National Renewable Energy Laboratory

NREL

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Information Resources Catalogue 99

About the Catalogue

The National Renewable Energy Laboratory's (NREL) sixth annual *Information Resources Catalogue* can help keep you up-to-date on the research, development, opportunities, and available technologies in energy efficiency and renewable energy. The catalogue includes five main sections with entries grouped according to subject area.

Most of the publications in this catalogue—and many others on energy efficiency and renewable energy—can be found on Web sites developed and/or maintained by NREL. The first section provides a listing of these "Internet Resources," which is especially helpful if you'd like to access information quickly. You can also access the latest information using these resources. A good place to start a search for information is on NREL's Publications Database at www.nrel.gov/publications/.

The second section provides concise descriptions of the "General Interest Publications" produced by NREL during its 1999 fiscal year. These publications highlight the advances in energy efficiency and renewable energy technologies, as well as the NREL and U.S. Department of Energy (DOE) programs that encourage their advancement and use.

The last three sections in the catalogue—"Technical Reports," "Conference Papers, Journal Articles, Book Chapters," and "Patents"—can help the research community and industry stay updated on the latest innovations from NREL's labs.

We hope you find this catalogue useful and informative.

About the National Renewable Energy Laboratory

NREL is DOE's premier laboratory for renewable energy and energy efficiency research, development, and deployment. The Laboratory is a national resource committed to leadership, excellence, and innovation in renewable energy and related technologies.

NREL conducts research in photovoltaics, wind energy, building energy efficiency, biofuels, hybrid vehicles, fuels utilization, biomass power, hydrogen, concentrating solar power, geothermal power, and superconductivity. Advances made in these research areas enable the private sector to make informed choices from a number of energy options.

Key to NREL's mission is facilitating the transfer of these technologies to private industry for commercialization. We do this by cooperating with industry through cost-shared agreements, collaborating with universities and other researchers, and making facilities available for experiments, analyses, and proprietary studies.

NREL is managed for DOE by Midwest Research Institute, Battelle, and Bechtel.

Contents

Internet Resources

The sites listed below provide information on many energy efficiency and renewable energy technologies. New Internet sites are created regularly, so be sure to visit these Web pages often for new and updated information.

National Renewable Energy Laboratory (NREL)—http://www.nrel.gov

Since its inception in 1977, NREL's mission has been to develop energy efficiency and renewable energy technologies and transfer these technologies to the private sector. The Web site provides information about NREL's technologies, online resources, and programs.

NEW—Clean Energy Basics—an online primer on energy efficiency and renewable energy at http://www.nrel.gov/clean_energy/

Research and Technology—NREL's research activities and expertise help reduce the cost and increase the use of renewable energy and energy efficiency technologies.

Basic Sciences and Materials—http://www.nrel.gov/st-bsm.html

Buildings and Thermal Systems—http://www.nrel.gov/buildings_thermal/

Electricity Technologies—http://www.nrel.gov/st-et.html

Fuels and Chemicals—http://www.nrel.gov/st-fc.html

Industrial Technologies—http://www.nrel.gov/st-it.html

Measurements and Testing—http://www.nrel.gov/st-mt.html

Photovoltaics—http://www.nrel.gov/photovoltaics.html

Renewable Energy Resources—http://www.nrel.gov/energy_resources/

Transportation—http://www.nrel.gov/transportation/

Wind Energy—http://www.nrel.gov/wind/

Online Resources—NREL's databases provide documents and digital photographs of renewable energy and energy efficiency technologies.

NREL Publications—http://www.nrel.gov/publications/

PIX—Online Photographic Library—http://www.nrel.gov/data/pix/pix.html

Partnerships—NREL creates and coordinates partnerships for market and technology development. NREL programs also help teachers instruct tomorrow's workforce about science, math, and clean energy solutions.

International Programs—http://www.nrel.gov/international/

Technology Transfer—http://www.nrel.gov/technologytransfer/

Education Programs—http://www.nrel.gov/education/

Energy Efficiency and Renewable Energy Network (EREN) http://www.eren.doe.gov

EREN is the official Web site for the U.S. Department of Energy's (DOE) Office of Energy Efficiency and Renewable Energy. EREN contains documents from DOE programs and maintains links to other government, education, industry association, and international organization Web sites. EREN offers a robust search capability and resources for energy professionals and consumers.

Technologies

Bioenergy—http://www.eren.doe.gov/RE/bioenergy.html
Buildings—http://www.eren.doe.gov/EE/buildings.html
Geothermal—http://www.eren.doe.gov/RE/geothermal.html
Hydrogen—http://www.eren.doe.gov/RE/hydrogen.html
Hydropower—http://www.eren.doe.gov/RE/hydropower.html
Industry—http://www.eren.doe.gov/EE/industrial.html
Ocean—http://www.eren.doe.gov/RE/ocean.html
Solar—http://www.eren.doe.gov/RE/solar.html
Transportation—http://www.eren.doe.gov/EE/transportation.html
Utilities—http://www.eren.doe.gov/EE/utilities.html
Wind—http://www.eren.doe.gov/RE/wind.html

Specialized Resources

Consumers—http://www.eren.doe.gov/consumerinfo/
Education—http://www.eren.doe.gov/education/
Financing—http://www.eren.doe.gov/financing
Kids—http://www.eren.doe.gov/kids.html
News—http://www.eren.doe.gov/news
Solicitations—http://www.eren.doe.gov/solicitations.html

Related Information

DOE Headquarters—http://www.doe.gov/
DOE Office of Energy Efficiency and Renewable Energy—http://www.eren.doe.gov/ee.html
DOE Regional Support Offices—http://www.eren.doe.gov/rso.html
DOE Golden Field Office—http://www.eren.doe.gov/golden/
DOE Office of Scientific and Technical Information (OSTI)—Energy Science and Technology Database—http://www.osti.gov/eren/eren.html

General Interest Publications

The following publications are grouped according to subject matter for your convenience. These documents contain information that is generally nontechnical in nature and is intended for a wide audience. Unless otherwise noted, National Renewable Energy Laboratory (NREL) general interest publications are available in limited quantities from NREL's Document Distribution Service at (303) 275-4363 (phone), (303) 275-4053 (fax), or Sally_Evans@nrel.gov (e-mail).

Alternative Fuels

Biofuels: A Solution for Climate Change (Brochure). December 1998; 6 pp. The use of fossil fuels releases greenhouse gas emissions into the atmosphere, contributing to global warming. This brochure discusses an alternative—biofuels made from organic matter, such as corn, which release little or no greenhouse gas emissions.
Order no. DOE/GO-10098-580.

Biofuels News—Fall 1998, Vol. 1, No. 4 (Newsletter). November 1998; 4 pp. This issue focuses on the use of agricultural residues, such as sugarcane waste and rice hulls, in the production of ethanol. It also includes an article on the potential of switchgrass as an energy crop for the production of ethanol.
Order no. DOE/GO-10098-674.

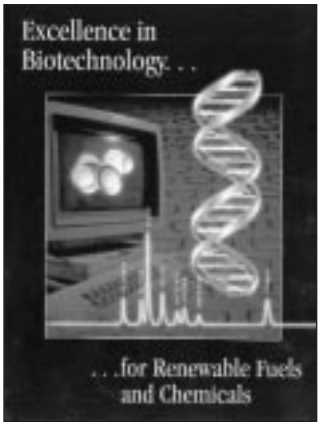
Biofuels News—Spring 1999, Vol. 2, No. 2 (Newsletter). April 1999; 4 pp. This issue focuses on the U.S. Department of Energy's efforts to bridge the gap between the corn ethanol industry and new technologies for making ethanol from agricultural wastes, such as corn stover and corn fiber. It includes articles on a plan to commercialize corn stover and on the renewed interest in an old tax credit for ethanol producers.
Order no. DOE/GO-10099-762.

Biofuels News—Summer 1999, Vol. 2, No. 3 (Newsletter). July 1999; 4 pp. This issue focuses on the research and development of biodiesel: a fuel made from vegetable oils, animal fats, or recycled cooking greases. It features articles on a fuel-blend of diesel and corn-derived ethanol; a program testing a soybean-based fuel—B20—on school buses; and the U.S. Department of Energy's final ruling on the B20 credit for federal and state fleets.
Order no. DOE/GO-10099-880.

Biofuels News—Winter 1999, Vol. 2, No. 1 (Newsletter). January 1999; 4 pp. This issue focuses on the financing of bioenergy projects, including an article on the U.S. Department of Energy's Regional Biomass Energy Program, which strives to match local biomass resources to local energy needs.
Order no. DOE/GO-10099-698.

