SOLAR ENERGY: THE FEDERAL PROGRAM AND CONGRESSIONAL INTEREST

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ISSUE DEFINITION

Following the oil embargo of 1973-74, the Federal Government began an aggressive solar energy development program which grew steadily through the Carter Administration to become an important component of the Federal energy effort. Under the Reagan Administration, however, an energy policy has been introduced which places greater reliance on private enterprise for energy development. As a result, Federal solar R&D has been sharply reduced, and Federal support for solar demonstrations and commercialization activities is being phased out. At issue is the effect that the pace and timing of the reduction in the Federal solar program will have on solar development and commercialization efforts in this country.

BACKGROUND AND POLICY ANALYSIS

SOLAR POWER DEFINED

There are many ways in which solar energy can be used. Some applications make use of "direct" solar energy received on the Earth each day as heat or light. Others tap "indirect" solar resources that have been collected through natural processes. Natural collection of solar energy gives rise to wind, plant growth, the hydrologic cycle, and warm surface waters in the ocean. These "indirect" solar resources can be further converted into thermal energy, electricity, or clean burning fuels.

Much of the confusion about solar's potential, its present contribution, even its Federal budget, is attributable to how the term is defined. In the narrowest sense, the term means only direct applications. These include passive applications, direct heating and cooling, swimming pool heaters, domestic hot water heaters, agriculture and industrial process heat systems, photovoltaics (solar cells), and high-temperature electric power generators. In the broadest sense it means both direct and indirect applications. The indirect applications include wind conversion systems, ocean thermal energy conversion systems, high- and low-head hydropower plants, and a wide variety of bioconversion processes, including direct wood burning and alcohol fuels derived from biomass. Currently, the U.S. meets about 5% of its energy needs from indirect solar sources -- 3% from hydropower and about 2% from wood burning. The contribution from direct sources is negligble.

Other issue briefs on solar-related topics are IB78012 -- Solar Energy from Space: Satellite Power Stations; IB74058 -- Ocean-Generated Power Ocean Thermal Energy Conversion; IB74087 -- Gasohol: The Alcohol FUels; and IB80091 -- Wind Energy.

THE FEDERAL PROGRAM AND CONGRESSIONAL INTEREST

The Arab oil embargo of 1973 sparked the establishment of a comprehensive, coordinated Federal energy program to deal with the Nation's immediate and long-term energy needs. The modest Federal effort in solar energy development that existed prior to the embargo was made part of the overall program and was greatly accelerated. During the 1970s, the Federal solar program grew rapidly to include not only basic and applied R&D, but also joint participation with the private sector in demonstration projects,

commercialization, and information dissemination.

Solar funding grew commensurately. In the 1960s and early 1970s funding for solar R&D was only a few hundred thousand dollars annually; by FY81 -- the peak funding year for solar R&D -- it had grown to $599 million (later reduced to $472 million by rescission and deferrals with $549 million finally expended). In addition to direct support for R&D and demonstrations, the Federal Government adopted market incentives such as the business and residential tax credits, and further supported solar technologies through regulatory reform in such legislation as the Public Utilities Regulatory Policy Act (PURPA). The Internal Revenue Service estimates that the indirect support provided by the solar residential and business tax credits alone will amount to $4.5 billion during the period FY79-86.

Congress has played a key role in shaping Federal programs and policies in solar energy. It took the initiative in 1974 in the absence of a coherent, long-range policy from the Administration and has led ever since through legislative initiatives and close reviews of annual budget submissions. Solar legislation enacted by the 93d Congress and succeeding Congresses forms the basis of the current Federal effort. Among these guiding statutes are the following.

- The Energy Reorganization Act of 1974 (P.L. 93-438), which consolidated functions relating to solar and other renewable energy research into the Energy Research and Development Administration (ERDA);

- The Solar Hearing and Cooling Demonstration Act of 1974 (P.L. 93-409), which established a program to demonstrate experimental prototypes of solar heating and cooling technologies for residential and commercial buildings applications and to determine their economic and technical feasibility;

- The Solar Energy Research, Development, and Demonstration Act of 1974 (P.L. 93-473), which charged ERDA with coordinating research, development, and demonstration activities of several Federal agencies (including the Atomic Energy Commission, the National Aeronautics and Space Administration, the House and Urban Development Agency, the National Science Foundation, and the Federal Power Commission);

- The Federal Nonnuclear Energy Research and Development Act of 1974 (P.L. 93-577), which established a comprehensive national program of research and development for potential alternatives to conventional energy sources, including solar, geothermal, and other renewables;

- The Solar Photovoltaic Energy Research, Development and Demonstration Act of 1978 (P.L. 95-590), which established an aggressive research, development, and demonstration program for photovoltaic systems to produce electricity that is cost-competitive with utility-generated electricity;

- The Energy Security Act of 1980 (P.L. 96-294), which created the Solar Energy and Energy Conservation Bank to provide financial assistance to a number of renewable technologies in order to encourage their commercialization;

- The Ocean Thermal Energy Conversion Research, Development, and Demonstration Act of 1980 (P.L. 96-310), which established specific national development goals for what considered the most promising of the ocean energy systems, OTEC;

- The Wind Energy Systems Act of 1980 (P.L. 96-345), which established specific program objectives for the wind energy program.

Appendix II at the end of this issue brief provides a more complete list of solar enactments.

Congress has consistently supported a broader, more aggressive solar program than any Administration in office since the Federal program took off in 1974. Every R&D, regulatory reform, tax, or other incentive bill to promote solar originated in Congress. In every year since 1974, Congress has added funds to the Administration's solar budget request. The net result of Congress's interest has been a higher priority for solar in the Federal energy R&D effort and a larger Federal role in solar commercialization than would have been expected from the Administration.

