept "involves totally new planning and zoning techniques and new ways of viewing property rights." He maintains that assurance of solar access should be reasonable rather than absolute and emphasizes the need to determine obstacles to solar access. Engel contrasts two situations: a builder or home owner planning to construct a solar home and a builder or home owner not planning to do so. The author recommends including a statement in state legislation and zoning laws to the effect that "a valid purpose of zoning and planning decisions is to provide direct solar access." The article concludes with a discussion of several zoning problems that might arise regarding solar access.

Gergacz, John William, "Solar Energy Law: Easements of Access to Sunlight," New Mexico Law Review, vol. 10 no. 1, 1979-80, pp. 121-168.

See SOLAR ACCESS for abstract.

Jones, Nancy Lee, "Aesthetic Restrictions and the Use of Solar Devices," Boston College Environmental Affairs Law Review, vol. 8 no. 1, 1979, pp. 33-58.

Available from: Local law library.

Aesthetic restrictions affecting the use of solar energy devices may take the form of private restrictive covenants or zoning regulations. The author examines both situations and proposes remedies designed to strike a balance between encouraging solar energy and protecting aesthetic values.

The article suggests four arguments that could be used to overcome a restrictive covenant: conditions have changed in the neighborhood; the covenant works a particular hardship on the landowner; the party attempting to enforce the covenant has not proceeded with reasonable promptness; and public policy goals negate the covenant.

Concerning zoning, the author notes that courts have increasingly accepted aesthetics as a valid concern of zoning. She notes two major ways in which a solar user attempting to counter an aesthetic zoning restriction may proceed: by seeking a variance or by directly challenging the zoning provision. The article cautions against strategies that would seek to deny that aesthetic regulation is a valid purpose of zoning. The author briefly discusses pro-solar covenants and notes that legislation could specifically prohibit or limit covenants and zoning laws that interfere with the use of solar devices. California's Solar Rights Act of 1978 and a Minnesota statute are examined in this context. The article also examines two cases: D'Aurio v. Board of Zoning Appeals (zoning) and Kraye v. Old Orchard Association (covenants).

"Solar Energy and Land Use," Environmental Comment, entire issue, May 1978.

Available from: Local library.

The entire issue of the journal is devoted to solar energy issues. "Solar Energy and Land Use," by Ralph J. Basile, is a short overview of solar/land use issues. "Residential Solar Energy Systems: On-Site Versus District," by Pat Smith, Peter Pollock, and Robert Twiss, contrasts two approaches to siting collectors: the traditional on-site rooftop approach and the use of a shared network of solar collectors to provide a district heating system. The collectors in this system could either be located on a single site or dispersed throughout a neighborhood.

"Solar Rights in California," by Richard L. Maullin and Kevin D. Sheehy, examines strategies for solar access under consideration in California. These include the use of city and county general development plans, environmental impact reports mandated by the California Environmental Quality Act, zoning, eminent domain proceedings, restrictive covenants, and skyspace easements. Holly H. Williams' "Solar Energy Works" describes several functioning solar energy sites, including a single-family detached houses project in California, a renovated office building in Detroit, a state-funded school in Denver, and several others.

"Trying To See Both the Forest and the Trees," by Gail Boyer Hayes, focuses on the problem of vegetation control in assuring solar access. Martin Jaffe's "Protecting Solar Access" distinguishes between private sector development decisions (residential site planning, solar access easements, and restrictive covenants) and public sector development decisions (land use planning and land-use controls, such as zoning). The issue also contains a bibliography on solar energy and land use.

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SECTION 12.0

LOCAL LEGISLATION AND PROGRAMS

Goodnight, Jill A.; King, Sarah T. (Pacific Northwest Laboratory), The Role of Government in Solar Energy Development: A View from the Northwest, Washington, DC: U.S. Department of Energy, August 1978, PNL-2784.

See STATE LEGISLATION AND PROGRAMS for abstract.

White, Mary Ray, "Solar Investments by a Municipal Utility," North Dakota Law Review, vol. 55, 1979, p. 409.

See UTILITIES for abstract.

White, Sharon Stanton, Municipal Bond Financing of Solar Energy Facilities, Golden, CO: Solar Energy Research Institute, December 1979, SERI/TR-434-191.

Available from: Local library; NTIS, Report No. SERI/TR-434-191, PC $6.00, MF $3.00.

The author maintains that some form of municipal bond financing is available to most solar energy facilities if the facility is technically and economically feasible. The report discusses types of solar facilities that might be bond-financed, including biomass conversion systems, residential and commercial solar heating and cooling systems, wind power installations, and photovoltaic systems. The general principles of municipal securities financing are outlined: the power to issue bonds is the power to incur debt; the bonds must be issued to satisfy a public, rather than private, purpose; and the issuance of the bonds must conform to statutory and constitutional provisions. Five types of municipal bonds (general obligation, revenue, assessment, industrial development, and housing mortgage) are examined. The author discusses the issue of tax exemption and bonds, specifically, Section 103 of the Internal Revenue Code of 1954, as amended. Finally, the report examines bond laws in five states (California, Florida, Illinois, New Mexico, and New York) and constructs three hypothetical situations illustrating common issues involved in municipal bond financing of solar energy installations.

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SECTION 13.0

OCEAN ENERGY

Linky, Edward J., "Lead Agency Designation and Proposed Licensing Procedures for Ocean Thermal Energy Conversion Facilities," in Gordon L. Dugger, ed., Proceedings of the 6th Ocean Thermal Energy Conversion Conference: Ocean Thermal Energy for the 80's, vol. 2, Washington, DC, June 19-22, 1979; Washington, DC: U.S. Department of Energy, 1979, p. 14.4.

Available from: Local library; NTIS, Report No. CONF-790631.

The author addresses the questions of whether a single federal agency should assume primary responsibility for OTEC regulation and, if so, which agency is the best candidate for that job. He uses New Jersey's experience to illuminate jurisdictional problems that can arise when several agencies are involved with energy facility siting questions. The author proposes the National Oceanic and Atmospheric Administration as the best candidate for OTEC lead agency, largely because of its coastal zone management program. The article also recommends an OTEC licensing procedure.

Nanda, Ved P., "Legal and Institutional Aspects," in Gordon L. Dugger, ed., Proceedings of the 6th Ocean Thermal Energy Conversion Conference: Ocean Thermal Energy for the 80's, vol. 2, Washington, DC, June 19-22, 1979; Washington, DC: U.S. Department of Energy, 1979, p. 14.2.

Available from: Local library; NTIS, Report No. CONF-790631.

Delivered at the June 1979 OTEC conference, the report deals with both U.S. federal-state and international aspects of law relating to OTEC. It covers OTEC devices within 200-mile Exclusive Economic Zones of nations as well as sites on the high seas. Specific proposals include a recommendation that the United States claim 200-mile coastal state competence and that, in the interim, Congress enact legislation creating a 200-mile Coastal Energy Conservation and Management Zone. Regarding national-international regulatory issues, the author asserts a need for the United States to promulgate unilateral regulations in a variety of fields and for bilateral and regional agreements to be reached among nations.

Nyhart, J. D., "Legal Aspects of Siting OTEC Plants Offshore the United States, on the High Seas, and Offshore Other Countries," in Gordon L. Dugger, ed., Proceedings of the 6th Ocean Thermal Energy Conversion Conference: Ocean Thermal Energy for the 80's, vol. 2, Washington, DC, June 19-22, 1979; Washington, DC: U.S. Department of Energy, 1979, p. 14.1.

Available from: Local library; NTIS, Report No. CONF-790631.

The report focuses on six issue areas: (1) international legal and political frameworks; (2) international arrangements (those promoting cooperation in OTEC operations and those of a national self-interest nature); (3) international regulatory law (including environmental protection); (4) criminal law; (5) private law; and (6) financing. Three general types of sites are examined: OTEC sites in the 200-mile Exclusive Economic Zone of the

United States, sites in the Exclusive Economic Zone of other nations, and sites on the high seas. The report ends with a series of recommendations regarding OTEC and the Law of the Sea Conference, and the status of OTEC under IMCO regulatory conventions, criminal law, and private law. The report was prepared for the Department of Energy by the American Society of International Law.