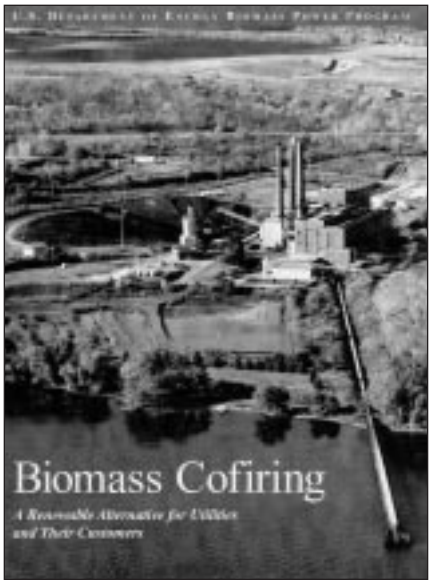
Ethanol: Separating Fact from Fiction (Fact sheet). April 1999; 4 pp. Ethanol—a fuel produced from corn or other biomass sources—has emerged as a desirable alternative to petroleum products. Its use not only reduces the emissions of harmful pollutants, but also helps bolster the agricultural industry through its production. This fact sheet dispels the misconceptions concerning ethanol that have arisen despite its positive aspects.
Order no. DOE/GO-10099-736.

Excellence in Biotechnology for Renewable Fuels and Chemicals. NREL's Biotechnology Center for Fuels and Chemicals Capabilities Brochure. 1999; 6 pp. This brochure takes a look at NREL's Biotechnology Center for Fuels and Chemicals, including its mission, professional staff, research activities and facilities, areas of expertise, and industry partnership opportunities.
Order no. BR-580-24111.



Biomass Power

Biomass Cofiring: A Renewable Alternative for Utilities and Their Customers (Brochure). May 1999; 4 pp. Utilities can burn coal along with biomass—organic matter—to generate electricity. The process is called cofiring. This brochure discusses the environmental advantages, economics, and technical challenges of cofiring, as well as consumer support for such renewable energy options.
Order no. DOE/GO-10099-758.



Biomass Cofiring: A Renewable Alternative for Utilities (Fact sheet). August 1999; 2 pp. Utilities can burn coal along with biomass—organic matter—to generate electricity. The process is called cofiring. This fact sheet discusses the environmental advantages, economics, technical challenges, and planned demonstrations of cofiring, as well as consumer support for such renewable energy options.
Order no. DOE/GO-10099-914.

Small Modular Biopower Systems (Fact sheet). August 1999; 1 p. Biomass or organic matter can be used as a fuel source in the generation of electricity. This fact sheet provides a quick look at a U.S. Department of Energy initiative to develop small, modular biopower systems, which can be used to provide electricity at the household and village level.
Order no. DOE/GO-10099-915.

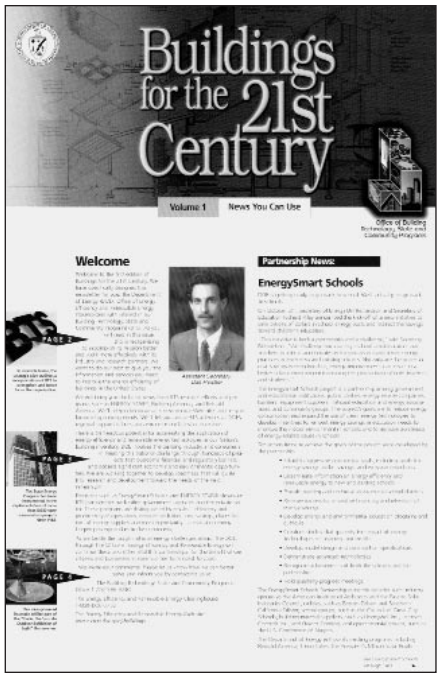
Buildings

Advanced Desiccant Cooling and Dehumidification Program Overview (Fact sheet). August 1999; 2 pp. The use of desiccant materials in cooling and dehumidification systems is an effective, economical, and environmentally safe method for meeting indoor air quality standards. Desiccant systems can also displace chlorofluorocarbon systems that contribute to the depletion of the ozone layer. This fact sheet describes the efforts of the U.S. Department of Energy's Advanced Desiccant Cooling and Dehumidification Program to promote the technology, including partnering with industry, expanding the market, and educating industry users.
Order no. DOE/GO-10099-873.

Borrower's Guide to Financing Solar Energy Systems: A Federal Overview, Second Edition (Booklet). March 1999; 44 pp. This guide provides lenders and consumers with information on nationwide financing programs for solar energy systems: solar electric (photovoltaic) and solar thermal (hot water systems). It includes information on other ways to make solar energy systems more affordable.
Order no. DOE/GO-10099-742.

Buildings for the 21st Century: Office of Building Technology, State and Community Programs (BTS) Newsletter; Vol. 1, No. 1 June 1999; 4 pp. This is a quarterly newsletter for those interested in BTS programs and research efforts. The first issue features articles on EnergySmart Schools, the BTS strategic plan, the BTS roadmapping effort, the State Energy Program, the BTS Web site redesign, and on an Energy Star® video broadcast.
Order no. DOE/GO-10098-690.

(see photo on this page)



Communication and Collaboration Keep San Francisco VA Medical Center Project on Track: ESPC Case Study. Federal Energy Management Program (FEMP) Fact Sheet. August 1999; 2 pp. This is a case study about the Veterans Affairs Medical Center in San Francisco, California, which is saving more than $500,000 annually in energy costs from a Super Energy Savings Performance Contract through FEMP.
Order no. DOE/GO-10099-819.

Cooperative Efforts Raise Building Energy Codes and Appliance Standards. Office of Building Technology, State and Community Programs: Program Brief. January 1999; 2 pp. This publication gives an overview of the U.S. Department of Energy's Office of Codes and Standards programs, which establish minimum efficiency codes, standards, and guidelines for reduced energy use and lower operating costs in U.S. building components.
Order no. DOE/GO-10099-703.

Counting on Solar Power for Disaster Relief. Federal Energy Management Program: Technical Assistance Case Study (Fact sheet). April 1999; 4 pp. Solar-powered generators can reliably provide electricity during disasters, and this fact sheet explains how. It includes a list of manufacturers and distributors.
Order no. DOE/GO-10099-729.

Electrifying Pinnacles. Federal Energy Management Program: Technical Assistance Detailed Case Study (Fact sheet). October 1998; 4 pp. Before 1996, the National Park Service used diesel generators to provide electricity for its facilities at the Pinnacles National Monument in California. In addition to producing noise and pollution, the generators also increased the risk of diesel fuel spills in this environmentally sensitive area. This fact sheet provides information on the park service's solution—a hybrid photovoltaic system, which has replaced the diesel generators and even saves money.
Order no. DOE/GO-10098-543.

Energy Star® Partnerships Generate Powerful Savings at Home and at Work. Office of Building Technology, State and Community Programs: Program Brief. January 1999; 2 pp. This publication provides an overview of the Energy Star® program—sponsored by the U.S. Department of Energy and the U.S. Environmental Protection Agency—which promotes the use of energy-efficient appliances, electronics, windows, lighting, and building materials.
Order no. DOE/GO-10099-699.

Energy-Efficient Air Conditioning. Energy Efficiency and Renewable Energy Clearinghouse (EREC) (Brochure). June 1999; 8 pp. This brochure provides consumers with information on air conditioning systems: how they work, the types available, common problems, maintenance, sealing/insulating air ducts, energy-efficiency ratings, and how to select and install a new system.
To obtain copies, please contact EREC at 1-800-DOE-EREC (1-800-363-3732).
Order no. DOE/GO-10099-379.

Federal Energy Management Program: Program Overview (Revised). Federal Energy Management Program (FEMP) (Fact sheet). July 1999; 2 pp. This fact sheet provides a quick look at how FEMP, a U.S. Department of Energy program, helps federal agencies reduce energy costs, increase energy efficiency, use renewable energy, and conserve water.
Order no. DOE/GO-10099-765.

New National Conservation Training Center a Model of Energy-Efficient Design. Federal Energy Management Program: Technical Assistance Case Study (Fact sheet). October 1998; 2 pp. The U.S. Fish and Wildlife Service designed its National Conservation Training Center in West Virginia to use passive solar and energy-efficient technologies that are readily available, easily maintained, and cost effective. This fact sheet includes information on the center's energy-efficient features, energy savings, and environmental benefits. Order no. DOE/GO-10098-530.

Procuring Low-Energy Design and Consulting Services. Federal Energy Management Program (Brochure). March 1999; 12 pp. This is a guide for federal building managers, architects, and engineers on how to incorporate energy efficiency, renewable energy, and passive solar design into the construction or renovation of a federal building.
Order no. DOE/GO-10099-723.