SUMMARY: REAGAN ADMINISTRATION AND 97TH CONGRESS

During the 1970s, as the Federal solar program took shape, Congress and the Administration in office were frequently at odds over program details and level of Federal support for solar. When the Reagan Administration took office in 1981, however, the gap between the two widened appreciably. The new Administration redefined the Federal role in energy R&D. Instead of concentrating on near-term product development and commercialization, the Federal effort would now focus on long-range, high-risk, potentially high-payoff projects. Demonstration and commercialization phases necessary for bringing new technologies to market would be left solely to the private sector. The Administration's new energy policy ended the long-standing trend of expanding solar budgets and expanding Federal involvement in solar commercialization.

During the two years of the 97th Congress, the Reagan Administration succeeded in dismantling much of the existing Federal solar program. Among other actions, it (1) reduced the R&D budget of every solar subprogram; (2) eliminated many demonstration and commercialization projects; (3) eliminated the four regional solar energy centers; (4) reduced the staff of the Solar Energy Research Institute by more than half and restricted its work to advanced R&D projects; (5) took actions which resulted in a substantial reduction in the scope of operation of the Solar Energy and Energy Conservation Bank; and (6) reduced the information dissemination effort. It would have gone further had Congress not intervened to restore R&D funds to many subprograms targeted for elimination and to protect certain tax incentive programs from repeal. The Administration used the authority available to it in the annual budget review process to effect the reduction and redirection of the solar program. Although there was some question that

the Administration's actions were in conflict with congressionally mandated programs -- particularly in the photovoltaic, wind, and ocean energy program areas -- its authority to reduce programs through the budget process was never seriously challenged.

Budget History

The following table summarizes the final action taken on the two solar budgets submitted to the 97th Congress by the Reagan Administration. FY81 figures are for comparison.

SOLAR R&D BUDGET HISTORY DURING 97TH CONGRESS
(in millions)

	FY81 Actual	FY82 Request	FY82 Actual	FY83 Request	FY83 Appropriatio
Solar Building Energy Research	73.3	21.8	22.1	0.0	11.6
Photovoltaic Energy Systems	151.6	62.9	74.0	27.0	57.9
Thermal Energy Systems	138.3	44.0	56.0	18.0	49.4
Biomass Energy Systems	31.7	20.5	20.5	6.6	15.9
Wind Energy Systems	77.5	19.4	34.4	5.5	31.4
Ocean Energy Systems	34.6	0.0	20.8	0.0	10.5
Solar International	10.8	4.0	4.0	9.5	10.0
Solar Energy Research Institute (construction	5.0	0.0	0.0	0.0	0.0
Solar Technology Transfer	1.4	6.7	6.7	--	3.0
Alcohol Fuels	18.0	10.0	10.0	2.9	5.0
Program Direction	6.8	4.0	4.0	2.2	5.9
Program support	0.0	0.0	3.5	0.5	1.0
Solar Reserve	0.0	0.0	12.3	0.0	0.0
TOTAL NEW BUDGET AUTHORITY	549.0	193.3	268.3	72.2	201.6

In the absence of an FY83 appropriation bill for the Department of Energy and other agencies, an omnibus budget resolution (P.L. 97-377) was enacted at the close of the 97th Congress providing for the continuation of solar funding in FY83 at the FY82 level. This was perceived as a boon for the solar program since the FY82 appropriation ($268 million) was substantially more than the Administration's request ($72 million) and more than the budget levels recommended by either House Appropriations ($180.4 million) or Senate Appropriations ($187.9 million).

The budget resolution gave the Administration great latitude in setting the final FY83 level -- anywhere from the Administration's request to the FY82 level. The Administration's FY84 budget request, submitted to Congress on Jan. 31, 1983, indicates an estimated solar budget of $201.935 million. Later budget sources indicate that the amount available in FY83 appropriations totals $201.6 million.

Solar Bank Action

The Solar Energy and Energy Conservation Bank (the Bank) was established by Title V of the Energy Security Act of 1980 (P.L. 96-294). The Reagan Administration found the Bank inconsistent with other energy policies, possibly duplicative of existing tax and loan subsidies, and a potential windfall for some eligible recipients. The Administration sought to kill the Bank before it could be implemented by requesting zero funding for FY82 and FY83. Congress was unwilling to accede to the Administration on this and appropriated $22 million and $20 million, respectively, for the two fiscal years. Congress did, however, agree to a reauthorization of the Bank through the Omnibus Budget Reconciliation Act of 1981. The reauthorization reduced the operating budget from $3.025 billion over 4 years to just $150 million over 3 years. (See section entitled 98TH CONGRESS for further action.)

98TH CONGRESS

FY84 R&D Budget

Congress received the Administration's FY84 budget request Jan. 31, 1983. It included $86.659 million for solar, which was $14.5 million more than the FY83 request, but $127.5 million less than the FY83 estimate.

The FY84 request offered few substantive changes over the FY83 request. Ocean energy was again zeroed out. Passive and active solar were folded into the broader solar thermal program rather than being zeroed out as they were in the FY83 request. Solar international, the reserve account, and program support were zeroed out this year. A $3.1 million budget line for technology transfer replaced the solar information systems budget line.

The table below shows the Administration's FY84 request and the levels appropriated in P.L. 98-50, the Energy and Water Development Appropriation Bill, 1984 (H.R. 3132). The $181.65 million appropriation is slightly above both the $180 million originally approved by the House and the Senate's $176 million. An additional $6 million, deferred in FY83, was made available for the solar thermal program and is reflected in the table. Compromise was reached on most of the differences which separated the House and Senate versions. The Senate did prevail, however, on its refusal to fund $1 million for the design of buildings at the Solar Energy Research Institute, as

contained in the House bill.

