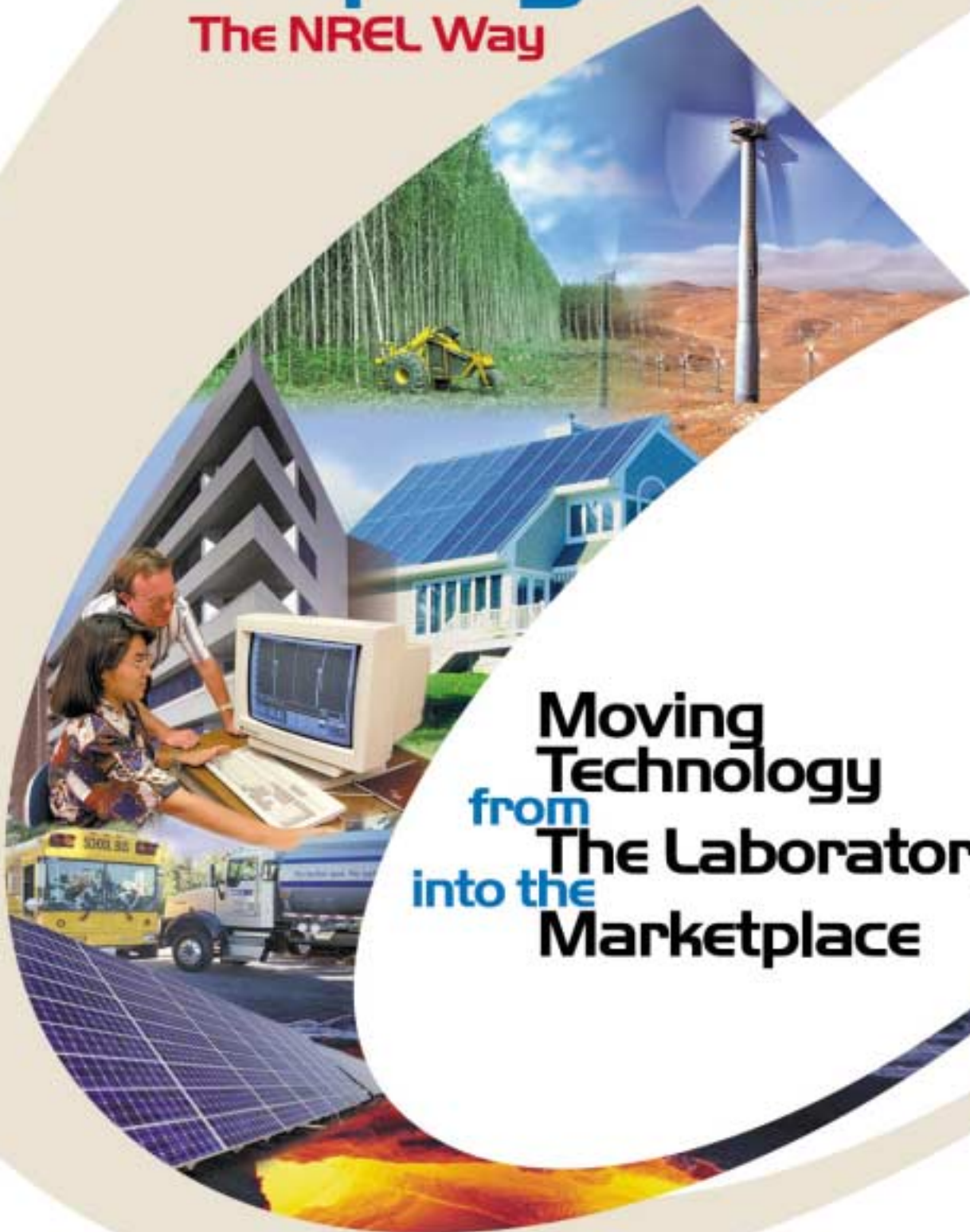


Facilitating Deployment

The NREL Way



Moving
Technology
from
The Laboratory
into the
Marketplace

NREL's Deployment Facilitation Activities

Successful technology deployment requires a close relationship between the R&D laboratory and the marketplace. The researcher must understand the needs of consumers and industry, as well as those for the public good, so that new technologies can meet these needs. In turn, the marketplace must know about new technology advancements so that they might be deployed in new and improved products. These activities of the researcher identifying market needs and incorporating them in the development of new technology, and of the stakeholders learning how new technology performs and removing barriers and establishing incentives to market entry must be performed in a continuous cycle. Each of these activities can be categorized into one or more processes as summarized below.