Rebuilding America—One Community at a Time. Office of Building Technology, State and Community Programs: Program Brief. January 1999; 2 pp. This publication provides an overview of the U.S. Department of Energy's Rebuild America program—a voluntary network of community partnerships that improve the energy efficiency of community buildings.
Order no. DOE/GO-10099-701.

Save with Solar, Summer 1999, Vol. 2, No. 2. Federal Energy Management Program (FEMP): Quarterly Technical Bulletin. September 1999; 8 pp. FEMP produces this quarterly bulletin for those who are planning or working on installations of solar and other renewable energy technologies in federal facilities. This issue includes information on an Executive Order that promotes renewable energy, solar-powered lights, the U.S. Department of the Interior's renewable energy installations, a solar-powered post office, photovoltaic system installations at U.S. Bureau of Land Management field stations, and on a project in Boston.
Order no. DOE/GO-10099-905.

Save With Solar, Spring 1999, Vol. 2, No. 1. Federal Energy Management Program (FEMP): Quarterly Technical Bulletin. May 1999; 8 pp. FEMP produces this quarterly bulletin for those who are planning or working on installations of solar and other renewable energy technologies in federal facilities. This issue includes information on funding renewable energy projects at Native American facilities; helping communities prepare for disasters using renewable energy; a daylighting Energy-Savings Performance Contract; the U.S. Postal Service's solar projects; proposed renewable energy use in Antarctica; and a federal strategy to deploy renewables.
Order no. DOE/GO-10099-799.

Save with Solar, Winter 1998, Vol. 1, No. 3. Federal Energy Management Program (FEMP): Quarterly Technical Bulletin. November 1998; 8 pp. FEMP produces this quarterly bulletin for those who are planning or working on installations of solar and other renewable energy technologies in federal facilities. This issue includes information on fiscal year 1998 funding for renewable energy projects, the U.S. Department of Energy's Million Solar Roof Initiative, an outdoor exhibition of light, a photovoltaic (PV) hybrid system at Volcanoes National Park, and on PV Power System Technology-Specific Super Energy Savings Performance Contracts.
Order no. DOE/GO-10098-684.

Seven Steps to Savings: How to Implement an Energy-Saving Project. Federal Energy Management Program (FEMP) Technical Assistance (Fact sheet). May 1999; 4 pp. FEMP has developed seven steps to achieving greater energy and water efficiency in federal facilities. This fact sheet goes through each step, using a successful U.S. Bureau of Reclamation project at the Glen Canyon Dam's visitor center as an example.
Order no. DOE/GO-10099-554.

Showering with the Sun at Chickasaw National Recreation Area. Federal Energy Management Program Technical Assistance Detailed Case Study (Fact Sheet). January 1999; 4 pp. The Chickasaw National Recreation Area in Oklahoma uses a solar water heating system to provide its visitors with hot showers. This fact sheet discusses the system's design, performance, and cost savings.
Order no. DOE/GO-10099-670.

Software Tools for Energy Efficient Buildings: Office of Building Technology, State and Community Programs (BTS) Buildings for the 21st Century Fact Sheet. March 1999; 2 pp. This fact sheet takes a look at the BTS Building Energy Software Tools Web site at *www.eren.doe.gov/buildings/tools_directory/*, which provides information on more than 150 software tools for improving the energy efficiency and/or for integrating renewable energy technologies into building systems.
Order no. DOE/GO-10099-744.

Solar Success Story at Moanalua Terrace. Federal Energy Management Program: Technical Assistance Detailed Case Study (Brochure). March 1999; 4 pp. Solar systems provide an economically and environmentally sound way to heat water for U.S. Navy housing in Pearl Harbor, Hawaii. This brochure shares the Navy's success story, including information on the economics and performance of solar water heaters.
Order no. DOE/GO-10099-671.

Solar Water Heaters: The Next Generation. Solar Buildings Program Fact Sheet. October 1998; 2 pp. This fact sheet discusses the U.S. Department of Energy's efforts to reduce the costs of solar water heating systems through research. Research includes improving energy storage and freeze protection for piping; and the use of polymers and plastics in the construction of the systems.
Order no. DOE/GO-10098-557.

State and Local Partnerships Accelerate the Use of New Energy Technologies. Office of Building Technology, State and Community Programs: Program Brief. January 1999; 2 pp. This publication gives an overview of the U.S. Department of Energy's state and community programs, which have helped pass along new, cost-effective, energy-efficient technologies and practices to many communities and households nationwide.
Order no. DOE/GO-10099-700.

State Energy Program Operations Manual. February 1999; 152 pp. This is a reference tool for the states and the program officials at the U.S. Department of Energy's Office of Building Technology, State and Community Programs, and Regional Support Offices. It contains the information needed to apply for and administer State Energy Program grants, including program history; application rules and requirements; and program administration and monitoring requirements.
Order no. DOE/GO-10099-735 or BK-550-23585.

State Energy Program Results: More Projects That Work. December 1998; 48 pp. This is a collection of successful, energy-saving projects undertaken by state programs with technical and financial assistance from the U.S. Department of Energy. The projects are organized under the following categories: buildings, transportation, industry, education, agriculture, financing, utilities, and sustainability and disaster relief.
Order no. DOE/GO-10098-675.

Strong R&D Partnerships Energize the Buildings of the 21st Century. Office of Building Technology, State and Community Programs (BTS): Program Brief. January 1999; 4 pp. This publication provides an overview of the past, current, and future BTS research efforts.
Order no. DOE/GO-10099-704.

Super Energy Savings Performance Contracts: Program Overview. Federal Energy Management Program Brochure. August 1999; 4 pp. This publication briefly explains the benefits of using Super Energy Savings Contracts (ESPCs) when financing energy efficiency improvements for federal buildings. It includes success stories, as well as information on Technology-Specific Super ESPCs and on the Federal Energy Management Agency's Service Network, which assists agencies with the Super ESPC process.
Order no. DOE/GO-10099-792.

Systems Engineering: An Approach That Can Save Millions of Dollars in Energy and Construction Costs. Building America—Buildings for the 21st Century Fact Sheet. July 1999; 4 pp. This brochure discusses the Building America program's approach to building, which views the house as an integrated system of components and incorporates improvements that yield optimal energy and cost savings, quality, and performance. It also provides information on some of the components and improvements considered: advanced framing, thermal envelope, ductwork, plumbing and wiring, and HVAC systems.
Order no. DOE/GO-10099-751.

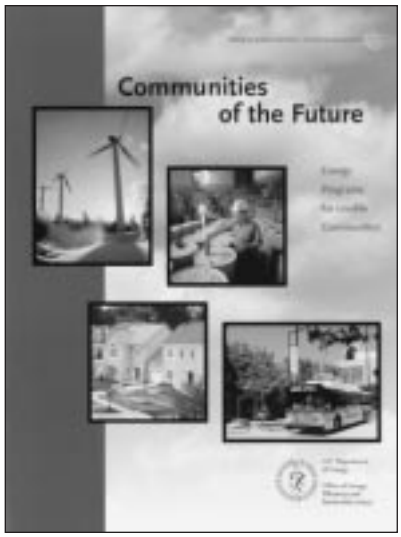
Transpired Air Collectors: Ventilation Preheating. Solar Buildings Program Fact Sheet. September 1998; 2 pp. Heating ventilated air in commercial and industrial buildings can be very expensive. This fact sheet discusses a new technology—a transpired air collector system—that uses solar energy for ventilation pre-heating, greatly reducing energy costs.
Order no. DOE/GO-10098-558.

Chemical Technologies

Beneficial Use and Recycling of Municipal Waste Combustion Residues: A Comprehensive Resource Document. Wiles, C.; Shepherd, P. April 1999; 141 pp. This document summarizes information from worldwide sources on the beneficial use of residues from the combustion of municipal solid waste. It includes results of numerous research projects, field demonstrations, and actual full-scale projects, demonstrating that the ash can be safely used.
Order no. BK-570-25841.

Energy Efficiency and Renewable Energy

Communities of the Future: Energy Programs for Livable Communities (Brochure). April 1999; 16 pp.
This booklet explains how the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy helps communities across the nation deal with issues of livability and sustainable growth. Highlights include information on energy-saving technologies and practices, some outstanding program anecdotes, and regional and Internet contact information.
Order no. DOE/GO-10099-757.



Technology Cooperation Agreement Pilot Project: Development-Friendly Greenhouse Gas Reduction Update (Fact sheet). May 1999; 2 pp. This fact sheet provides an updated overview of the Technology Cooperation Agreement Pilot Project, which was launched by several federal agencies, including the U.S. Department of Energy, to establish a model for climate change technology cooperation with developing and transitional countries.
Order no. FS-26543.