FY85 R&D Budget

The Administration has requested $163.6 million for solar R&D in FY85. While the proposed budget is 10% less than Congress appropriated in FY84, it far surpasses the FY83 ($72 million) and FY84 ($87 million) budget requests. Of note in the FY85 request, the Reagan Administration has for the first time asked for funds for the OTEC subprogram -- $3.5 million for engineering research. Funds ($0.5 million) were also requested for the first time to support international solar programs. With one exception, every subprogram was reduced by varying amounts from FY84 levels. The exception is the technology transfer subprogram which was increased by 85% over FY84.

FY84 AND FY85 SOLAR BUDGETS
(in thousands)

	FY84 DOE Request	FY84 Appropriation	FY85 DOE Request
Photovoltaic Energy Systems	32,700	50,400	47,500
Solar Thermal Energy Systems	13,575	43,850	37,500
Solar Building Energy Research	8,375	16,450	11,885
Wind Energy Systems	8,600	26,500	23,300
Biomass Energy Technology	17,300	28,400	28,100
Alcohol Fuels R&D (included under biomass)	---	---	---
Ocean Energy Systems	0	5,500	3,500
Solar International Programs	0	500	500
Solar Technology Transfer	3,100	3,250	6,000
Program Direction	3,009	6,000	4,864
Solar Program Support	0	1,000	500
Solar Energy Research Institute	0	0	0
TOTAL, SOLAR ENERGY	86,659	181,650	163,649

Solar Bank Action

For FY84 the Administration again requested zero funding for the Bank. Once again Congress rejected the request appropriating $25 million instead (P.L. 98-45), bringing to $67 million the total appropriated for the Bank through FY84.

Bank funds were allocated but not released to participating States and territories in June 1983 following publication of interim rules and regulations in the Federal Register (FR May 31, 1983: 24254-24270). By mid-November 1983 all of the FY82 appropriation and $9 million of the FY83 appropriation had been allocated. Under the interim rules the funds are being used to provide loan assistance primarily to low-income individuals for eligible energy conservation measures on residential buildings of any size and passive solar energy measures for one-to-four-family residential buildings. The interim rules made active solar energy systems ineligible for assistance.

At a Jan. 11, 1984 meeting the Bank board voted to approve final publication of the regulation governing operation of the Bank. The board also released a total of $48 million through the first two quarters of FY84 to the 45 States, DC, and two territories participating in the Bank program. Another $18 million will be apportioned during the last two quarters of FY84. States cannot draw on the Bank's funds until they have reached a cooperative agreement with the Bank on the use of the funds. As of the Jan. 11 meeting, only 26 of the participating States and territories had procedures approved by the Bank.

P.L. 98-181, the Supplemental Appropriations Act of 1984, amended the Energy Security Act to liberalize some of the restrictions imposed on recipients and equipment by the interim rules and regulations. As a result active solar energy systems, energy efficient air conditioners, and home energy audits will be eligible for Bank subsidies. In addition, P.L. 98-181 raised the ceiling on administrative costs which may enable more States to participate in the program. It also reauthorized the Bank for FY85 for "such sums as may be necessary."

For FY85 the Administration has again requested a zero budget for the Bank.

LEGISLATIVE ACTIVITY

Several major solar bills were introduced in the first session of the 98th Congress. Some of these are briefly described below. (See legislation section, below, for a more complete listing.)

H.R. 1595, the Solar Energy National Security and Employment (SENSE) Act of 1983. Bipartisen support was lined up in the 97th Congress by the Solar Lobby (contact Sam Enfield at 466-6350) and other solar support groups for introduction of the SENSE Act early in the 98th Congress. In the House the Act was introduced both as a single bill (H.R. 1595) and by separate titles (H.R. 1596-H.R. 1599); in the Senate it was introduced just by titles (S. 616-S. 619). The Act is intended to stimulate small solar businesses, extend and increase renewable energy tax credits, reauthorize the Solar Bank, establish a national strategic alcohol fuels stockpile, create jobs in the

renewable energy fields, and improve the Federal Government's renewable energy efforts. Introductory statements appear in the Congressional Records of February 23 (H604-H606), February 28 (S1741-S1752), and Mar. 9, 1983 (H1103-H1108).

H.Res. 139, to restore balance in the DOE energy program. A resolution introduced with 130 cosponsors. It calls for the Federal Government to demonstrate a commitment to energy conservation and renewables by restoring balance to DOE's proposed FY84 budget. The resolution is in response to Administration proposed cuts in conservation and renewables for FY84. An explanation of H.Res. 139 appears in the Mar. 16, 1983, Congressional Record (H1360-H1361).

S. 710/H.R. 1883, passive solar tax credits. This bill provides about a 20% tax credit subsidy ($2,500 maximum credit) to encourage builders to incorporate efficient passive solar energy systems in new construction. Introductory statements appear in the Congressional Records of March 8 (S2300) and Mar. 11, 1983 (E996).

Tax Credit Legislation

A prime objective of solar backers is the increase and extension of tax credits for solar and other renewable energy property, most of which expire at the end of 1985. Several bills to this effect are under consideration in the House and Senate.

The SENSE Act is a comprehensive bill with several tax provisions. Title I extends the business energy tax credits for all renewable energy applications through 1990. It also increases the credits for solar, wind, and geothermal applications to 25%, and the credit for hydroelectric projects to 15%. It includes an affirmative commitments provision which allows projects underway but not completed before the 1985 expiration date to remain eligible for the credit beyond 1985. Title IV extends the residential credit through 1990 and adds passive solar to the list of equipment eligible for the credit.