Tefft, R. Clark; Kelly, Ratus L.; et al., "Research in OTEC Institutional and Legal Matters," in Gordon L. Dugger, ed., Proceedings of the 6th Ocean Thermal Energy Conversion Conference: Ocean Thermal Energy for the 80's, vol. 2, Washington, DC, June 19-22, 1979; Washington, DC: U.S. Department of Energy, 1979, p. 14.3.

Available from: Local library; NTIS, Report No. CONF-790631.

The report deals with two main issues: whether OTEC power plants are legally "vessels" and what arrangements would facilitate OTEC commercialization. The authors construct seven scenarios involving various levels of federal action on OTEC. They recommend, as a minimum commitment necessary to OTEC commercialization, a "legal regime package," including federal legislation to establish a U.S. Energy Management Zone, institute an OTEC licensing requirement and fee policy, determine applicable law (federal or state, maritime or terrestrial), and create OTEC regulatory mechanisms.

SECTION 14.0

PASSIVE SOLAR HEATING AND COOLING

Beyard, Michael D.; Weiss, Stuart, "Guidelines and Criteria for Including Passive Systems in Federal Solar Incentive Programs," in Proceedings of the 3rd National Passive Solar Conference of the American Section of the International Solar Energy Society, vol. 3, San Jose, CA, January 11-13, 1979; Killeen, TX: American Section of the International Solar Energy Society, 1979, p. 357.

Available from: Local library.

The article asserts that passive solar heating, cooling, and hot water systems may be left out of federal incentive programs unless ways can be devised to specifically identify passive elements. It recommends a "functional element" approach to eligibility—a system whereby passive components and elements are rated according to specific criteria. These elements are grouped in three general categories: collection apertures, thermal heat storage elements, and control and distribution elements.

Beyard, Michael D.; Weiss, Stuart (PRC Energy Analysis Company), Survey of State Legislative Programs That Include Passive Solar Energy, Washington, DC: U.S. Department of Energy, draft working paper, April 1979.

Available from: Local library.

The report examines a number of solar energy incentives and their specific impact on passive solar programs. These inducements include property, income, and sales tax incentives; loan programs; grant programs; life-cycle cost programs; and building codes and standards. Legal incentives include solar access provisions, solar property rights, and solar easements. Also discussed are solar utility rates, demonstration programs, veterans' subsidies, and franchise tax exemptions. Case studies are presented of solar programs in Virginia, California, Arizona, New Mexico, and Oregon. Appendices show existing, proposed, and defeated state legislation that explicitly includes passive solar energy, implicitly includes it, and explicitly excludes it. The report includes 19 tables.

Kiphut, A. D.; Philbrick, D.; Isaak, D., "Oregon's Solar Tax Credit Program: Actual Cost and Estimated Performance of Passive Solar Installation," in Proceedings of the 3rd National Passive Solar Conference of the American Section of the International Solar Energy Society, vol. 3, San Jose, CA, January 11-13, 1979; Killeen, TX: American Section of the International Solar Energy Society, 1979, p. 73.

Available from: Local library.

At the time the paper was presented, 42 passive solar homes had taken advantage of Oregon's solar tax credit program. This program stipulated that alternative energy devices provide at least 10% of the dwelling's energy requirements. A list of eligible components was drawn up but was not made all-inclusive to encourage innovative designs. The Oregon Department of Energy has signed a contract with the University of Oregon to monitor these 42 solar systems and is using the PASOLE program developed at Los Alamos to estimate passive system efficiency.

Loftness, Vivian, "The Future of the HUD Passive Residential Design Competition," in Proceedings of the 3rd National Passive Solar Conference of the American Section of the International Solar Energy Society, vol. 3, San Jose, CA, January 11-13, 1979; Killeen, TX: American Section of the International Solar Energy Society, 1979, p. 22.

Available from: Local library.

Based on a review of the history of the HUD Passive Residential Design Competition, the author makes suggestions and observations about the program and about passive solar research in general. She asserts a need for R&D in specific areas, including phase-change storage materials and movable insulation to increase the usefulness of additional demonstration projects. The author urges extending passive solar technologies to non-residential (commercial and institutional) buildings.

Morse, Frederick H.; Maybaum, Michael W., Commercialization Strategy Report for Passive Solar Heating, Washington, DC: U.S. Department of Energy, draft.

Available from: Local library; NTIS, Report No. TID-28857.

The report is divided into a concept statement, an assessment of technical readiness, and a marketing strategy section. The readiness section includes technical, environmental, market/economic, institutional, and benefits analysis components. The strategy section deals with actions to be taken for marketing solar equipment.

Some conclusions are that technical readiness for passive solar heating has been demonstrated; that passive solar heating should be more economical on a life-cycle basis than active solar heating; and that effective commercialization could surmount most barriers.

Recommended activities for technology diffusion and marketing include technology development activities; designer and realtor education; programs to ensure solar access; and stimulation of market demand, including consumer education, utility programs, and low-interest loans.

Overdorf, John, Legal Issues Arising from Passive Solar Energy Systems, Golden, CO: Solar Energy Research Institute, June 1980, SERI/TR-434-423.

Available from: Local library; NTIS, Report No. SERI/TR-434-423, PC $5.25, MF $3.00.

Strategies and remedies open to individual consumers and society to protect against economic loss, personal injury, and property damage by passive solar systems, as well as a description of passive solar systems, are contained in this report. The article points out that the National Energy Conservation Policy Act requires utilities, under certain conditions, to perform energy audits on houses to determine what measures may be taken to increase energy efficiency. Knowledge provided by the audit can be important in making decisions on the performance of passive systems. The author believes that legal control of advertising and warranty practices—"public regulation of representations"—may be more efficacious than private remedies for damages. Public regulation is mandated by the Federal Trade Commission Act and the Magnuson-Moss Warranty/FTC Improvement Act as well as by state consumer protection legislation. Private remedial actions may be based on the legal theories of negligence, strict liability, warranty, and common law consumer fraud. The author examines the application of these theories to design professionals, contractors, and lenders.

Taul, James W. Jr.; Moncrief, Carol Y.; Bohannon, Marcia L., "The Economic Feasibility of Passive Solar Space Heating Systems," in Proceedings of the 3rd National Passive Solar Conference of the American Section of the International Solar Energy Society, vol. 3, San Jose, CA, January 11-13, 1979; Killeen, TX: American Section of the International Solar Energy Society, 1979, p. 186.

Available from: Local library.

After evaluating direct gain systems and Trombe wall systems in a variety of regions and comparing factors such as building type, electricity prices, and backup systems, the authors conclude: Trombe walls outperform direct gain systems in colder climates, while the reverse is true in warmer climates; greatest annual fuel savings are obtained in northern latitudes; larger passive systems will become more economical as fuel prices rise; 30% to 50% income tax credits are now needed to make large passive systems economical.

Wolcott, David; Shoemaker, Floyd, A Communication Strategy to Commercialize Passive Solar Energy, Golden, CO: Solar Energy Research Institute, 1979, SERI/TP-69-412.

Available from: Local library; NTIS, Report No. SERI/TP-69-412.

This report asserts that passive solar market development depends more upon communications (information dissemination, education, training, and promotional activities) than upon technical and economic issues. The paper concludes with "precepts" for passive solar communication programs: target audiences must be clearly identified and defined; communication activities must be responsive to local conditions; existing communication channels should be utilized; communication tasks must be carefully timed and coordinated; and information transfer is a feedback as well as a dissemination process.

SECTION 15.0

PHOTOVOLTAICS

Costello, Dennis; Posner, David; et al., Objectives and Strategies of the International Photovoltaic Program Plan, Golden, CO: Solar Energy Research Institute, July 1979, SERI/TR-52-250.

Available from: Local library; NTIS, Report No. SERI/TR-52-250.