Technology Cooperation Agreement Pilot Project: Development-Friendly Greenhouse Gas Reduction (Fact sheet). October 1998; 2 pp. This fact sheet provides an overview of the Technology Cooperation Agreement Pilot Project, which was launched by several federal agencies, including the U.S. Department of Energy, to establish a model for climate change technology cooperation with developing and transitional countries.
Order no. FS-25708.

Environmental and Energy Benefits of Geothermal Heat Pumps. Office of Geothermal Technologies Fact Sheet. September 1998; 4 pp. Geothermal heat pumps (GHPs) tap into the stable temperature of the shallow ground to heat buildings in winter and keep them cool, as well as provide hot water, in the summer. This fact sheet discusses the benefits of using a GHP: reduced pollution and greenhouse gas emissions; minimized ozone layer depletion; and improved human health and comfort. It includes a case study of GHP use at the Fort Polk Army Base in Louisiana.
Order no. DOE/GO-10098-653.

Geothermal Heat Pumps for Federal Buildings. Office of Geothermal Technologies Fact Sheet. August 1999; 6 pp. A U.S. Presidential Executive Order calls for the reduction of energy use in federal buildings. This fact sheet explains how geothermal heat pumps (GHPs)—which tap into the stable temperature of the shallow ground to heat buildings in winter, and keep them cool and provide hot water in the summer—can help a wide range of federal facilities accomplish this goal. It includes information on Energy Savings Performance Contracts and Utility Area-Wide Contracts, as well as case studies of GHP use at the Fort Polk Army Base in Louisiana, and at the Little Rock Air Force Base in Arkansas.
Order no. DOE/GO-10099-910.

Geothermal Heat Pumps for Medium and Large Buildings. Office of Geothermal Technologies Fact Sheet. September 1998; 4 pp. Geothermal heat pumps (GHPs) tap into the stable temperature of the shallow ground to heat buildings in the winter and keep them cool, as well as provide hot water, in the summer. This fact sheet explains how businesses can benefit from using GHPs for their medium-sized or large buildings. Benefits include significant energy cost savings; lower operation and maintenance costs; and increased employee and customer comfort.
Order no. DOE/GO-10098-648.

Geothermal Heat Pumps Make Sense for Homeowners. Office of Geothermal Technologies Fact Sheet. September 1998; 4pp. Geothermal heat pumps (GHPs) tap into the stable temperature of the shallow ground to heat buildings in winter, and keep them cool, as well as provide hot water, in the summer. This fact sheet explains the benefits of using GHPs for homes, such as energy savings, lower maintenance costs, increased comfort, and little if any environmental impact. It includes information on financing, as well as homeowner case studies.
Order no. DOE/GO-10098-651

Geothermal Heat Pumps Score High Marks in Schools. Office of Geothermal Technologies Fact Sheet. September 1998; 4 pp. Geothermal heat pumps (GHPs) tap into the stable temperature of the shallow ground to heat buildings in winter and keep them cool, as well as provide hot water, in the summer. This fact sheet explains how schools can benefit from using GHPs. Benefits include aesthetics, individual room controls, energy savings, smaller space requirements, and safety. It also provides three case studies and information on installation methods.
Order no. DOE/GO-10098-650.

Hybrid Electric Vehicles

Sunrayce 99: 1300 Miles of Solar-Powered Racing. January 1999; 4 pp. This brochure provides information on Sunrayce 99—a solar vehicle race from Washington, D.C, to Orlando, Florida, for college students—which was staged June 20-29 by the U.S. Department of Energy, General Motors, and EDS. It also includes a timeline showing the evolution of solar-powered vehicles in the race, and Web site information on other solar-powered vehicle races.
Order no. BR-520-25908.

Industry

Chemicals—Industry of the Future: Office of Industrial Technologies Brochure. January 1999; 8 pp. A new industry-led partnership with the U.S. Department of Energy is working to strengthen the U.S. chemical industry's competitive position and further national economic goals. This brochure describes how the partnership is promoting advanced technologies that optimize energy efficiency in operations, reducing waste and energy-related emissions.
Order no. DOE/GO-10099-708

Energy Matters—September/October 1999 (Newsletter). September 1999; 8 pp. The focus of this newsletter is to help U.S. industry improve operational efficiencies in industrial energy systems, such as electric motor, steam, compressed air, and combined heat and power. This issue presents information about energy-related contracted services and partnerships available to industrial end users. It also includes performance optimization tips for pumping systems.
Order no. DOE/GO-10099-908.

Energy Matters—May 1999
(Newsletter). May 1999; 10 pp. The focus of this newsletter is to help U.S. industry improve operational efficiencies in industrial energy systems, such as electric motor, steam, compressed air, and combined heat and power. This issue presents information about motor, steam, and compressed air systems management, which includes improving boiler system efficiency with effective water treatment; reducing maintenance and energy costs with help from the U.S. Department of Energy's Industrial Assessment; and defining performance and identifying problems in an air compressed system by data logging. There's also a special supplement on the Steam Challenge—a voluntary, technical assistance program that helps U.S. industry become more competitive through increased steam system efficiency.
Order no. DOE/GO-10099-589.

Energy Matters—March 1999
(Newsletter). March 1999; 8 pp. The focus of this newsletter is to help U.S. industry improve operational efficiencies in industrial energy systems, such as electric motor, steam, compressed air, and combined heat and power. This issue presents information about utility financing and services, such as how a utility helped a customer reduce noise level and save energy; and the value provided by energy service companies. It includes a special supplement on the Compressed Air Challenge™—a program that raises awareness about the benefits of applying a "best practices" approach to the management of compressed air systems.
Order no. DOE/GO-10099-588.

Energy Matters—January 1999
(Newsletter). January 1999; 12 pp. The focus of this newsletter is to help U.S. industry improve operational efficiencies in industrial energy systems, such as electric motor, steam, compressed air, and combined heat and power. This issue includes information on the following: how General Motors improved system efficiency; the effects of electric power restructuring and deregulation; combined heat and power systems; the Northeast Premium Efficiency Motor Initiative; root cause failure analysis on AC induction motors; how to improve boiler and steam distribution; and a pump sourcebook.
Order no. DOE/GO-10099-587.

From Invention To Innovation
(Brochure). August 1999; 52 pp. The U.S. Department of Energy's Inventions and Innovation Program offers assistance to independent inventors and small businesses engaged in developing new energy-saving technologies. This program brochure explains how to handle the innovation process, commercialization process, innovation financing, technical development, market assessment and strategy, and how to establish an appropriate business structure.
Order no. DOE/GO-10099-810.

Georgia-Pacific's Insulation Upgrade Leads to Reduced Fuel Costs and Increased Process Efficiency: Steam Challenge Forest Products Project Fact Sheet. January 1999; 2 pp. This case study looks at how Georgia-Pacific reduced fuel costs, increased process efficiency, and improved plant safety by insulating steam lines and replacing steam traps.
Order no. DOE/GO-10099-546.

Improving Industrial Compressed Air System Performance: Office of Industrial Technologies Brochure. January 1999; 4 pp. This brochure provides information on the resources available through the Compressed Air Challenge™, a program—cosponsored by the U.S. Department of Energy Office of Industrial Technologies—that works to improve the efficiency and reliability of industrial compressed air systems. Resources include training, a sourcebook, case studies, a bimonthly newsletter, and an information clearinghouse.
Order no. DOE/GO-10099-705.

Inventions and Innovation: Helping Bring Your Energy Ideas to Market (Brochure). June 1999; 2 pp. This brochure explains how the U.S. Department of Energy's Inventions and Innovation Program can help an individual inventor or small business develop and market energy-saving ideas. It includes information on the steps to realizing a vision, the resources available, notable achievements, and examples of ideas that have reached commercial markets.
Order no. DOE/GO-10099-811.

Inventions and Innovation Project Fact Sheets The U.S. Department of Energy's Inventions and Innovation Program can help an individual inventor or small business develop and market energy-saving ideas. The following fact sheets take a look at some of the technologies developed through the program.

Acoustic Humidity Sensor: Inventions and Innovation Forest Products Project Fact Sheet. January 1999; 2 pp. Overdrying paper and textile products during the manufacturing process wastes energy. This fact sheet explains how manufacturers of paper and textiles can improve quality and lower energy use by using a technology that measures humidity acoustically.
Order no. DOE/GO-10099-680.