H.R. 1775 (Fuqua) increases the business energy credit to 25% and extends it to 1990. It also includes an affirmative commitments provision.

H.R. 3358 (Shannon) is limited to an affirmative commitments provision for solar, wind, and geothermal systems. It does not increase or extend existing credits. This bill is similar to S. 1396 but does not make synthetic fuels projects eligible for affirmative commitments.

S. 1305 (Packwood) is a comprehensive solar incentives bill having provisions similar to Titles I and IV of the SENSE Act. It includes an affirmative commitments provision. A similar bill (H.R. 3072 - Heftel) has been introduced in the House.

S. 1396 (Domenici) is similar to H.R. 3358 except that it extends the affirmative commitment provision to synthetic fuels projects.

S. I780 (Bumpers) is a redraft of selected non-tax provisions of the SENSE Act to conform to the jurisdiction of the Senate Energy and Natural Resources Committee.

H.R. 4078 (Heftel)/S. 1939 (Wallop) is a compromise measure to extend the

tax credits for renewable energy and synfuels. It pares back the credit levels originally sought by the SENSE Act, but offers considerably more than the limited-purpose bills (H.R. 3358 and S. 1396).

Summary of Action

Supporters of solar tax increases/extensions had hoped to ride a major tax bill during the first session of the 98th Congress. Those hopes were dashed when Congress ajourned without acting on an appropriate bill. Congressional and industry support appears to have coalesced around identical bills introduced by Senator Wallop (S. 1939) and Representative Heftel (H.R. 4078). These bills were a compromise between the SENSE Act and limited purpose legislation such as S. 1396 (Domenici). Looking ahead, supporters are expected to continue their efforts in the second session but are concerned that their compromise position may be further compromised by forces opposed to any measure that can be viewed as a revenue loser in a time of high budget deficits.

FEDERAL SOLAR ASSISTANCE PROGRAMS

Over the past several years the Federal Government has promoted the commercial introduction of solar technologies through various financial, educational and informational programs. Assitance has been made available to State and local organizations, private business and individuals. In addition, State governments and private sector organizations have become increasingly active in providing informational and other forms of assistance.

This section identifies some of the major current Federal assistance programs by agency. However, because the Reagan Administration is attempting to reduce Federal involvement in energy commercialization, many of the programs identified are under active review for either termination or consolidation into State-administered block grants. Consequently, the long term status of many of these programs is uncertain. For additional information on these and other Federal programs, as well as State and private sector programs, contact the Conservation and Renewable Energy Inquiry and Referral Service identified below. See also, mini brief 83210 -- The Residential Energy Tax Credits.

Internal Revenue Service (Tax Credits)

Residential Conservation Tax Credit. Limited to 15% of the first $2,000 spent, or a maximum of $300. Credit available through 1985.

Residential Renewable Energy Tax Credit. Limited to 40% of the first $10,000 spent, or a maximum of $4,000. Credit available through 1985. Eligible equipment includes solar space and water heating systems, solar cooling systems, photovoltaic systems, wind electric generators, and systems that use geothermal energy to heat or cool a home. Wood or peat burning stoves are not eligible. "Passive" solar systems, such as roof overhangs, greenhouses or extra thick walls have been ruled ineligible for tax credits by the IRS because they serve dual structural functions. Taxpayers use IRS form 5695 to file for conservation and renewable energy credits as explained

in IRS publication 903, "Energy Credits for Individuals."

Business Energy Tax Credits. Solar, wind and geothermal energy equipment eligible for a 15% tax credit through 1985. Small-scale hydroelectric equipment is eligible for a 10% credit through 1985. A 10% credit for cogeneration and other specifically defined energy property such as recouperators, heat exchangers and automatic energy control systems expired in 1982.

HUD (Grants, Loans, Insurance)

Title I: Home Improvement Loan Insurance. HUD insures up to 90% of a conventional home improvement loan made for structural alterations, repairs or additions, including installation of weatherization measures and solar hearing systems. Solar systems must be approved by HUD in advance of installation.

Section 203: Home Mortgate Insurance. Insured loans funded through HUD's Federal Housing Administration (FMA) lending authority. Down payment requirements may be less than with conventional loans. Solar homes meeting FMA inspection requirements are eligible.

Section 312: Rehabilitation Loans: Direct loans at low rates for long terms for the rehabilitation of multi-family housing. Energy conservation and solar heating installations are encouraged.

Community Development Block Grants/Entitlements (Large Cities). Cities with populations greater than 50,000 eligible for grants for use in revitalizing neighborhoods. Energy-related projects, including solar energy measures, wind conversion and district heating are encouraged.

Urban Development Action Grants. Similar to community development block grants but available to any city or urban county which meets certain economic distress criteris. Cost sharing required.

Solar Energy and Energy Conservation Bank. Legislation creating the Bank enacted in 1980. Efforts by the Reagan Administration to block the implementation of the Bank during the 97th Congress were not successful. Bank assistance became available through State institutions beginning in early 1983. Interested parties should contact their State energy offices. In its initial startup based phase, the Bank is targeting passive solar energy systems and conservation loans/grants to individuals whose incomes are too low to use the tax credit.

Department of Agriculture

Farm Ownership Loans. Farmers' Home Administration (FmHA) makes insured and guaranteed loans available for the purchase or improvement of farms. Conservation and renewable energy systems eligible for assistance, including alcohol distilleries, windmills, wood burning stoves, solar heaters and greenhouses.

Rural Housing Programs. Loans or direct grants to low income borrowers in rural areas to rehabilitate, weatherize or otherwise bring homes above minimum standards. FmHA administers the program and encourages the installation of solar heating systems.

Alcohol Fuels Loan Grant Guarantees. FmHA loan guarantees for up to 90% of the total cost of large scale facilities for the production of alcohol fuels from farm products, residues, or wood.