The Solar Photovoltaic Energy Research, Development, and Demonstration Act of 1978 mandates the U.S. Department of Energy to prepare a plan for international marketing of photovoltaic systems. SERI, in conjunction with the Photovoltaics Lead Center at the Jet Propulsion Laboratory, was responsible for preparing the International Photovoltaic Program Plan, to be submitted by the Department of Energy to Congress in November 1979. This report contains sections describing photovoltaics system technology, the research plan for this study, the objectives of the international plan, and strategies and tactics to facilitate international photovoltaics marketing.

IIT Research Institute, Policy Strategies for the International Marketing of U.S. Photovoltaics, vol. 1, Pasadena, CA: Jet Propulsion Laboratory, California Institute of Technology, August 1979, JPL Contract No. 955463.

Available from: Local library.

This study provides input to a DOE plan mandated by the Photovoltaic Act of 1978 for international marketing of U.S. photovoltaic systems. The preparation of the report involved two workshop sessions and concept papers written by experts in the field of international marketing of high technology products. The report proposes several government initiatives, including an outreach education program by the Department of Commerce/Small Business Administration to let firms know about export opportunities; a liaison effort by the Departments of State and Energy to work with the purchasing countries; and the granting of noncontrolled export license status to photovoltaic products and systems.

The report recommends that the Robinson-Patman Act be amended to allow the photovoltaic industry to sell products at different prices in different markets; that a more specific interpretation of the Webb-Pomerene Act be established to enable small- and medium-size photovoltaic firms to participate in cooperative trading activities; and that soft currency (PL 480) funds be used in photovoltaic transactions. The report also recommends government activity, such as grants, loans, tax incentives, information distribution, and negotiation.

Lamm, David, Photovoltaic Commercialization: An Analysis of Legal Issues Affecting a Government-Accelerated Solar Industry, Golden, CO: Solar Energy Research Institute, June 1980, SERI/TR-434-423.

Available from: Local library; NTIS, Report No. SERI/TR-434-423, PC $5.25, MF $3.00.

A unifying focus of this report is the timetable for photovoltaics development detailed in the Photovoltaics Program Multi-Year Plan (MYPP) mandated by the Photovoltaics

Research, Development, and Demonstration Act of 1978. Major areas examined are solar access, building codes, manufacturer and installer performance guarantees, and utility rate and interconnection policies. Each area is discussed in terms of its potential impact on MYPP goals. The author recommends solar zoning and solar easement legislation to mitigate solar access problems, particularly in PV residential retrofit situations. To help alleviate building code problems, the author urges the Department of Energy to consider holding seminars for building code officials and developing code standards for PV systems in conjunction with SERI's Quality Assurance and Standards program. This program might also be helpful in developing manufacturer and installer performance guarantees in compliance with the Magnuson-Moss Warranty Act. The author believes that most utilities will be compelled to provide service to PV users by a combination of federal and state laws and that the Public Utility Regulatory Policies Act of 1978 could protect PV users against disadvantageous rates for backup power.

Morse, Frederick H.; Card, Michael; et al., Commercialization Strategy Report for Photovoltaic Systems, Washington, DC: U.S. Department of Energy, draft, 1979, TID-28842.

Available from: Local library; NTIS, Report No. TID-28842.

This report includes a developmental history of photovoltaics, as well as a commercialization readiness assessment section and a commercialization strategy section. The readiness assessment section deals with technical, market/economic, environmental, institutional, and benefits analysis issues. The strategy section describes government actions addressing the barriers to market development enumerated in the readiness section and discusses market assessment; information dissemination; infrastructure; system test; and application, research, and technology development funding issues. It also deals with performance standards development, user incentives, producer incentives, and institutional/legal issues.

Terry, Robert M. (BDM Corp.), Photovoltaic Incentives Options Preliminary Report, Washington, DC: U.S. Department of Energy, August 1978, HCP/CS-0023.

Available from: Local library; NTIS, Report No. HCP/CS-0023, PC $9.50, MF $3.00.

This report involved three steps: determining the current status of the photovoltaic industry; deciding changes necessary to meet national energy policy goals (specifically including DOE photovoltaic program goals); and assessing the capacity of industry to make the changes without government assistance. The report identified eight areas in which government aid could help the photovoltaic industry: market assessment, market development, infrastructure development, product development, criteria and standards research and development, demonstration, and production expansion.

TRW, Inc., Analysis of Investment Alternatives to Stimulate Development and Technology Transfer for Energy Technologies/Solar Photovoltaics: A Case Study, Washington, DC: U.S. Department of Energy, September 1978, TID-28968.

Available from: Local library; NTIS, Report No. TID-28968, PC $8.00, MF $3.00.

This study was primarily designed to evaluate possible government incentives to encourage commercial success of photovoltaic systems. It consists of four principal parts:

simulation of industry response to different incentives, analysis of the company decision-making process, consideration of residential photovoltaic balance-of-system costs, and an overview of the U.S. photovoltaic industry.

Six types of incentives were considered in the study: direct government procurement, modified direct government procurement, fixed-price buy, capital subsidy, increased investment tax credit, and enhanced depreciation allowances.

General conclusions of the study are: the direct procurement incentives would cost the government more than the capital subsidy or tax incentives but would be more likely to achieve a favorable industry response because they would remove market uncertainties; it is important to reduce balance-of-system costs as well as array costs; and residential photovoltaic systems will probably not be cost-competitive with most utility-provided electricity in the mid-to-late 1980s.

SECTION 16.0

SMALL-SCALE HYDRO

Brown, Peter W.; Ringo, Martin (Franklin Pierce Law Center), Fundamental Economic Issues in the Development of Small Scale Hydro, Washington, DC: U.S. Department of Energy, March 1979, DOE/RA-23-216.

Available from: Local library; NTIS, Report No. DOE/RA-23-216.00.0-02.

Divided into four parts dealing with costs, supply, demand, and profitability, the report maintains that a variety of factors combine to impose abnormally high costs on small-scale hydro projects. The authors consider the cost of complying with government regulations imposed on the small-scale hydro developer and pose two questions: (1) where is regulation inefficient at achieving its stated goals? and (2) what policy options are available to remedy this institutional problem?

McDonald, Richard; Smith, Farwell, Commercialization Strategy Report for Small-Scale Hydroelectric Power, Washington, DC: U.S. Department of Energy, draft, 1979, TID-28841.

Available from: Local library; NTIS, Report No. TID-28841.

This report includes a concept statement, a reward readiness assessment section, and a reward strategy section for small-scale hydroelectric power projects. The concept statement incorporates a description of the status of the technology, the economics, the technical risks, and the environmental and institutional status. The commercialization readiness section includes technical, market/economic, environmental, and institutional components. The strategy section deals with financial incentives, technical activities, and technical studies.

The report indicates that severe financial barriers to small-scale hydro exist. These include: high capital cost, a cash flow gap, and the cost of undertaking feasibility studies. Actions already taken to deal with these barriers include a feasibility study loan program and a commercial demonstration program. Proposed incentives include a federal insurance program and a loan guarantee program.

McGuigan, Leigh, Legal Issues Affecting the Development of Low-Head Hydroelectric Power, Golden, CO: Solar Energy Research Institute, June 1980, SERI/TR-434-373.

Available from: Local library; NTIS, Report No. SERI/TR-434-373, PC $5.25, MF $3.00.

Many legal barriers may complicate development of low-head hydroelectric projects. These barriers can arise in five general areas: acquisition of land and water property rights; licensing by federal, state, and local governments; potential liabilities; regulation of sale and use of power; and sale or abandonment of the plant. The author maintains that the licensing system of the Federal Energy Regulatory Commission (FERC) is unnecessarily burdensome and recommends several simplifying measures, two of which involve FERC letting states take a more leading role in licensing. She also believes that FERC (and state public utilities commissions) can greatly influence hydro/utility interconnection patterns and makes several recommendations in this area, including the suggestion that FERC encourage buy-back rates that reward power production at peak demand times.

SECTION 17.0

SOLAR ACCESS

Adams, Russell J., "An Analysis of Solar Legislation—Taxes and Easements," Land and Water Law Review, vol. 14 no. 2, 1979, pp. 393-417.

See STATE LEGISLATION AND PROGRAMS for abstract.