Apparatus for Removing Bark from Whole Logs: Inventions and Innovation Forest Products Project Fact Sheet. January 1999; 2 pp. This fact sheet explains how a new technology for removing bark from logs—a Cradle Debarker™—can save trees, reduce production costs, and increase the economic value of wood products.
Order no. DOE/GO-10099-685.

Coal-Fired Air Turbine (CAT)-Cycle Plant: Inventions and Innovations Combined Heat and Power Project Fact Sheet. January 1999; 2 pp. Many cogeneration and steam driven turbine systems for generating electricity may be more energy efficient, but they often can't compete with the lower operating and capital costs of conventional oil or natural gas systems. This fact sheet provides information on an energy-

Inventions and Innovation Project Fact Sheets *(continued from page 8)*

efficient, coal-fired air turbine with lower capital costs than other cogeneration systems.
Order no. DOE/GO-10099-678.

Density Separation in Complex-Mode Vibration Fluidized Beds: Inventions and Innovation Mining Project Fact Sheet. January 1999; 2 pp. This fact sheet explains how a new method for separating dry mined coal through the use of vibrating beds eliminates the need to send the coal through a wet slurry process; and how it saves energy and time, and cuts down on wastewater disposal.
Order no. DOE/GO-10099-640.

Energy from Organic Waste: Inventions and Innovation Project Fact Sheet. January 1999; 2 pp. This fact sheet explains how a new process, called wet thermal oxidation, can produce a liquid fuel from organic waste without incineration, which causes pollution.
Order no. DOE/GO-10099-677.

Filtering Molten Metal: Inventions and Innovation Metalcasting Project Fact Sheet. January 1999; 2 pp. This fact sheet provides information on a filtering method for the injection casting of metal that not only improves the quality of the metal, but also provides significant energy savings because the method reduces the amount of scrap that must be melted again.
Order no. DOE/GO-10099-681.

High-Temperature Refractory Ceramic Saves Energy: Inventions and Innovation Monolithic Refractory Material Project Fact Sheet. May 1999; 2 pp. Conventional refractory materials, such as bricks, used in industrial rotary kilns typically have temperature limitations and require frequent replacement from wear and thermal shock. This fact sheet takes a look at a new refractory material—G5—that can operate at higher temperatures with increased wear resistance, and improved thermal shock characteristics and energy efficiency.
Order no. DOE/GO-10099-798.

Molten Film Paper Dryer: Inventions and Innovation Forest Products Project Fact Sheet. January 1999; 2 pp. This fact sheet explains how a new, industrial paper drying process—a molten metal bath—can dry paper using less energy and without the major capital investment of conventional drying equipment.
Order no. DOE/GO-10099-679.

Producing Glass Fiber: Inventions and Innovation Glass Project Fact Sheet. January 1999; 2 pp. More than 40,000 different products use glass fibers for reinforcement. This fact sheet provides information on a new energy-efficient furnace design, which produces glass fibers that are more uniform, break less easily, and more economical to produce.
Order no. DOE/GO-10099-641.

Products from Metal Powders: Inventions and Innovation Project Fact Sheet. January 1999; 2 pp. Powdered metals are used in the manufacturing process of many products. This fact sheet explains how a new technology treats metal powder before it is processed, increasing energy savings and production.
Order no. DOE/GO-10099-656.

Ramex Tunneler: Inventions and Innovation Mining Project Fact Sheet. January 1999; 2 pp. This fact sheet provides information on a new rock-cutting tool that produces larger rock cuttings for easier handling; allows the energy-efficient mining of any shape opening in a rock; reduces air emissions and pollution; and eliminates the costly and energy intensive need to drill holes for explosives.
Order no. DOE/GO-10099-642.

Recycling Acid and Metal Salts from Pickling Liquors: Inventions and Innovation Steel Project Fact Sheet. January 1999; 2 pp. This fact sheet explains how the iron and steel industry can benefit economically and environmentally from a new process that renews the wastewater used to remove oxide coatings from metal.
Order no. DOE/GO-10099-686.

Reflective Aluminum Chips: Inventions and Innovation Aluminum Project Fact Sheet. January 1999; 2 pp. This fact sheet provides information on a new, energy-efficient roofing technology—aluminum chips. Aluminum chips form a highly reflective surface on asphalt roofs that cuts down on heat

Inventions and Innovation Project Fact Sheets *(continued from page 9)*

adsorption, reducing air conditioning energy use.
Order no. DOE/GO-10099-639.

Rotary Electric Glass Furnace: Inventions and Innovation Glass Project Fact Sheet. January 1999; 2 pp. Many types of glass optical blanks are produced for lasers, telescopes, cameras, lights, and many other products. This fact sheet explains how a new rotary electric furnace can mold these blanks more efficiently than a conventional gas-fired furnace; and how using electric heat also saves energy and reduces air emissions.
Order no. DOE/GO-10099-654.

Variable Wall Mining Machine with Dual Duct Ventilation System: Inventions and Innovation Mining Project Fact Sheet. January 1999; 2 pp. This fact sheet provides information on a new longwall mining machine that can cut and transport the most coal with the least amount of effort, resulting in less energy use.
Order no. DOE/GO-10099-643.

Wireless Telemetry Communication: Inventions and Innovation Mining Project Fact Sheet. January 1999; 2 pp. The communication cables currently used in the mining industry for transmitting data and voice signals to the surface are not always reliable in emergency situations. This fact sheet discusses the development of a possible solution—a wireless telemetry system, which would be more flexible and cost-effective.
Order no. DOE/GO-10099-644.

Laboratory Coordinating Council: Partnerships with Industry (Brochure). November 1998; 6 pp. This brochure provides information on the U.S. Department of Energy's Laboratory Coordinating Council, which provides U.S. industry with access to a network of laboratory research and development expertise, and equipment for almost any research project.
Order no. DOE/GO-10098-673.

(see photo on this page)

Making the Licensing Decision: Inventions and Innovation Program Booklet. October 1998; 36 pp. Licensing a technology is a demanding and highly specialized process. This booklet provides independent inventors and small business owners with the information they need to understand the process.
Order no. DOE/GO-10098-667.

Motor Challenge Project Fact Sheets
The U.S. Department of Energy's Motor Challenge program is an industry/government partnership that works to increase the use of energy-efficient, industrial electric motor-driven systems. It helps industry by encouraging the appropriate matching and integration of energy-efficient system components. The following fact sheets take a look at some of the program's advancements in motor-driven technology.

Improved System Yields $100,000 Annual Savings: Motor Challenge Aluminum Project Fact Sheet. January 1999; 2 pp. This is a success story about Alcoa's efforts to improve the energy efficiency of systems that collect dust and other airborne impurities generated during the aluminum production process.
Order no. DOE/GO-10099-545.

Improving Efficiency of Tube Drawing Bench Reduces Energy by 34%: Motor Challenge Project Fact Sheet. January 1999; 4 pp. This is a case study of the Greenville Tube Company's efforts to improve energy efficiency in the production process of stainless steel tubing.
Order no. DOE/GO-10099-544.

Improving Several Fan-Driven Systems in an Oriented-Strand Board Manufacturing Facility: Motor Challenge Forest Products Project Fact Sheet. January 1999; 4 pp. This is a case study about a fan system optimization project that resulted in substantial energy and cost savings for Louisiana Pacific Corporation, a producer of oriented-strand board.
Order no. DOE/GO-10099-709.

Motor System Upgrades Smooth the Way to Savings of $700,000 at Chevron Refinery: Motor Challenge Petroleum Project Fact Sheet. January 1999; 2 pp. This is a success story about a motor system efficiency improvement project that has resulted in significant cost and energy savings for Chevron at its refinery in Richmond, California.
Order no. DOE/GO-10099-734.

Motor System Usage in Forest Products: Motor Challenge Forest Products Industry Profile Fact Sheet. January 1999; 2 pp. This fact sheet provides information on how paper and pulp mill companies can save money by using energy-efficient motor systems, including pumps, fans, and compressed air systems. Available online only at *www.oit.doe.gov/factsheets/#motor.*

Optimizing Electric Motor Systems at a Corporate Campus Facility: Motor Challenge Chemicals Project Fact Sheet. January 1999; 4 pp. This is a case study of a project that evaluated around 1,000 motor systems in 29 buildings at 3M's corporate headquarters. Energy-saving upgrades made to one of the buildings has demonstrated the significant energy and cost savings possible for all of 3M's facilities.
Order no. DOE/GO-10099-711.

Reducing BOF Hood Scrubber Energy Costs at a Steel Mill: Motor Challenge Steel Project Fact Sheet. January 1999; 4 pp.