ACTION (Federal Agency for Citizen Voluntary Service).

Demonstration Grants Program. Projects which use volunteer services and focus on the low income community may qualify for direct grants from ACTION. Eligible energy-related activities include skill training and disseminating information on energy conservation and low-cost renewable energy technologies.

Retired Senior Volunteer Program (RSVP). Provides meaningful volunteer opportunities for persons 60 years of age or older. RSVP projects which focus on energy conservation and renewables are encouraged.

Small Business Administration

SBA has established an energy loan program to finance small business energy ventures as part of the Section 7(a) loan program. Direct and guaranteed loans available.

Other Agency Programs and Information Sources

Conservation and Renewable Energy Inquiry and Referral Service. Formerly called the National Solar Heating and Cooling Information Center, the CAREIRS is an inquiry and referral service for questions about energy conservation as well as renewable technologies, such as wind, biomass, photovoltaics, solar thermal, ocean theremal, alcohol fuels, and active and passive solar heating and cooling. CAREIRS will disseminate basic information and provide a referral service for those requiring extensive, detailed information. The toll-free telephone numbers remain the same as they were for NSHCIC. They are open from 9 a.m. to 6 p.m. Eastern time.

(800) 523-2929 continental U.S., Virgin Islands
Puerto RIco

(800) 462-4983 Pennsylvania

(800) 537-4700 Alaska and Hawaii

The Mailing address is:

Renewable Energy Information
P.O. Box 1607
Rockville, MD. 20850

Solar Energy Information Data Bank. The SEIDB is intended to serve the technical community. It answers technical inquiries, conducts seminars and workships, provides on-site usage of the comprehensive library collection, and conducts computerized information services. Computer services include modeling and simulation capabilities. Contact: Solar Energy Research

Institute, 1536 Cole Boulevard, Golden, Colorado 80401 (313-234-7171).

National solar energy education directory. A National Solar Energy Education Directory is available from the Government Printing Office at a cost of $7.00 (ask for publications number 061-000-00537-4). Published in May 1981, it lists colleges and unversities, junior colleges and vocatinal/technical schools that offer degrees and courses in solar energy and related fields. The schools are listed by State.

A solar Energy Technical Education Directory (based on the SERI directory), listing 91 post-secondary institutions offering training programs in technical fields, is available from the Conservation and Renewable Energy Inquiry and Referral Service. In addition, CAREIRS has available at no charge State-by-State educational program listings.

Additional Information

Additional information on these and other Federal and State solar energy assistance programs is available from the Conservation and Renewable Energy Inquiry and Referral Service. Also, a report entitled "ESC Guide to Solar Programs" is available from the Environmental and Energy Study Conference of the House of Representatives (3334 House Annex II, Washington, D.C. 20515).

LEGISLATION

P.L. 98-50 (H.R. 3132)

Energy and Water Development Appropriation, 1984. Provides $178.65 million for DOE solar energy programs in FY84. Reported May 24, 1983 (H.Rept. 98-217). Passed House June 7, 1983. Reported in Senate June 16, 1983 (S.Rept. 98-153). Conference report filed in House June 28, 1983 (H.Rept. 98-272). Final agreement reached June 29, 1983. Signed into law July 14, 1983.

P.L. 98-45 (H.R. 3133)

Housing and Urban Development-Independent Agencies Appropriation, 1984. Provides $25 million to HUD for the Solar Energy and Energy Conservation Bank in 1984. Reported May 24, 1983 (H.Rept. 98-223). Passed House June 2, 1983. Reported in Senate June 14, 1983 (S.Rept. 98-152).

Passed Senate amended June 21, 1983. Conference report filed June 23, 1983 (H.Rept. 98-264). Final agreement reached June 29, 1983. Signed into law July 12, 1983.

H.R. 1381 (D'Amours)

Amends the Ocean Thermal Energy Conversion Act of 1980 to provide additional authorizations. Introduced Feb. 10, 1983; referred to Committee on Merchant Marine and Fisheries.

H.R. 1595 (Wirth)

The Solar Energy National Security and Employment (SENSE) Act of 1983. Amends, extends, and enhances the renewable energy and conservation program

of the U.S. in order to increase employment, promote renewable energy small business, enhance national security, and displace imported fuels. Introduced Feb. 23, 1983; referred jointly to Committees on Ways and Means; Banking, Finance and Urban Affairs; Energy and Commerce; Small Business; Armed Services; Agriculture; Education and Labor; and Science and Technology.

H.R. 1596 (Bedell)/S. 616 (Durenberger)

Renewable Energy Small Business Development Act of 1983. Promote the use of solar and other renewable forms of energy developed by the private sector. Introduced in the House Feb. 23, 1983; referred jointly to Committees on Ways and Means; Banking, Finance and Urban Affairs; Energy and Commerce; and Small Business. Introduced in the Senate Feb. 28, 1983; referred to Committees on Finance.

H.R. 1597 (Dickinson)/S. 617 (Stennis)

Renewable energy National Security Act of 1983. Promotes the use of energy-conserving equipment and biofuels by DOD. Introduced in the House Feb. 23, 1983; referred jointly to the Committees on Armed Services, Agriculture, and Energy and Commerce. Introduced in the Senate Feb. 28, 1983; referred to the Committee on Armed Services.

H.R. 1598 (Jeffords)/S. 618 (Percy)

Renewable Energy Employment Act. Revises certain Federal training and economic development programs to create jobs and develop skills in renewable energy and energy conservation industries. Introduced in the House Feb. 23, 1983; referred jointly to Committees on Education and Labor, Banking, Finance and Urban Affairs, Energy and Commerce, and Agriculture. Introduced in the Senate Feb. 28, 1983; referred to the Committee on Agriculture, Nutrition and Forestry.