Berryhill, W. Wade; Parcell, William H. III, "Guaranteeing Solar Access in Virginia," University of Richmond Law Review, vol. 13 no. 3, 1979, pp. 423-454.

Available from: Local law library.

Analysis of the Virginia Solar Easements Act is this article's most distinctive contribution to the body of solar access literature. Beginning sections of the article provide a brief overview of the energy problem, a technical description of solar collectors, and a list of traditional remedies and strategies for obtaining solar access.

Express easements are explicitly incorporated into the Virginia Solar Easements Act of 1978, which also seeks to indicate precise mathematical dimensions, in vertical and horizontal angles, of the solar easement. The authors believe that these two features of the act provide important benefits to solar users. They are related because the easement provides certainty for the parties involved, both in terms of the easement itself and in terms of the specific dimensions covered by the easement. The article includes illustrations and charts indicating the sunlight angles considered in the act.

Burhans, John T., "The Legislative Response to Solar Access: A Lesson for Michigan," Detroit College of Law Review, vol. 1979 issue 1, 1979, p. 261.

Available from: Local law library.

A number of states have sought indirect protection for solar access rights, since U.S. courts have generally not recognized a right to sunlight. The author examines a number of solar access strategies and analogies (television and radio, water law, airspace rights) and legislative approaches to the problem (solar easements, solar zoning, and New Mexico's water law approach). He strongly approves of the Minnesota and Oregon statutes because they utilize a comprehensive approach involving easements, zoning, and land-use planning. The author also criticizes approaches—including Michigan proposals—that provide an absolute solar access priority at the expense of other land-use goals.

Central Naugatuck-Valley Regional Planning Agency, Overcoming Land Use Barriers to Solar Access: Solar Planning Recommendations for Local Communities, Waterbury, CT: Central Naugatuck Valley Regional Planning Agency, February 1980.

See LAND USE for abstract.

Cohan, Marc, "The Right to Light: A Comparative Approach to Solar Access," Brooklyn Journal of International Law, vol. 4, 1978, pp. 221-245.

Available from: Local law library.

An international survey examines three traditions concerning right-to-light strategies for securing solar access. The English common-law Doctrine of Ancient Lights is considered inadequate because it does not vest the solar user with an immediate right (the right is acquired over time by prescription) and does not supply the user with an adequate remedy for deprivation of sunlight. For example, the owner of the servient tenement could obstruct the dominant owner's solar access and thus deny him or her the number of years of access necessary to acquire the prescription. The French nuisance approach is criticized because the aggrieved landowner would have to overcome the defense of hypersensitivity (which holds that if the plaintiff landowner is using her or his land in a way that is more susceptible to the alleged injury, that use will not be protected), and the solar user would have to sue to attain the right to light. The author approves of the Japanese zoning system for a number of reasons: it provides for uniformity of application, relieving the individual solar user of the burden of bringing suit; it confers an immediate right to sunlight rather than working by prescription; and it provides a sophisticated mechanism for resolving grievances.

Engel, David, "Developing Solar Land-Use Plans," Idea: The Journal of Law and Technology, vol. 19 no. 1, 1977, pp. 45-51.

See LAND USE for abstract.

Gergacz, John William, "Solar Energy Law: Easements of Access to Sunlight," New Mexico Law Review, vol. 10 no. 1, 1979-80, pp. 121-168.

Available from: Local law library.

The author discusses solar access rights that individuals can obtain through express easements, prescriptive easements, and implied easements.

Solar access rights obtained by express easements are created by words of conveyance or grant, or by contract or lease. However, problems exist because of the expense involved and the need for careful drafting.

Prescriptive easements are created through long-term use of an easement in an open, notorious, visible, and uninterrupted manner. Such easements traditionally have not been accepted for light and air. However, the author maintains that prescriptive easements should apply to solar access in residential areas because of the public policy behind the need to develop alternative energy sources. In urban areas, the author maintains, presciptive easements are unsuitable since such areas are still being developed and altered frequently.

An implied easement is created at the time of conveyance of a parcel of land from one individual to another if the easement is visible, is known to the parties, and is necessary for the reasonable use of the conveyed land. Courts are divided on the issue of implied creation of air and light easements with those courts that do grant implied light and air easements because of public policy. The same theory could be applied to solar access, although the impact of this method would be relatively small.

The article concludes that it is essential for the user of solar power to secure legal rights for access to the sun and that an easement is one method of doing so.

Goble, Dale D., "Solar Access and Property Rights: Reply to a 'Maverick' Analysis," Connecticut Law Review, vol. 12 no. 2, 1980, pp. 270-294.

Available from: Local law library.

A dispute over the nature and legitimacy of the "free market" is at the heart of this article, a response to Professor Stephen Williams' article and property "Solar Access and Property Rights: A Maverick Analysis." In his analysis of property rights and solar access, Williams is accused of applying blind faith in the operation of a perfect market. The author disputes both "perfection assumptions" and "neutrality assumptions," which, he maintains, underlie Williams' concept of the market. He believes that market perfection is disproved by economic agents' imperfect knowledge of market conditions, externalities (effects on other persons which the agent does not include in cost calculations), and transaction costs. The author also asserts that the concept of a neutral, value-free market is based on tautological reasoning and only serves to perpetuate the economic status quo. In this context, he specifically examines and criticizes Williams' treatment of nuisance law and prior appropriation doctrine in solar access issues.

Grout, Deborah, "Access to Sunlight: New Mexico's Solar Rights Act," Natural Resources Journal, vol. 19 no. 4, 1979, pp. 957-968.

Available from: Local law library.

The article reviews the New Mexico Solar Rights Act, which is based on concepts of beneficial use and prior appropriation, similar to New Mexico water law.

Several problems have arisen in the two-year history of the act. The author maintains that once the requirement of beneficial use is fulfilled, the solar right is absolute. An absolute solar right may be unconstitutional since it might so diminish the value of neighboring property that would constitute a taking of property without just compensation in violation of the fifth amendment. Another constitutional attack on the Solar Rights Act might be based on the ancient domain power that the act grants to political subdivisions to create a solar right.

The act also lacks specificity in provisions concerning permit systems and recordation. Some of these flaws would have been corrected by a bill that was introduced in the 1979 legislative session; however, after passing the House, the bill stalled in the Senate.

A condensed version of this article appears in New Mexico Law Review, vol. 10 no. 1, 169 1979-80, p. 169.

Hayes, Gail Boyer, "Out of the Shadows: Solar Access Laws," Environment, vol. 21 no. 7, September 1979, pp. 15-20.

Available from: Local library.

The article examines several approaches to securing access to sunlight by solar energy systems and makes recommendations about some government strategies to help provide

solar access. The author maintains that zoning, easements, and restrictive covenants are all imperfect mechanisms for obtaining solar access.

While asserting the need for legislation, the author clearly expresses a preference for laws that provide area-wide protection for solar access as opposed to lot-by-lot protection and for local laws over state and national ones.

Hayes, Gail Boyer, "The Quid Pro Quo for Sunshine," Idea: The Journal of Law and Technology, vol. 19 no. 1, 1977, pp. 35-43.

Available from: Local library.

The author maintains that "contrary to popular belief, sunshine will not be a free fuel." The article deals with a wide range of solar access issues and considers proposed federal and state legislation, including state bills that incorporate building permit and solar easement approaches. Federal legislation that would create an absolute solar right is criticized for a variety of reasons: it would preempt state authority; it does not define solar energy equipment; it contains no enforcement provisions; it would benefit "lucky individuals" because of its "first come, first served" nature; it would force premature development; and it would take property without compensation.

Jaffe, Martin, "Multinationals, Utilities, and Little Guys Vie for the Sun," Planning (ASPO), vol. 44 no. 3, March 1978, pp. 22-26.

See SOLAR HEATING AND COOLING for abstract.

Klepper, Martin, "Solar Energy: Myth or Reality," Real Estate Review, vol. 10 no. 1, 1980, pp. 27-30.

See SOLAR HEATING AND COOLING for abstract.

Lamm, David, Photovoltaic Commercialization: An Analysis of Legal Issues Affecting a Government-Accelerated Solar Industry, Golden, CO: Solar Energy Research Institute, June 1980, SERI/TR-434-423.