Motor Challenge Project Fact Sheets *(continued from page 10)*

This is a case study of the energy efficiency improvements made to a furnace at one of Bethlehem Steel Corporation's facilities, which resulted in energy savings, lower operational costs, and a decrease in system maintenance.
Order no. DOE/GO-10099-710.

NICE^3: Financial Support to Demonstrate Energy-Efficient and Pollution-Preventing Technologies (Brochure). November 1998; 2 pp. This brochure contains information about a U.S. Department of Energy cost-sharing grant program—National Industrial Competitiveness through Energy, Environment, and Economics—that advances U.S. industrial competitiveness by providing financial assistance to state and industry partnerships demonstrating energy-efficient, clean production technologies. It includes program eligibility and evaluation criteria, ineligible projects, and how to apply for a grant.
Order no. DOE/GO-10098-647.

NICE^3 Project Fact Sheets. NICE^3—National Industrial Competitiveness through Energy, Environment, and Economics—is a U.S. Department of Energy cost-sharing grant program that works to advance U.S. industrial competitiveness by providing financial assistance to state and industry partnerships demonstrating energy-efficient, clean production technologies. The following fact sheets take a look at some of the technologies developed through the program.

Aluminum Scrap Decoater: NICE^3 Aluminum Project Fact Sheet. January 1999; 2 pp. This fact sheet explains how an indirect-fired kiln can turn aluminum scrap into valuable feedstock, which secondary smelters can use to produce new products.
Order no. DOE/GO-10099-732.

Catalytic Cracking Demonstration Plant: NICE^3 Petroleum Project Fact Sheet. January 1999; 2 pp. Petroleum refiners use fluid catalytic cracking (FCC) technology to convert crude oil into blending stocks for use in gasoline, diesel, and heating oil. This fact sheet provides information on a new, low-profile FCC process that increases yields and lowers costs for refining operations of any size.
Order no. DOE/GO-10099-631.

Die Casting Copper Motor Rotors: NICE^3 Metalcasting Project Fact Sheet. October 1998; 2 pp Copper conducts electricity more efficiently, but aluminum is preferred for manufacturing conductors in electric induction rotor motors because it is easier to die cast. This fact sheet provides information on the development of motor rotor molds that can withstand the high temperatures needed for die casting copper, which will enable motor manufacturers to produce motors that use less electricity.
Order no. DOE/GO-10098-595.

Lightweight Steel Containers: NICE^3 Steel Project Fact Sheet. January 1999; 2 pp. This fact sheet provides information on a steel container construction method that reduces energy use and steel consumption by using a can's internal pressure to make the walls rigid.
Order no. DOE/GO-10099-696.

Long Wavelength Catalytic Infrared Drying System for Wood Fiber: NICE^3 Forest Products Project Fact Sheet. January 1999; 2 pp. Conventional wood fiber-drying systems, which consist of a raw flame shooting through a rotating drum, often have problems with product scorching and air emissions. This fact sheet explains how infrared drying can reduce the moisture content in a more energy-efficient and effective way without the use of a direct flame.
Order no. DOE/GO-10099-697.

Plastic Foam and Film Recovery through Thermal Densification: NICE^3 Chemicals Project Fact Sheet. January 1999; 2 pp. This fact sheet provides information on ReCylotron™, the first recycling technology demonstrated for plastic foams and films, which creates energy savings from the decreased need to haul waste.
Order no. DOE/GO-10099-602.

Process to Recover and Reuse Sulfur Dioxide in Metalcasting Operations: NICE^3 Metalcasting Project Fact Sheet. January 1999; 2 pp. In metalcasting, sulfur dioxide is used in forming cold box molds; it's typically used once and then discarded. This fact sheet provides information on a new process, called pressure swing adsorption, that can recover almost 100% of the sulfur dioxide for reuse, resulting in significant energy savings.
Order no. DOE/GO-10099-695.

Recycling of Aluminum Dross/ Saltcake: NICE^3 Aluminum Project Fact Sheet. January 1999; 2 pp. This fact sheet explains how the manufacturing of ceramic products from recycled aluminum waste saves energy and reduces landfill waste.
Order no. DOE/GO-10099-730.

Robotics Inspection System for Storage Tanks: NICE^3 Petroleum Project Fact Sheet. January 1999; 2 pp. This fact sheet explains how a robotics inspection system can minimize the need to empty and vent storage tanks containing petroleum or petrochemicals for

NICE^3 Project Fact Sheets
(continued from page 11)

cleaning, and how it can save energy.
Order no. DOE/GO-10099-731.

SO_3 Cleaning Process in Semiconductor Manufacturing: NICE^3 Project Fact Sheet. January 1999; 2 pp. Photoresist, a light-sensitive material, is used to produce semiconductor wafers for computers and other electronics. This fact sheet explains how hardened photoresist can be removed from the wafers without damage and with reduced use of hazardous chemicals by exposing the wafers to sulfur trioxide gas.
Order no. DOE/GO-10099-593.

Textile Brine Separation: NICE^3 Project Fact Sheet. January 1999; 2 pp. This fact sheet explains how textile manufacturers can save energy and reduce waste by using a new membrane technology to recover and reuse brine in the dyeing process.
Order no. DOE/GO-10099-623.

Textile Finishing Process: NICE^3 Project Fact Sheet. January 1999; 2 pp. When liquid chemicals are used to finish fabrics, the process of drying the fabrics can consume a lot of energy. This fact sheet explains how the use of foam chemicals reduces the drying time, decreasing natural gas consumption and increasing production speed.
Order no. DOE/GO-10099-611.

Office of Industrial Technologies (OIT) Financial Assistance Brochure. February 1999; 8 pp. This brochure provides information on OIT's Financial Assistance program for industrial technologies, which can potentially improve energy efficiency, reduce wastes, and enhance productivity. It includes portfolio highlights, case studies, and available research, services, and resources.
Order no. DOE/GO-10099-693.

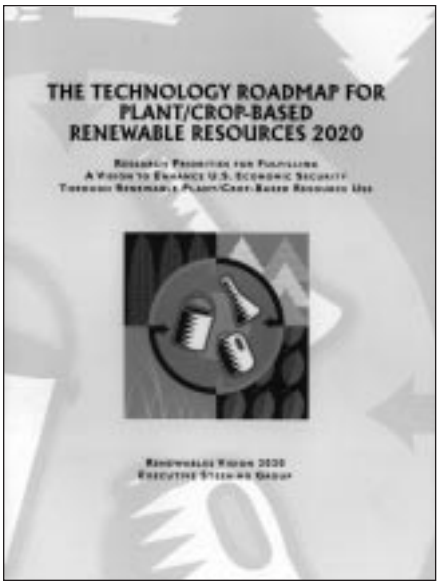
Office of Industrial Technologies (OIT) Technical Assistance Brochure. February 1999; 8 pp. This brochure provides information on OIT's Technical Assistance program, which helps manufacturers identify the best energy-efficient and pollution-preventing options for their industrial processes. It includes portfolio highlights, case studies, and available research, services, and resources.
Order no. DOE/GO-10099-692.

OIT Plant Assistance Helps You Help Yourself: Office of Industrial Technologies (OIT) Technical Assistance Fact Sheet. January 1999; 2 pp. This fact sheet explains how OIT can help guide industrial manufacturing plants through the process of identifying energy saving opportunities.
Order no. DOE/GO-10099-712.

OIT Tools Can Help You Improve Productivity: Office of Industrial Technologies (OIT) Technical Assistance Fact Sheet. January 1999; 2 pp. OIT provides a one-stop-shop, information clearinghouse that manufacturers can use to help make their businesses more productive, competitive, and efficient. This fact sheet describes these sources of information, which include software and databases; a technical newsletter; technical publications; and access to a comprehensive Web site that lists OIT programs, training opportunities, and links to other pertinent sites.
Order no. DOE/GO-10099-713

States Industries of the Future (Brochure). January 1999; 2 pp. This brochure provides information on the U.S. Department of Energy Office of Industrial Technologies' States Industries of the Future program, which encourages states to help boost industry resource productivity through visioning, roadmapping, and partnership activities. It includes a typical state approach, state benefits, and a list of state projects.
Order no. DOE/GO-10099-707.

Technology Roadmap for Plant/Crop-Based Renewable Resources 2020: Research Priorities for Fulfilling a Vision to Enhance U.S. Economic Security through Renewable Plant/Crop-Based Resource Use. February 1999; 44 pp. Traditionally, petrochemicals have been used to produce plastics and other materials, but their resources are finite and often imported. Renewable materials from U.S. crops, trees, and agricultural wastes can provide many of the same chemical building blocks. This document sets forth a roadmap and research priorities to advance plant/crop-based technologies in this area.
Order no. DOE/GO-10099-706.