H.R. 1599 (Neal)/S. 619 (Tsongas)

Renewable Energy Consumer Incentives Act of 1983. Reauthorizes the Solar Energy and Energy Conservation Bank, extends the residential energy tax credits, coordinates Federal energy informational programs, reinstates automobile and applicance efficiency labelling standards, and standardizes PURPA contracts. Introduced in the House Feb. 23, 1983; referred jointly to Committees on Banking, Finance and Urban Affairs, Ways and Means, Energy and Commerce, Science and Technology, and Small Business. Introduced in the Senate Feb. 28, 1983; referred to the Committee on Finance.

H.R. 1775 (Fuqua)

Renewable Energy Tax Credit Act of 1983. Extends the energy investment tax credit for solar, wind, geothermal, and ocean thermal property. Introduced Mar. 2, 1983; referred to Committee on Ways and Means.

H.R. 3168 (Heftel)

Establishes eligibility for the energy tax credit for U.S. produced renewable energy equipment employed in beneficiary developing countries. Referred to Committee on Ways and Means.

H.R. 3169 (Wyden)

Renewable Energy Industry Development Act of 1983. Gives the Secretary of Commerce the responsibility for developing a comprehensive program for identifying strengths and weaknesses in U.S. competitiveness with respect to the renewable energy industry and developing a strategy for improvement. Referred to Committee on Energy and Commerce.

H.R. 3358 (Shannon)

Energy Security Tax Incentives Act of 1983. Provides an affirmative commitments provision for solar, wind, and geothermal energy property to allow projects underway and for which significant work has been done before the close of 1985 to remain eligible for the tax credits beyond 1985. Referred to Committee on Ways and Means.

H.Res. 139 (Ottinger)

A resolution to restore balance in the Federal energy budget. Introduced Mar. 23, 1983.

S. 710 (Hart)/H.R. 1883 (Fowler)

To provide a tax credit to homebuilder for the construction of residences incorporating passive solar energy features. Introduced in the Senate Mar. 8, 1983; referred to the Committee on Finance. Introduced in the House Mar. 3, 1983; referred to Committee on Ways and Means.

S. 1305 (Packwood)

Renewable Energy Tax Incentive Act of 1983. Extends the 40% residential solar, wind, and geothermal tax credit to Dec. 31, 1990; increases the business energy investment credit to 25% and extends these credits to Dec. 31, 1990; includes an affirmative commitments provision. Referred to Committee on Finance. Similar to H.R. 3072 (Heftel).

S. 1396 (Domenici)

Energy Security Tax Incentives Act of 1983. Similar to H.R. 3358 except that the affirmative commitments provision is also extended to synthetic fuels projects. Referred to Committee on Finance.

S. 1780 (Bumpers)

Solar Energy National Security and Employment Act of 1983. For committee jurisdictional purposes collects some of the non-tax provisions of the SENSE Act to allow for appropriate hearings to be held. Referred to Committee on Energy and Natural Resources.

HEARINGS

U.S. Congress. House. Committee on Banking, Finance, and Urban Affairs. Subcommittee on Domestic Monetary Policy. Hearings on H.R. 605, to establish a Solar Energy Development Bank. Hearings, 96th Congress, 1st session. May 3 and June 20, 1979. Washington, U.S. Govt. Print. Off., 1979. 208 p.

----- Subcommittee on Housing and Community Development.

Hearings on H.R. 605, H.R. 4987, and other bills to establish a solar energy development bank. Hearings, 96th Congress, 1st session. July 30 and Aug. 1, 1979.

----- Subcommittee on the City and Subcommittee on Oversight and Investigations of the Committee on Interstate and Foreign Commerce. Joint hearings on renewable energy in the city. Hearings, 96th Congress, 1st session. Oct. 17, 1979.

U.S. Congress. Committee on Energy and Commerce. Subcommittee on Energy Conservation and Power. Hearings on Administration budget cuts in conservation and solar programs. Hearings, 97th Congress, 1st session. Dec. 1, 2, and 3, 1981. 174 p.

----- Jointly with the Committees on Small Business and Education and Labor. Hearings on the renewable energy industry. Hearings, 98th Congress, 1st session. June 28, 1983.

U.S. Congress. House. Committee on Interstate and Foreign Commerce. Commerce Subcommittee on Energy and Power. Hearings on solar commercialization. Hearings, 96th Congress, 1st session. Jan. 10, 1979.

U.S. Congress. House. Committee on Merchant Marine and Fisheries. Subcommittee on Oceanography. Hearing on H.R. 1381, to amend the Ocean Thermal Energy Conversion Act of 1980 to provide for additional authorizations. Hearings, 98th Congress, 1st session. Mar. 7, 1983. (In press)

U.S. Congress. House. Committee on Merchant Marine and
----- Oversight hearing on ocean thermal energy conversions. Hearings, 96th Congress, 1st session. Sept. 20, 1979.

U.S. Congress. House. Committee on Science and Technonoloy. Oversight hearings to review Title V of P.L. 95-619, the National Energy Conservation Policy Act (relates to the conservation and solar energy in Federal buildings, and the utilization of photovoltaics in Federal facilities). Hearings, 96th Congress, 1st session. Sept. 26 and 27, 1979.

U.S. Congress. House. Committee on Science and Technology. Subcommittee on Energy Development and Applications. Hearings on tax incentives for new energy technologies. Hearings, 98th Congress, 1st session. July 1983.