See PHOTOVOLTAICS for abstract.

Ontario Ministry of Energy, Perspectives on Access to Sunlight, Toronto, Ontario, May 1978.

Available from: Local library.

The study discusses the existing "law of light" in Ontario and lists advantages and disadvantages of several strategies for ensuring solar access. Discussed are private agreement, the doctrine of ancient lights (prescriptive easements), prior appropriation, restrictive covenants, solar zoning, shade control, site certification, municipal acquisition of solar rights, and natural solar rights.

In particular, the article asserts that authority for some aspects of zoning is found in Section 35 of The Planning Act of Ontario and states that "solar zoning is, potentially, the principal long-term tool for the general protection of solar access" in Ontario.

Rejected for use in Ontario are prescriptive easements, prior appropriation, and natural solar rights. Accorded an ambiguous status are private agreement, shade control, site certification, and municipal solar rights. Restrictive covenants are considered useful.

Williams, Stephen F., "Solar Access and Property Rights: A Maverick Analysis," Connecticut Law Review, vol. 11, 1979, pp. 430-458.

Available from: Local law library.

The author argues that the standard article on solar access determines that existing common law property definitions are an obstacle to the use of solar energy, then suggests that they be swept away conceptually and constitutionally. The author recommends a more balanced approach: one that considers solar access to be just one of many factors in evaluating land use. This approach would maximize the value of all resources when solar access conflicts with other land uses. The author considers possible modification of property doctrines to facilitate solar energy use both through the courts and congressional enactments; and suggests that, although voluntary agreements that guarantee solar access usually reflect the market value of other rights foreclosed by such agreements, because of the cost of negotiation itself, not all otherwise desirable agreements will be entered into. Furthermore, such factors as price controls on fossil fuels and the value of increased national security from decreased reliance on fossil fuels may not be accurately reflected in the marketplace, masking the true value of solar energy and, therefore, the value of solar access rights.

The author discusses nuisance doctrine, spite fences, prescription, and the possiblity of applying water law appropriation doctrine to solar access rights. Finally, there is a short note on solar zoning.

SECTION 18.0

SOLAR HEATING AND COOLING

Jaffe, Martin, "Multinationals, Utilities, and Little Guys Vie for the Sun," Planning (ASPO), vol. 44 no. 3, March 1978, pp. 22-26.

Available from: Local library.

The solar industry comprises a wide variety of participants, from do-it-yourself homeowners, to small companies, to huge corporations. The primary technological competition in the industry will be between small companies and large multinationals, including oil companies, in the context of government involvement. This involvement takes the form of establishing incentives (tax incentives and demonstration grants) and performance standards for equipment. Utilities will also play a considerable role in solar development, possibly by providing the solar equipment itself. Utility rates necessarily affect solar users who are connected to the electric power grid. The article also examines the solar access issue.

Klepper, Martin, "Solar Energy: Myth or Reality," Real Estate Review, vol. 10 no. 1, 1980, pp. 27-30.

Available from: Local library.

Rising energy costs have interested many property managers in solar energy. They want to learn about the nature of the solar technologies and about solar economics (life-cycle costing and governmental incentives). The author speaks to this constituency in the article and discusses these areas. The article also provides a short examination of the solar access issue.

Lish, G. Rex; Marks, Barry R., "Survey of the Attitude of Appraisers Toward Solar Energy Systems," The Appraisal Journal, vol. XLVII no. 1, January 1979, pp. 106-109.

See FINANCING AND INSURANCE for abstract.

SECTION 19.0

STANDARDS

Holton, John K., "Establishing Technical Standards for Solar Installations," Idea: The Journal of Law and Technology, vol. 19 no. 1, 1977, p. 25.

Available from: Local library.

The Solar Heating and Cooling Demonstration Act of 1974 mandated the development of both interim and definitive performance criteria for solar heating and combined heating and cooling components. The National Bureau of Standards, with the Energy Research and Development Administration and the Department of Housing and Urban Development, carries out programs to implement the act's mandate. Activities involve the creation of a standards development plan, work with the American National Standards Institute, and development of thermal performance standards, materials standards, building code standards, and performance criteria and standards.

Lamm, David, Photovoltaic Commercialization: An Analysis of Legal Issues Affecting a Government-Accelerated Solar Industry, Golden, CO: Solar Energy Research Institute, June 1980, SERI/TR-434-423.

See PHOTOVOLTAICS for abstract.

SECTION 20.0

STATE LEGISLATION AND PROGRAMS

Adams, Russell J., "An Analysis of Solar Legislation—Taxes and Easements," Land and Water Law Review, vol. 14 no. 2, 1979, pp. 393-417.

Available from: Local law library.

The article provides an overview of state legislation designed to provide incentives for a solar transition. Covered are property tax, sales tax, income tax, and corporate tax incentives. A shorter section deals with solar access laws, primarily in the form of easements. Particular state laws are briefly discussed in the relevant sections, and the article includes two charts, one a description of existing state legislation by category (including product quality; zoning, planning, and construction; taxes; and easements) and another dealing with personal income tax incentives.

Beyard, Michael D.; Weiss, Stuart, (PRC Energy Analysis Company), Survey of State Legislative Programs That Include Passive Solar Energy, Washington, DC: U.S. Department of Energy, draft working paper, April 1979.

See PASSIVE SOLAR HEATING AND COOLING for abstract.

Burhans, John T., "The Legislative Response to Solar Access: A Lesson for Michigan," Detroit College of Law Review, vol. 1979 issue 1, 1979, p. 261.

See SOLAR ACCESS for abstract.

"California Orders Its Utilities To 'Unsell' Energy," Business Week, no. 2638, May 26, 1980, pp. 167, 171, 175-76.

See UTILITIES for abstract.

Gergacz, John William, "Solar Energy Law: Easements of Access to Sunlight," New Mexico Law Review, vol. 10 no. 1, 1979-80, pp. 121-168.

See SOLAR ACCESS for abstract.

Goodnight, Jill A.; King, Sarah T. (Pacific Northwest Laboratory), The Role of Government in Solar Energy Development: A View from the Northwest, Washington, DC: U.S. Department of Energy, August 1978, PNL-2784.

Available from: Local library; NTIS, Report No. PNL-2784/UC-594.

Focusing on the Northwest, the report includes economic feasibility studies, a discussion of public policy issues (including the case for federal assistance to the solar industry and to the consumer), descriptions of solar-related activities undertaken by Northwest states, and the role of municipal governments.

The feasibility section asserts a need for further analysis, including performance monitoring of active and passive systems in a variety of locations. The public policy section states that homeowners without solar subsidies will be disadvantaged by using solar systems given the relatively cheap cost of hydroelectric power.

The states section discusses Oregon, Idaho, Washington, Montana, and Western SUN. State tax incentives and educational programs receive particular attention. It also deals with utility regulation. The municipal section focuses on building codes and solar access.

Grout, Deborah, "Access to Sunlight: New Mexico's Solar Rights Act," Natural Resources Journal, vol. 19 no. 4, 1979, pp. 957-968.

See SOLAR ACCESS for abstract.

Hayes, Gail Boyer, "The Quid Pro Quo for Sunshine," Idea: The Journal of Law and Technology, vol. 19 no. 1, 1977, pp. 35-43.

See SOLAR ACCESS for abstract.

Kiphut, A. D.; Philbrick, D.; Isaak, D., "Oregon's Solar Tax Credit Program: Actual Cost and Estimated Performance of Passive Solar Installation," in Proceedings of the 3rd National Passive Solar Conference of the American Section of the International Solar Energy Society, vol. 3, San Jose, CA, January 11-13, 1979; Killeen, TX: American Section of the International Solar Energy Society, 1979, p. 73.

See PASSIVE SOLAR HEATING AND COOLING for abstract.

McGuigan, Leigh, Legal Issues Affecting the Development of Low-Head Hydroelectric Power, Golden, CO: Solar Energy Research Institute, June 1980, SERI/TR-434-373.

See SMALL-SCALE HYDRO for abstract.