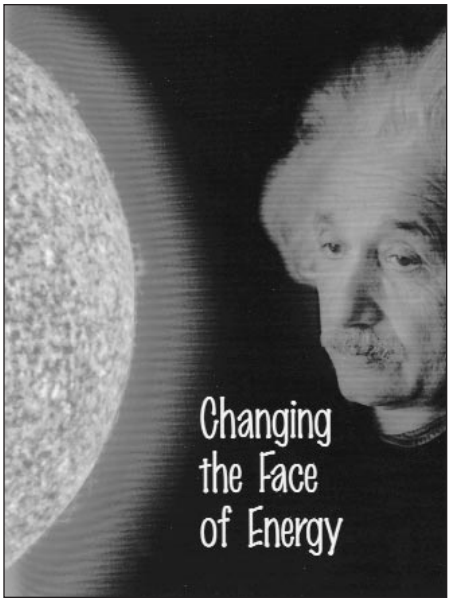
Training Sessions and Materials Present Ways to Improve System Efficiency: Office of Industrial Technologies Technical Assistance Fact Sheet. January 1999; 2 pp. This fact sheet offers information regarding training sessions, teleconferences, and various training materials to teach companies ways to reduce energy use, save money, and reduce waste and pollution through system optimization.
Order no. DOE/GO-10099-714.

Turning Industry Visions into Reality: Office of Industrial Technologies (OIT) Technology Partnerships Brochure. February 1999; 18 pp. This brochure explains how OIT is partnering with U.S. industry to develop, demonstrate, and deploy energy-saving technologies. It includes partnership portfolio inserts for the following industries: aluminum, chemical, glass, metalcasting, forest products, and steel.
Order no. DOE/GO-10099-694.

Turning Point—November 1998 (Newsletter). November 1998; 8 pp. The focus of this newsletter is to help U.S. industry improve operational efficiencies in industrial energy systems, such as electric motor, steam, compressed air, and combined heat and power. This issue features articles on an electric motor system market assessment, a motor systems software upgrade, Louisiana Pacific's Motor Challenge demonstration project, the systems approach, and on potential field measurement pitfalls.
Order no. DOE/GO-10098-586.

National Renewable Energy Laboratory

Changing the Face of Energy (Brochure). March 1999; 6 pp. This publication takes a look at how researchers at NREL are applying modern physics to advance sustainable technologies for generating, transmitting, and storing energy.
Order no. BR-590-26070.



National Renewable Energy Laboratory Information Resources Catalog—1998.
December 1998; 88 pp. This fifth annual catalogue describes recent NREL publications and services that will keep you up-to-date regarding the latest advances in renewable energy and energy efficiency.
Order no. BK-330-24946.

Solar Energy—Photovoltaics

Colorado Consumer's Guide for Buying a Solar Electric System. October 1998; 20 pp. This booklet is designed to guide consumers in Colorado through the process of buying a solar electric system. It provides basic information about photovoltaic systems, as well as guidelines for choosing installers, providers, and where to get help with permits, agreements, and warranties.
Order no. BR-520-25734.

Consumer's Guide to Buying a Solar Electric System. July 1999; 20 pp. This booklet is designed to guide consumers through the process of buying a solar electric system. It provides basic information about photovoltaic systems, as well as guidelines for choosing installers, providers, and where to get help with permits, agreements, and warranties.
Order no. BR-520-26591

NCPV FY 1998 Annual Report. McConnell, R.D.; Hansen, A. June 1999; 572 pp. This report summarizes the in-house and subcontracted research and development activities under the National Center for Photovoltaics (NCPV) from October 1, 1997, through September 30, 1998. The NCPV is part of the U.S. Department of Energy's National Photovoltaics (PV) Program. The program's mission is to make PV a significant part of the domestic economy—as an industry and as an energy resource.
Order no. BK-210-25626.

NREL PV Working With Industry, Second Quarter 1999 (Newsletter). July 1999; 12 pp. NREL produces this quarterly report to encourage cooperative research and development (R&D) by providing the U.S. photovoltaics (PV) industry with information on the activities and capabilities of researchers at NREL. This issue features articles on PV R&D, solid-state theory, freezing electron motion in the Solid-State Spectroscopy Lab, better PV through chemistry, the thin-layer silicon barrier, and the future of PV.
Order no. BR-520-25848.

NREL PV Working With Industry, First Quarter 1999 (Newsletter). April 1999; 12 pp. NREL produces this quarterly report to encourage cooperative research and development (R&D) by providing the U.S. photovoltaics (PV) industry with information on the activities and capabilities of researchers at NREL. This issue focuses on the PV Manufacturing Technology project, also known as PVMaT.
Order no. BR-520-25930.

NREL PV Working With Industry, Third Quarter 1998 (Newsletter). October 1998; 12 pp. NREL produces this quarterly report to encourage cooperative research and development (R&D) by providing the U.S. photovoltaics (PV) industry with information on the activities and capabilities of researchers at NREL. This issue focuses on two of the Thin Film PV Partnership's national teams: CIS (copper indium diselenide) and Cadmium Telluride.
Order no. BR-520-25282.

Photovoltaic Energy Program Contract Summary, Fiscal Year (FY) 1998. January 1999; 222 pp. The U.S. Department of Energy's National Photovoltaic Program supports efforts to make photovoltaics (PV) an important part of our economy through three main activities: research and development, technology development, and system engineering and applications. For FY 1998, this booklet gives an overview of the entire scope of these PV program activities, and provides project descriptions for subcontracted research activities with industry and universities.
Order no. DOE/GO-10099-721.

Photovoltaic Energy Program Overview, Fiscal Year (FY) 1998. March 1999; 24 pp. This booklet provides an overview of the research and development, technology development, and systems engineering and application activities under the National Center for Photovoltaics (NCPV) during FY 1998. The NCPV is part of the U.S. Department of Energy's National Photovoltaics (PV) Program. The program's mission is to make PV a significant part of the domestic economy—as an industry and as an energy resource.
Order no. DOE/GO-10099-737.

Transportation

Alternative Fuel News: Official Publication of the U.S. Department of Energy's Clean Cities Network and the Alternative Fuels Data Center; Vol. 2, No. 4. November 1998; 16 pp. Clean Cities is a program that encourages the use of alternative fuel vehicles (AFVs) and their supporting infrastructure throughout the nation. This issue features articles on how to comply with both the Energy Policy Act of 1992 and the 1990 Clean Air Act by using AFVs; the National Low Emission Vehicle program; P-Series fuels, which are 70% biomass; alternative fuel school buses; Clean Cities market development; Mobile Source Emission Reduction programs; and the Transportation Equity Act for the 21st Century.
Order no. BR-540-25273.

Alternative Fuel News: Official Publication of the U.S. Department of Energy's Clean Cities Network and the Alternative Fuels Data Center; Vol. 2, No. 5. December 1998; 16 pp. Clean Cities is a program that encourages the use of alternative fuel vehicles (AFVs) and their supporting infrastructure throughout the nation. This issue features articles on the oil embargo of 1973, alternative fuel taxis, model year 1999 vehicle offerings, the U.S. Postal Service's AFV fleet, National Gas Vehicle Coalition, a trip across the country in an AFV, and ZAP power systems.
Order no. BR-540-25615.

Alternative Fuel News: Official Publication of the U.S. Department of Energy's Clean Cities Network and the Alternative Fuels Data Center; Vol. 3, No. 2. August 1999; 16 pp. This issue features the highlights of the fifth annual Clean Cities National Conference in 1999. Clean Cities is a program that encourages the use of alternative fuel vehicles and their supporting infrastructure throughout the nation.
Order no. BR-540-26564.

Alternative Fuel News: Official Publication of the U.S. Department of Energy's (DOE) Clean Cities Network and the Alternative Fuels Data Center; Vol. 2, No. 6. March 1999; 16 pp. Clean Cities is a program that encourages the use of alternative fuel vehicles and their supporting infrastructure throughout the nation. This issue features articles on the niche market principle, the increase in alternative fuel transit buses nationwide, technology deployment, a program that transports former welfare recipients to work, DOE's State Energy Program funding opportunities, and E85—a blend of ethanol and gasoline.
Order no. BR-540-25912.

Alternative Fuels News: Official Publication of the U.S. Department of Energy's (DOE) Clean Cities Network and the Alternative Fuels Data Center; Vol. 3, No. 1. May 1999; 20 pp. Clean Cities is a program that encourages the use of alternative fuel vehicles (AFVs) and their supporting infrastructure throughout the nation. This issue features articles on the future of alternative fuels, the DOE EnergySmart Schools initiative, federal electric vehicle fleets, FuelMaker refueling systems, and the use of AFVs at national parks.
Order no. BR-540-25913.