U.S. Congress. House. Committee on Science and Technology. Subcommittee on Energy Conservation and Power and Subcommittee on Energy Development and Applications; Committee on Small Business. Subcommittee on General Oversight of the Economy; Subcommittee on Employment Opportunities. Committee on Education and Labor. Hearings on the status of the solar energy industry in America. Hearings, 98th Congress, 1st session. June 28, 1983. (In press)

----- Subcommittee on Space Science and Applications. Hearings

on H.R. 2335, the Solar Power Satellite Research, Development and Evaluation Program Act of 1979. Hearings, 96th Congress, 1st session. Mar. 28, 29, and 30, 1979.

----- Hearings on the President's solar goal: one year later. Hearings, 96th Congress, 2d session. June 12, 1980. Washington, U.S. Govt. Print. Off., 1980. 210 p.

----- Subcommittee on Space Science and Applications. Hearings on solar power satellite. Hearings, 96th Congress, 1st session. Mar. 28, 29, 30, 1979. Washington, U.S. Govt. Print. Off., 1979. 342 p.

----- Subcommittee on Energy Development and Applications. Oversight hearings on the Solar Energy Research Institute and Regional Solar Energy Centers. Vol. XII. Hearings, 96th Congress, 1st session. Oct. 24 and 25, 1979. Washington, U.S. Govt. Print. Off., 1980. 467 p.

----- Subcommittee on Energy Development and Applications. Hearings on the DOE Photovoltaic Program and the FY81 photovoltaic program authorization request. Hearings, 96th Congress, 2d session. Feb. 29, 1980.

----- Subcommittee on Energy Development and Applications. Oversight hearing on biomass. 96th Congress. 2d session. Mar. 10, 1980. Washington, U.S. Govt. Print. Off., 1980. 175 p.

----- Subcommittee on Energy Development and Applications and the Subcommittee on Energy and Power of the Committee on Interstate and Foreign Commerce. Joint hearings on national solar energy policy. Vol. VI.. Hearings, 96th Congress, 1st session. June 14 and 21, 1979. Washington, U.S. Govt. Print. Off., 1979. 944 p.

Subcommittees on Energy Development and Applications and on Investigations and Oversight. Joint hearing on U.S. solar and conservation technologies in international markets. Hearings, 97th Congress, 2d session. June 3 and 17, 1982.

Subcommittee on Energy Development and Applications. Hearings on business energy tax incentives for renewable energy resources. Hearings, 97th Congress, 2d session. July 13, 1982.

U.S. Congress. House. Committee on Small Business. Hearing on the role of small business in solar photovoltaic research and development and the effects of consolidations on the industry. Hearings, 96th Congress, 2d session. July 30, 1980. Washington, U.S. Govt. Print. Off., 1980.

----- Hearing on the SBA Solar Energy Loan Program. Hearings, 96th Congress, 2d session. Mar. 18, 1980.

U.S. Congress. Senate. Committee on Energy and Natural Resources. Subcommittee on Energy Conservation and Supply. Hearings on S. 950, the Omnibus Solar Energy Commercialization Act. Hearings, 96th Congress, 1st session.

June 12 and 13, 1979. Washington, U.S. Govt. Print. Off., 1979. 429 p.

----- Oversight hearings on the potential impact of international applications of renewable energy resources. Hearings, 96th Congress, 2d session. Aug. 19, 21, and Sept. 9, 1980.

U.S. Congress. Senate. Committee on Finance. Subcommittee on Energy and Agricultural Taxation. Targeted extension of energy tax credits. Hearings on S. 1396. Hearings, 98th Congress, 1st session. June 20, July 18, 1983.

U.S. Congress. Senate. Select Committee on Small Business. Hearings on the structure of the solar energy industry. Hearings, 96th Congress, 1st session. Dec. 11 and 12, 1979. Washington, U.S. Govt. Print. Off., 1980. 439 p.

REPORTS AND CONGRESSIONAL DOCUMENTS

U.S. Congress. House. Committee on Science and Technology. A multi-year framework for Federal solar energy research and development. Washington, U.S. Govt. Print. Off., 1983. 75 p.

At head of title: 98th Congress, 1st session. Committee print.

A historical review of Federal solar policies. Makes the case for a multi-year, level-funded solar for a multi-year, level-funded solar R&D program of $210 million.

U.S. Congress. House. Committee on Interstate and Foreign Commerce. Subcommittee on Oversight and Investigations. Solar energy and today's consumer. Washington, U.S. Govt. Print. Off., 1978. 119 p.

At head of title: 95th Congress, 2d session. Committee print.

Reviews the problems encountered in residential applications of active solar technology. Examines the issues of standards, warranties, and Federal involvement in consumer affairs. Based in part on an extensive questionnaire survey of solar consumers.

CHRONOLOGY OF EVENTS

04/12/82 -- Startup of the 10-Mw solar one power tower at Barstow, Ca.

07/07/81 -- Solar Challenger, the first solar-powered airplane (photovoltaic cells), crossed the English channel.

06/20/79 -- President Carter set forth a national strategy for accelerating the use of solar and renewable resource technologies based upon the results of the Solar Energy Domestic Policy Review, and committed the Nation to a goal of makig 20% of our energy needs

by solar resources in the year 2000.

05/03/78 -- National observance of "Sun Day" as a day to promote public awareness of the potential of solar energy as a national energy resource. The President called for a Domestic Policy Review of solar energy.

10/01/77 -- Department of Energy activated. Consolidates functions of ERDA, FEA and FPC, plus energy programs from other agencies and departments.

03/24/77 -- The Midwest Research Institute, teamed with the State of Colorado, was selected to establish and operate the Solar Energy Research Institute to be located near Golden, Colorado.

07/22/76 -- Construction of a 400-kilowatt (thermal) ERDA Solar Thermal Test Facility began at the Georgia Institute of Technology in Atlanta.