Rose, Dietmar W.; Olson, Karen, "Social, Economic and Environmental Impacts of a 25-MW Wood-fueled Power Plant," Journal of Environmental Management, vol. 9 no. 2, September 1979.

See BIOMASS for abstract.

Shulock, Charles M., Evaluation of State Incentives to Encourage the Residential Use of Solar Energy in California, Livermore, CA: Lawrence Livermore Laboratory, June 1978.

Available from: Local library; NTIS, Report No. UCRL 15006.

Three dimensions of state activity are discussed in the report: Should the state do anything? If so, how should it be done? Who should do it? The author distinguishes "benefits of solar development" from "value ascribed by the political system to the benefits of solar development." Key actors in this decision making process are discussed: solar advocates, the state legislature, the solar industry, utility companies, and the governor.

In dealing with the timing of solar development, the author maintains that consumers may postpone making solar investments under conditions of technical change. The author lists several criteria for evaluating incentive programs: political feasibility, flexibility, cost, effectiveness, and equity.

Solar Energy Research Institute, State Solar Energy Incentives Primer: A Guide to Selection and Design, Golden, CO: Solar Energy Research Institute, December 1979, SERI/SP-434-470.

Available from: Local library; NTIS, Report No. SERI/SP-434-470, PC, $4.00, MF, $3.00.

This booklet, a product of SERI's State Incentives Project, examines both financial and nonfinancial incentives and barriers to solar energy development. It delineates advantages and disadvantages of options such as income tax rebates, credits, and deductions and loan, property tax, and sales tax incentives. A section on solar energy program development deals with planning, research, development, and demonstration programs; institutional barrier mitigation; and information outreach efforts. A final reference section lists state legislation, organizations, and publications of potential use to the reader.

SolarCal Council, Toward A Solar California: The SolarCal Council Action Program, Sacramento, CA: SolarCal Council, January 1979.

Available from: Local library.

Appointed on Sun Day 1978 by Governor Edmund G. Brown, Jr., the SolarCal Council is composed of representatives of the solar industry, community groups, labor unions, utilities, local governments, and solar advocates. This document contains a general review of the prospects for solar energy in California and the SolarCal Action Program and a list of 46 recommendations for federal, state, and local governments and the solar industry. General areas dealt with by the program are financing, consumer assurance, public information, job development, public facilities, federal actions, and local actions. Specific recommendations are: the Public Utilities Commission should initiate solar system financing by utilities, the state should investigate the feasibility of municipal solar utilities, the state should propose a solar financing authority, the federal government should expand the national tax credit, and local governments should experiment with solar codes.

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SECTION 21.0

TAX LAW

Donovan, William, "Creating Financial Incentives for the Development of a Commercial Solar Energy Industry," Idea: The Journal of Law and Technology, vol. 19 no. 1, 1977, pp. 17-23.

Available from: Local library.

Opening with the question "why incentives?" Donovan notes that it is easier for a family to budget a monthly oil bill than to obtain $5,000 to $15,000 to buy a solar energy system. After discussing energy problems in general, the author deals with then-current (1977) federal programs and lists three solar tax credit programs then pending in Congress.

McDonald, Stephen L., "The Energy Tax Act of 1978," Natural Resources Journal, vol. 19 no. 4, 1979, pp. 859-869.

Available from: Local library.

A factual overview of the provisions of the Energy Tax Act of 1978, providing a variety of tax incentives designed to encourage residential and transportation energy savings, is combined with a polemic against use of tax incentives in most circumstances. The author maintains that incentives tend to produce inefficiency in resource allocations by encouraging individual investments to exceed the point at which social benefit coincides with individual benefit. He recommends instead tax neutrality and uncontrolled oil and gas prices.

"Tax Credits That Could Save Industry Billions," Business Week, no. 2631, April 7, 1980, pp. 107-110.

Available from: Local library.

This short article describes some effects of tax credits included in the windfall profits tax legislation. The magazine reports that the credits—nearly all of them for alternative energy—are controversial, as is the tendency of Congress to use tax legislation to channel spending into certain areas. The article describes the mechanism of various types of credits and concludes that administrative problems with the credits may necessitate IRS regulations.

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SECTION 22.0

TORT LIABILITY

McGuigan, Leigh, Legal Issues Affecting the Development of Low-Head Hydroelectric Power, Golden, CO: Solar Energy Research Institute, June 1980, SERI/TR-434-373.

See SMALL-SCALE HYDRO for abstract.

Noun, Robert J., Product Liability and Small Wind Energy Conversion Systems (SWECS): An Analysis of Selected Issues and Policy Alternatives, Golden, CO: Solar Energy Research Institute, December 1979, SERI/TR-354-365.

See WIND RESOURCES for abstract.

Overdorf, John, Legal Issues Arising from Passive Solar Energy Systems, Golden, CO: Solar Energy Research Institute, June 1980, SERI/TR-434-423.

See PASSIVE SOLAR HEATING AND COOLING for abstract.

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SECTION 23.0

UTILITIES

Ain, Ross D., "PURPA: Federal Energy Policy Impacting on the State Regulatory Domain," Public Utilities Fortnightly, vol. 104 no. 8, October 11, 1979, pp. 69-73.

See FEDERAL LEGISLATION AND PROGRAMS for abstract.

Berger, Glenn J., The Legal and Regulatory Framework for the Interface of a Wood-Fired Power Plant and the Electric Power Grid in Vermont, Hanover, NH: Dartmouth College, December 1977.

See BIOMASS for abstract.

"California Orders Its Utilities To 'Unsell' Energy," Business Week, no. 2638, May 26, 1980, pp. 167, 171, 175-76.

Available from: Local library.

California is performing an experiment in conservation and alternative energy that may have important implications for the rest of the country. The State Public Utilities Commission has promulgated a series of decisions ordering utilities to finance installation of insulation and conservation equipment in customers' homes, provide $600 million in low-interest loans to equip 500,000 homes with solar water heaters, and purchase power from cogeneration sources or alternative energy producers. Reaction from utilities spokespersons has been mixed: some express opposition to apparent political interference in their affairs; some maintain that these steps give utilities an opportunity to utilize a previously untapped resource. The article also discusses possible supply uncertainties and the impact of such policies on decisions by business to locate in California.

Edelman, Richard A.; Bongiorno, Sal, "Cogeneration—A Viable Alternative," Public Utilities Fortnightly, vol. 104 no. 12, December 6, 1979, pp. 36-43.

Available from: Local library.

While concentrating to a large extent on technical, thermodynamic considerations favoring development of cogeneration (the production of electricity and steam heat at the same site), the article touches on legal and institutional issues. These include regulatory constraints (the extent to which industrial cogeneration plants are exempt from federal and state regulations) and tax policy (the National Association of Manufacturers has called for an investment tax credit and a depreciation write-off). A variety of power sources can be used in cogeneration: wood, coal, oil, solar, and hydropower.

Fegan, George R.; Percival, C. David, Planning for Electric Utility Solar Applications: The Effects on Reliability and Production Cost Estimates of the Variability in Demand, Golden, CO: Solar Energy Research Institute, January 1980, SERI/TP-351-545.

Available from: Local library; NTIS, Report No. SERI/TP-351-545.

The article attempts to redress a methodological imbalance: previous studies have shown the necessity of considering hourly variability in the output from the intermittent generation source but did not deal with variability in demand. The term "variability in demand" is defined more precisely as variability due to randomness or to forecasting uncertainty.

Freeman, John K., "Utility Alternatives for Solar Energy," Public Utilities Fortnightly, vol. 101 no. 1, January 5, 1978, pp. 20-23.

Available from: Local library.

The author sets forth possible utility responses to the use of residential solar energy. He identifies four possible economic strategies for utilities to adopt, ranging from a hands-off policy to a policy of treating the customer's solar installation as utility property. Legal and regulatory issues include state regulatory statutes, federal antitrust laws, the Public Utility Holding Company Act, the Natural Gas Act, financing, and depreciation and tax credits.

Gallup, Robert B.; Trommershausen, William E., "Bringing in the Wind," Public Power, vol. 37 no. 5, September-October 1979, pp. 14-19.