Barwood Cab Fleet Study Summary: Alternative Fuel Case Study (Fact sheet). May 1999; 6 pp. This is a case study of a cab company in Maryland that incorporated a limited number of dedicated, compressed natural gas vehicles into its fleet. It includes information on fuel economy and cost, maintenance comparison and cost, total operating costs, emissions results, and lessons learned.
Order no. FS-540-26334.

Dedicated CNG Ford F250 Pickup. Clean Cities Alternative Fuel Information Series Fact Sheet. June 1999; 2 pp. NREL has conducted projects, under the U.S. Department of Energy, that evaluate the performance and acceptability of light-duty alternative fuel vehicles. This fact sheet provides information on one of these studies, which compared a 1998 F250 Ford pickup that uses compressed natural gas with its conventional gasoline model. It includes data on performance and emissions.
Order no. DOE/GO-10099-801 or FS-540-26519.

Denver SuperShuttle CNG Fleet Evaluation: Alternative Fuel Fleet Start-Up Experience (Fact sheet). May 1999; 6 pp. The Gas Research Institute and the U.S. Department of Energy, along with several industry partners, are collaborating with SuperShuttle of Denver, Colorado, to evaluate two of the latest natural gas vehicle technologies available. This fact sheet explains how the study will provide real-world information on using alternative fuel vehicles for shuttle services, including data on operation and maintenance costs, vehicle performance, emissions, and SuperShuttle's experiences.
Order no. FS-540-26439.

Experience with Bi-Fuel LPG Pickups in Texas: Alternative Fuel Case Study (Fact sheet). May 1999; 4 pp. In 1996, Texas Department of Transportation (TxDOT) representatives added about 400 bi-fuel, liquefied petroleum gas pickup trucks to their fleet, as part of a state requirement to purchase alternative fuel vehicles (AFVs). This case study includes information on the AFVs' fuel economy and vehicle

range, maintenance and reliability, and operating and fuel costs, as well as lessons learned.
Order no. FS-540-24226.

Ford Taurus Ethanol-Fueled Sedan. Clean Cities Alternative Fuel Information Series Fact Sheet. June 1999; 2 pp. NREL has conducted projects, under the U.S. Department of Energy, that evaluate the performance and acceptability of light-duty alternative fuel vehicles. This fact sheet provides information on one of these studies, which compared an ethanol-fueled 1998 Ford Taurus sedan with its conventional gasoline model. It includes data on performance and emissions.
Order no. DOE/GO-10099-800.
Order no. FS-540-26578.

Guide to Alternative Fuel Vehicles Incentives & Laws. September 1998; 165 pp. This guide, from the U.S. Department of Energy's Clean Cities program, contains a listing of state, federal, and private incentives and funding offered to encourage the expanded use of alternative fuel vehicles (AFVs). It includes an AFV funding worksheet along with instructions and examples of how to complete the worksheet.
Order no. DOE/GO-10098-573.

Ohio's First Ethanol-Fueled Light-Duty Fleet: Alternative Fuel Case Study (Fact sheet). May 1999; 4 pp. In 1996, the State of Ohio established a project to demonstrate the effectiveness of ethanol as an alternative to gasoline in its fleet operations. This case study provides information on the state's use of flexible-fuel vehicles, including fuel economy and vehicle range, maintenance and repairs, operating costs, emissions results, and lessons learned.
Order no. FS-540-24056.

UPS Delivers with Alternative Fuels: Alternative Fuel Case Study (Fact sheet). August 1999; 4 pp. In 1994, the United Parcel Service (UPS) fleet in Landover, Maryland, began operating 20 vehicles on compressed natural gas (CNG). This case study provides information on the CNG vehicles' fuel economy, range, and costs; maintenance and repair; emissions; and on the lessons learned.
Order no. DOE/GO-10099-912.
Order no. FS-540-26534.

Waste Management's LNG Truck Fleet: Start-Up Experience. Alternative Fuel Truck Evaluation Project (Brochure). August 1999; 8 pp. This brochure highlights a refuse-hauling company's experience with starting up an alternative fuel—liquefied natural gas—truck fleet for its operations in Washington, Pennsylvania. It includes information on the project's origins, fuel storage, operation, and lessons learned.
Order no. BR-540-26617.

Utilities

Choices for a Brighter Future: Perspectives on Renewable Energy. September 1999; 34 pp. This booklet identifies and explores some of the major opportunities and challenges surrounding the use of renewable energy in the United States. It includes perspectives on the future of U.S. electricity use; a discussion of the current status, availability, and applications of renewable energy technologies; examples of how renewables are meeting some regional challenges; policies affecting renewables; market opportunities and barriers; and the role of research and development.
Order no. DOE/GO-10099-878.

Village Power

Energia Renovable para Centros de Salud Rurales. Jimenez, A. C.; Olson, K. 1998; 52 pp. This is the Spanish version of *Renewable Energy for Rural Health Clinics* (BK-500-25233). The guide can help assess a health clinic's electrical needs; select appropriate and cost-effective renewable energy technologies to meet those needs; and put into place an effective infrastructure to install and maintain the hardware. It is primarily written for decision-makers within government or private agencies.
Order no. BK-500-26224.

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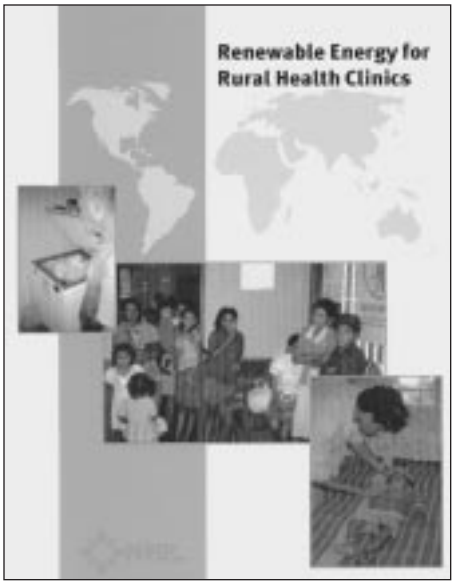

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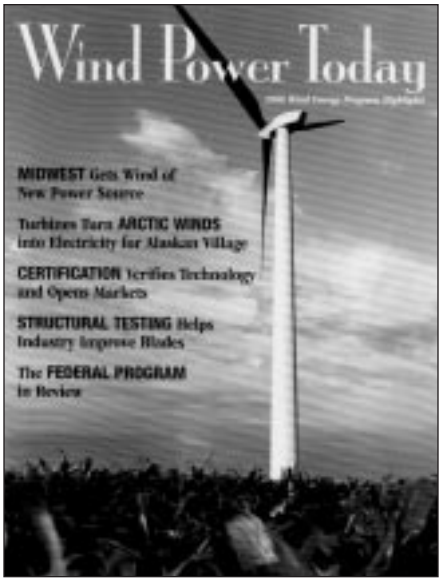

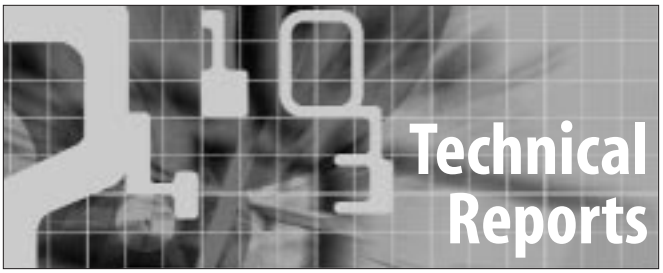

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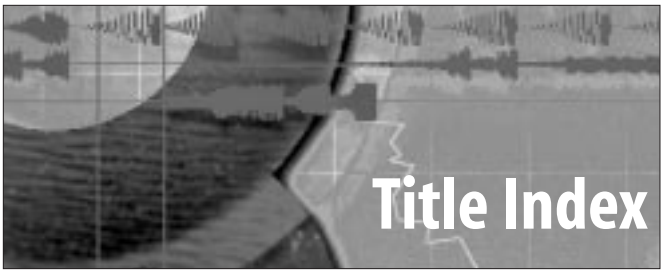

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Alternative Fuels

Basic Sciences

Biomass Power

Buildings

Chemical Technologies

Electrochromic Windows

Energy Efficiency and Renewable Energy

Energy Policy and Analysis

Geothermal Energy

Hybrid Electric Vehicles

Hydrogen

Industry

Materials Science and Semiconductors

National Renewable Energy Laboratory

Photoconversion

Solar Energy—General

Solar Energy—Photovoltaics

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Solar Energy—Thermal

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