07/08/76 -- The generation of 32 kilowatts of electricity by the Solar Total Energy Test Facility at ERDA's Sandia Laboratories in Albuquerque, NM, marked the first significant production of electric power from a solar-driven turbogenerator.

-- Construction of a 5-megawatt, $21-million solar thermal test facility began at a location near ERDA's Sandia Laboratories in Albuquerque, NM. The project includes a 40-acre field of mirrors and a boiler/test tower 200 ft. hight.

01/19/76 -- HUD announced $1 million in grants for the legislation of solar units in 143 new and existing dwelling units in 27 States as part of the ERDA Solar Heating and Cooling Demonstration Program. This marks the Nation's first large-scale test of solar energy in housing.

10/29/75 -- A 100-kw wind turbine built for ERDA by NASA's Lewis Research Center was dedicated at Sandusky, Ohio. The machine is the largest wind energy system new in operation and the second largest ever built.

01/20/75 -- ERDA activated; became lead agency for solar R&D.

10/26/74 -- P.L. 93-473 enacted.

10/11/74 -- P.L. 93-438 enacted.

10/00/74 -- FEA Project Independence Report submitted to the President.

09/03/74 -- P.L. 93-409 enacted.

01/23/73 -- The President announced a $50 million FY75 budget for solar energy -- an increase of $36 million or 257% over 1974 -- including R&D on heating and cooling of buildings and more advanced technologies for central

power stations.

12/01/73 -- The President received a long-range energy R&D program prepared by Chairman Dixy Lee Ray of the AEC. In the proposed program solar energy will receive $200 million over 5 years with an FY75 budget of $35 million.

12/00/72 -- The NSF/NASA Solar Energy Panel Report was published. The report considered every aspect of solar energy and made specific funding recommendations.

00/00/58 -- Solar batteries first used for satellite power.

00/00/54 -- Silicon solar cells developed by Bell Telephone Laboratory scientists.

00/00/52 -- A President's Materials Commission indicated a potential market of 13 million solar heated homes by 1973.

00/00/41 -- A 1,250-Kilowatt wind-powered generator began 5 years of intermittent operation near Rutland, Vermont.

00/00/29 -- A 22-kilowatt sea thermal power plant was successfully demonstrated near Cuba.

00/00/12 -- The first solar power plant operated near Cairo, Egypt. The plant had a collector area of 13,000 feet, automatic sun tracking capability, and produced up to 63.0 horsepower.

ADDITIONAL REFERENCE SOURCES

Application of solar technology to today's energy needs. Office of Technology Assessment. June 1978. For sale by Superintendent of Documents, U.S. Govt. Print. Off., SN 052-003-00539-5.

Assesses the technical, economic, legal, regulatory, and institutional implications of large-scale use of on-site solar energy, in the framework of the total U.S. energy problem. The 2-volume report is organized as a reference tool for committees involved in national energy policy.

Conservation and Solar Energy Programs of the Department of Energy: a critique. Office of Technology Assessment. June 1980. For sale by Superintendent of Documents, U.S. Govt. Print. Off., SN j052-003-00757-6, price $3.75.

Evaluates the progress and direction of a number of conservation and solar programs to assess the balance and long-range contribution of these effots, and to discover if the programs are coherently linked to goals set by Congress and the Administration.

Council on Environmental Quality [Executive Office of the President]. Solar Energy: progress and promise. Washington, for sale by the Supt. of Docs., U.S. Govt. Print. Off., 1978. SN 041-011-00036-0, price $2.30.

April 1978. 52 p.
Summarizes the technical status of each solar technology, projects the future impact of solar technologies through 2020, and makes recommendations for accelerating the use of solar energy.

U.S. NSF/NASA Solar Energy Panel. Solar energy as a national energy resource. 1972. 85 p. National Technical Information Service, Sales Dept., 5285 Port Royal Road, Springfield, Va. 22151. (PB221659)

U.S. Library of Congress. Congressional Research Service. Science Policy Research Division. Handbook of Alternative Energy Technology Development and Policy. March 1983. (Report no. 83-43 SPR)

APPENDIX I

U.S. FEDERAL SOLAR ENERGY RD&D FUNDING
by fiscal year

(millions of dollars)

	1974 and prior years	1975	1976	1977	1978	1979 (1)	1980 (2)	1981 (3)	1982 (3)
Heating and Cooling	6.9	16.2	55.2	100.6	127.6	140.9	84.8	68.6	22.1
Photovoltaics	3.5	5.0	28.9	50.9	76.2	118.5	150.0	133.2	74.0
Solar Thermal	4.4	13.2	33.3	67.1	104.1	100.0	143.2	112.0	52.9
Biomass	2.4	1.5	6.1	9.5	20.3	40.0	33.0	27.2	20.5
Wind	1.8	7.9	14.4	27.6	35.5	59.6	60.6	54.2	34.4
Ocean Thermal	1.2	2.8	8.6	14.5	31.2	43.0	43.0	34.6	18.8
Alcohol Fuels	---	---	---	---	---	2.4	22.0	18.0	10.0
Other*	0.6	1.4	7.3	13.5	10.7	6.4	0.0	17.2	20.1
Program Direction	---	---	---	1.5	2.5	3.4	6.0	6.8	4.0
TOTAL	20.8	48.0	153.8	285.2	408.1	514.2	542.6	471.8	256.9

* Construction, Capital Equipment, International Programs, Commercialization, etc. After FY79, Construction and Capital Equipment are included in the budget line of each program.

(1) RD&D funding figures for FY79 and all prior years were provided by Lloyd Herwig, DOE.

(2) Appropriations as shown in FY82 DOE budget request documents.

(3) Appropriations as shown in FY83 DOE budget request documents.