See WIND RESOURCES for abstract.

Gilmer, Robert W.; Meunier, Richard E., "Electric Utilities and Solar Energy: The Service Contract in a New Social Context," Mercer Law Review, vol. 30 no. 2, 1979, pp. 377-394.

Available from: Local law library.

In the context of examining the historical development of the electric utility industry, with its emphasis on economies of scale and capital-intensive centralization, the authors conclude that decentralized solar energy should not become highly integrated with utilities for a number of reasons. These include utilities' restrictive legal and regulatory environment; utilities' historical emphasis on management of large, centralized projects; potential discrimination of utilities against solar users in planning electric grids; potential inhibition of innovation in energy delivery; and the fact that utilities are already burdened with economic problems. The authors do recommend rate structure reform, including adoption of increasing block rates and application of peak-use charges to users of solar energy as well as all other customers.

ICF, Inc., Technical Institutional and Economic Analysis of Alternative Electric Rate Designs and Related Regulatory Issues in Support of DOE Utility Conservation Programs and Policy. Volume III. Economic Analysis, Washington, DC: U.S. Department of Energy, May 1979.

Available from: NTIS, Report No. HCP/B8681-01/3, PC $12.00, MF $3.00.

The report analyzes five rate designs: rates for industrial cogeneration customers, flattened rates, residential demand-energy rates, rates for hydro constrained utilities, and rates for load management. The data base of the analyses consists of six "synthetic"

utilities, which are "aggregated data" for utilities in six widely varying states. Six assumptions on which the analyses are based are listed. The summary of results is divided into three sections: seven cost-based rate design guidelines, seven customer effects, and eight utility effects.

The cost-based rate design guidelines include conducting a cost study and choosing a particular rate form from the beginning. Customer effects include the findings that flattened rates, demand-energy rates, and time-of-day rates would increase the electric bills of larger weather-sensitive customers if they do not alter their usage of electricity and that the relationship between marginal and embedded costs varies from one utility to another. Utility effects include the findings that effects of new rate forms depend on the number of customers placed on the new rate form and that current price elasticity data are insufficient to make precise estimates of the effects of rate flattening.

ICF, Inc., Technical Institutional and Economic Analysis of Alternative Electric Rate Designs and Related Regulatory Issues in Support of DOE Utility Conservation Programs and Policy, Vol. II. Foreign Rate Survey, Washington, DC: U.S. Department of Energy, May 1979.

Available from: Local library; NTIS, Report No. HCP/B8681-01/2, PC $6.00, MF $3.00.

The report is based on information from Australia, Canada, Finland, Israel, Japan, New Zealand, Norway, Sweden, the United Kingdom, and West Germany. The survey includes: electric rates that apply to back-up electricity for solar space and/or water heating units; electric rates that contain demand (kW) charges for residential customers; electric rates that contain flat energy charges for residential customers; electric rates to residential, commercial, and industrial customers who allow the utility to control part or all of their loads; electric rates that apply to customers who cogenerate part or all of their electricity, and the prices paid by utilities for purchases of cogenerated electricity from these customers; and electricity rates offered by energy-constrained electric utilities that rely primarily on hydropower.

ICF, Inc., Technical Institutional and Economic Analysis of Alternative Electric Rate Designs and Related Regulatory Issues in Support of DOE Utility Conservation Programs and Policy, Volume I. Domestic Rate Survey, Washington, DC: U.S. Department of Energy, May 1979.

Available from: Local library; NTIS, Report No. HCP/B8681-01/1.

This survey reviews six major types of rates: electric rates that apply to back-up electricity for solar space and/or water heating systems; electric rates that contain demand (kW) charges for residential customers; electric rates that contain flat or flattened energy charges for residential customers; electric rates to residential, commercial, and industrial customers who allow the utility to control part or all of their loads; electric rates that apply to customers who cogenerate part or all of their electricity, and prices paid by the utility for purchases of cogenerated electricity from the customer; and electric rates offered by energy-constrained electric utilities that rely primarily on hydropower. Examples are given of rates currently provided by various utilities in the United States.

Jaffe, Martin, "Multinationals, Utilities, and Little Guys Vie for the Sun," Planning (ASPO), vol. 44 no. 3, March 1978, pp. 22-26.

See SOLAR HEATING AND COOLING for abstract.

Kirschten, Dick, "What Role Will the Utilities Play in Harnessing the Sun's Energy?" National Journal, vol. 11 no. 40, 1979, pp. 1636-1640.

Available from: Local library.

The article describes the often antagonistic relationship between electric utilities and solar energy advocates and the tentative attempts to heal the enmity, including initiatives by utility executives. Regional policy meetings held by the Carter Administration to solicit public views on solar energy established that many solar energy supporters desire alternative energy precisely because they believe it cannot be controlled by centralized utilities. Utilities, on the other hand, are concerned that solar equipment should include storage capacity to alleviate their load management problem. Utility executives and the Harvard Business School energy team have both appealed for awareness of the complexities of the issue.

Koger, Robert K., "Regulatory Constraints on Solar Energy and Thermal Storage Installations," Public Utilities Fortnightly, vol. 101 no. 2, January 19, 1978, pp. 9-12.

Available from: Local library.

Focusing on North Carolina, where he has been chairman of the utilities commission, the author deals with the questions of back-up power for solar residential customers and time-of-day pricing. He concludes that, given a time-of-day pricing system and current costs of solar panels, solar heating systems with electrical backups will not be economical in the near future in North Carolina.

Lamm, David, Photovoltaic Commercialization: An Analysis of Legal Issues Affecting a Government-Accelerated Solar Industry, Golden, CO: Solar Energy Research Institute, June 1980, SERI/TR-434-423.

See PHOTOVOLTAICS for abstract.

Lotker, Michael; et al. (Booz, Allen and Hamilton, Inc.), Economic Incentives to Wind Systems Commercialization, Washington, DC: U.S. Department of Energy, August 1978, DOE/ET/4053-78/1.

See WIND RESOURCES for abstract.

Maidique, Modesto A.; Woo, Benson, "Solar Heating and the Electric Utilities," Technology Review, vol. 82 no. 6, May 1980, pp. 24-33.

Available from: Local library.

The authors take a strong position in favor of utility involvement in solar heating. The article briefly reviews the history of electric utility growth profitability and notes recent economic problems faced by the industry. Of particular concern to utilities is the possible effect that solar energy use may have on peak loads, particularly for winter-peaking utilities. However, the authors believe that solar energy will help utilities in the long run: solar energy may help the utilities obtain rate reform, and solar installations may give utilities the opportunity to build capacity in small steps, thus avoiding large investments that may never be recovered.

McGuigan, Leigh, Legal Issues Affecting the Development of Low-Head Hydroelectric Power, Golden, CO: Solar Energy Research Institute, June 1980, SERI/TR-434-373.

See SMALL-SCALE HYDRO for abstract.

Miller, Alan S.; Stambler, Barrett, "Plugging Into the Sun," Solar Age, vol. 5 no. 8, August 1980, pp. 99, 100.

See FEDERAL LEGISLATION AND PROGRAMS for abstract.

Ricci, Claudia, "Solar-Energy Conflict Ahead: Utilities Versus Do-It-Yourselfers," California Journal, vol. 8 no. 3, March 1977, pp. 91-93.

Available from: Local library.

Focusing entirely on energy politics in California, Ricci emphasizes work of the State Energy Resources Conservation and Development Commission. Attention is given to the potential conflict between advocates of decentralized energy and utilities seeking to become involved in the field through ownership and leasing of equipment.

Rice, Michael, An Analysis of PURPA and Solar Energy, Golden, CO: Solar Energy Research Institute, March 1980, SERI/TR-434-484.

See FEDERAL LEGISLATION AND PROGRAMS for abstract.

Rittenhouse, R. C., "Solar Power and Conservation: Helping to Carry the Load," Power Engineering, vol. 84 no. 3, March 1980, pp. 38-46.

Available from: Local library.

Power Engineering surveyed staff of 105 utility companies on their attitudes toward solar energy and conservation activities by utilities. Questions asked included: whether utilities are selling or leasing solar equipment; what types of customers are involved in the utilities' solar programs; whether utilities are involved in windpower; and whether the staff believe that it is in the best interest of utilities to promote solar energy. Seventy-five percent of the respondents answered the last question affirmatively.

Solar Energy Research Institute; California Energy Commission; Western Solar Utilization Network, Biomass Energy Conversion Workshop for Industrial Executives, Claremont, CA, April 9-10, 1979, SERI/TP-62-299.

See BIOMASS for abstract.

White, Mary Ray, "Solar Investments by a Municipal Utility," North Dakota Law Review, vol. 55, 1979, p. 409.

Available from: Local law library.

The author combines an overview of utility participation in solar energy, including loan and leasing programs, with an examination of a municipally owned utility in Colorado Springs, Colorado. This utility is examined as a hypothetical example to see what specific issues a municipal utility might encounter as it becomes involved with solar energy. Some issues are: antitrust problems (on both federal and state levels); state powers to encourage or compel builders to include solar systems and provide solar access; municipal powers to do the same and take more active steps to encourage use of, or directly provide, solar systems; and financing issues involving bonds.

The author maintains that revenue bonds are the best possible form of bond for this purpose and urges that Colorado Springs take steps to become a model solar-involved utility.

Woodley, Neil H., Solar Energy Perspectives for Public Power, Golden, CO: Solar Energy Research Institute, June 1979, SERI/TP-35-300.

Available from: Local library; NTIS, Report No. SERI/TP-35-300.

This report was presented in Seattle at the National Conference of the American Public Power Association in June 1979. It consists of a speech given by Neil Woodley, formerly manager of the Utilities and Industry Division of the Solar Energy Research Institute and an appendix article by Michael Noland entitled "Solar Energy: Practice and Prognosis."

Woodley's presentation to utility representatives asserted that unrealistically high public expectations may impede solar energy development. He suggested that industry decision-makers participate in studies of the applications of solar technologies to their systems, participate in federally funded studies, and collect data on solar resources in their service areas. Woodley also discussed various programs currently involving public utilities and wind energy conversion systems, biomass conversion systems, solar thermal and ocean thermal energy conservation systems, photovoltaics, and solar heating and cooling systems.

SECTION 24.0

WARRANTIES

Noun, Robert J., Legal Aspects of Coatings for Solar Collectors, Golden, CO: Solar Energy Research Institute, October 1979, SERI/TP-354-446.

Available from: Local library; NTIS, Report No. SERI/TP-354-446.

Presented at the AES Second Coatings for Solar Collectors Symposium in St. Louis in October 1979, the report identifies a number of legal issues that may be involved when solar collector manufacturers have their panels coated by electroplaters. These issues include whether application of a coating to a solar collector is a good or a service; how an electroplater can be held accountable for the product if the transaction is defined as a service; what is required under the Uniform Commercial Code and the Magnuson-Moss Warranty Act if the transaction is defined as a good; and whether the ultimate consumer of a solar collector could recover damages directly from the electroplater.

Overdorf, John, Legal Issues Arising from Passive Solar Energy Systems, Golden, CO: Solar Energy Research Institute, June 1980, SERI/TR-434-423.

See PASSIVE SOLAR HEATING AND COOLING for abstract.

Wright, Harry R. Jr., "The Sales-Service Dichotomy: A Roadblock to Consumer Acceptance of Domestic Solar Energy Devices," Mercer Law Review, vol. 30 no. 2, 1979, pp. 547-558.

Available from: Local law library.

The author contends that Article Two of the Uniform Commercial Code could provide warranty protection to users of solar energy devices, with one exception. Many courts have maintained that transactions in goods are not covered by the code if services (in this case, installation of the devices) are part of the contract. The author disagrees with the thrust of these decisions and urges the extension of Article Two protection to solar transactions.

SECTION 25.0

WIND RESOURCES

Divone, Louis V.; Blaunstein, Robert; et al., Commercialization Strategy Report for Large Wind Systems, Washington, DC: U.S. Department of Energy, draft, 1979, TID-28843.

Available from: Local library; NTIS, Report No. TID-28843.

This report includes a description and developmental history of large wind systems, an assessment of their commercialization readiness, and a commercialization plan. The commercialization readiness section deals with technical, market/economic, environmental, institutional, and benefit-analysis issues. The study recommends the use of wind power, if cost-effective, by the Federal Power Administration and Bureau of Reclamation.

Gallup, Robert B.; Trommershausen, William E., "Bringing in the Wind," Public Power, vol. 37 no. 5, September-October 1979, pp. 14-19.

Available from: Local library.

The article urges utilities to recognize the potential of wind power to reduce dependence on oil, coal, and nuclear energy. It describes a number of wind units operating in the United States and presents two choices in the development of wind power: the construction of a large number of small generators used to directly supply a portion of individual homes' needs, with sales of surplus electricity to the utility; or the construction of "energy farms" with large arrays of wind generators to supplement the utility's power supply. Municipal systems do not need to build wind generating stations within their city limits because they have the right to connect with other systems under the 1978 National Energy Act. The article concludes that new rate structures will be a necessary result of utility involvement in wind power.

Lotker, Michael; et al. (Booz, Allen and Hamilton, Inc.), Economic Incentives to Wind Systems Commercialization, Washington, DC: U.S. Department of Energy, August 1978, DOE/ET/4053-78/1.

Available from: Local library; NTIS, Report No. DOE/ET/4053-78/1, PC $12.50, MF $3.00.

This report is an analysis of quantitative and qualitative impacts of government-funded economic incentives on wind energy conversion systems (WECS). The report is based on the "rational man" model, which assumes that each market will operate exclusively on the basis of discounted cash flow analysis. The study attempts to analyze the impact of incentives on the following market sectors: utilities, residential, industrial, and agricultural and remote areas, as well as WECS manufacturers. The analysis also considers incentives cost to government, potential for loss of governmental control of incentives, phase-in and phase-out problems, and likely market response to selected incentives.

Market Facts—Washington, Large Wind Energy Focus Group Results, Washington, DC: U.S. Department of Energy, August 1978, EV-78-C-01-6458.

Available from: Local library, NTIS, Report No. EV-78-C-01-6458.

The focus group consisted of representatives from a variety of organizations concerned with wind power meeting for a DOE-sponsored discussion in July 1978. The respondents felt that large wind machines are technologically ready for commercialization but face several barriers: high current costs relative to other energy sources, lack of a guaranteed market, and lack of capital to prepare mass production facilities. They recommended that the federal government provide a guaranteed governmental market, remove economic barriers that prevent the utilities from adopting wind energy, promote industry R&D by allowing companies to retain patent rights, and promote arrays of smaller machines rather than use of one or two machines.

Noun, Robert J., Product Liability and Small Wind Energy Conversion Systems (SWECS): An Analysis of Selected Issues and Policy Alternatives, Golden, CO: Solar Energy Research Institute, December 1979, SERI/TR-354-365.

Available from: Local library; NTIS, Report No. SERI/TR-354-365, PC $5.25, MC $3.00.

Small Wind Energy Conversion Systems (SWECS) will play an important role in future wind energy technology. Legal issues associated with SWECS include the question of liability on the part of the system's manufacturer or seller for injury caused by the product. Recent court decisions on product liability attempt to balance the product's usefulness against its potential for harm. The author suggests that SWECS manufacturers can protect themselves by adopting product safety design review procedures that anticipate legal requirements on product safety.

The report discusses theories of product liability law (negligence, strict liability, and implied warrant of merchantability), the role of standards in estimating potential SWECS liability, the impact of potential liability on SWECS product liability insurance, and product liability prevention. The author suggests three policy options for the Department of Energy: providing SWECS safety and performance data to SWECS manufacturers, insurers, and governmental officials; assisting the private sector in developing standards; and providing technical assistance to SWECS manufacturers. Advantages and disadvantages of each approach are listed.

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BERSOHN, David L., "Securing Solar Energy Rights: Easements, Nuisance, or Zoning." See LAND USE, vol. 1, p. 53.

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