1

1. Identify market needs and drivers

- Conduct market assessment, market and technology analysis, market information gathering
- Identify road blocks, market and policy barriers, regulatory constraints
- Facilitate roadmaps, scenario planning
- Research energy market news, especially about restructuring and green markets

2

2. Incorporate market needs and drivers in developments

- Conduct strategic planning, 5-year plans, program plans, annual operating plans, business plans
- Hold program reviews with industry, stakeholder meetings and forums, advisory boards
- Provide process analysis, engineering and analytical expertise, modeling tools
- Conduct pilot tests, prototype tests, bench tests

3

3. Inform stakeholders of technology attributes

- Perform/support industry testing, field tests, near-commercial tests
- Disseminate information from workshops, educational material, test results, energy market news, green markets and restructuring news, lessons learned, policy issues
- Provide measurement and characterization support
- Conduct reliability modeling

4

4. Facilitate market conditioning and technology transfer

- Facilitate standards development, certification and adoption,
- Assist barrier removal
- Perform resource assessments
- File patents, form CRADAs, perform licensing
- Facilitate policy planning
- Facilitate market structures and infrastructures development
- Formulate financial assistance

At NREL, “deployment” is a critical part of our work—and our performance. We strive to conduct energy research, development, demonstration, and facilitation of deployment activities that lead to viable energy technology options—from concept to commercialization. Examples of NREL's deployment facilitation activities are highlighted throughout this publication

July 2000

Unused technology is useless technology!

At NREL, we understand that research and development is not enough, so we work hard to move our technologies into the marketplace. Creating technology is only half the battle—doing what’s required to move that technology into the commercial world is the other half. NREL has a very important role to play in facilitating commercial deployment.

This report highlights a selected few of NREL’s recent activities that have helped to move technology from our laboratory into the marketplace. It also hints at selected future efforts that we’ll be pursuing to facilitate deployment.

A handwritten signature in blue ink that reads "Jon Pietruszkiewicz".

Jon Pietruszkiewicz
Associate Director for Deployment Facilitation



Wind Powering America— From Wind to Megawatts

Federal Agencies Aggregate 10 MW of Wind Power Purchases

On April 27, 2000, Energy Secretary Bill Richardson announced the intention of 31 public agencies in Colorado to purchase 10 MW of wind power from Colorado Public Service Company's WindSource program. This is the single-largest commitment to purchase electricity generated by the wind. NREL was integrally involved with DOE and other participating federal agencies in formulating and reaching the agreement to aggregate this electric load. This effort provides a model agreement for the nation in support of the Secretary's directive for DOE to purchase a portion of its electricity from renewable energy sources, the President's Executive Order on Greening the Government (13123), and the Wind Powering America Initiative—each of which encourages the deployment of wind technology. ③④

Seven Wind Turbine Manufacturers Have Licensed NREL Airfoils

Using NREL's patented blade design provides an efficiency advantage of over 25%. Nearly all U.S. mid-size wind turbine manufacturers have licensed NREL's patented airfoil over the years. With three of the seven licenses currently active, NREL airfoils dominate the domestic landscape. Notably, NREL has transferred the capability to design these airfoils to industry. Using NREL's methodology, these companies can now execute their own designs. ④

Wind Development Solicitation

On May 1, 2000, DOE announced the names of community-based organizations and projects receiving \$2.7 million to help promote the use of wind energy across the U.S. The grants help encourage wind deployment activities through education about wind energy's benefits and potential applications. The funding will also assist key decision-makers in state and local government, the electric utility industry, and the financial community to understand the potential applications of wind energy. NREL, as part of its role in developing and

managing the Wind Powering America Initiative, carried out this solicitation. ②③

Verifying Performance for Industry

NREL continues to provide technical support to EPRI, utilities, turbine manufacturers, and other stakeholders through the Turbine Verification Program. This support helps verify new hardware performance in different applications. Projects are being carried out in Texas, Vermont, Iowa, Nebraska, Wisconsin and Alaska. Technical issues include project feasibility, installation, SCADA support, and operational problems such as lightning mitigation. Key successes in wind technical support include field verifications of small turbines and certification of NREL's testing and analysis capabilities by Underwriters' Laboratories. ①②③

Whats Next

Wind Powering America Impacts

NREL continues to provide support to the Wind Powering America Initiative to increase the penetration of wind power into new regions, and increase general understanding of wind power nationwide. NREL is assisting in these ongoing upcoming deployment activities:

- Produce resource maps and assessments,
- Develop a wind-specific Super-Energy Services Performance Contract with Federal Energy Management Program,
- Provide strategic assistance to ensure state and local input and perspectives in the Initiative,
- Link state and local interests to the national energy initiatives,
- Strengthen ties with national and regional organizations to understand technical needs of states and communities, and
- Obtain market information and support from NREL's Deployment Facilitation Market Sectors in strategic planning for the Initiative. ①②③④



Geothermal Energy - Improved Efficiency

Geothermal Condenser Wins Technology Transfer and R&D 100 Awards

Researchers at NREL developed advanced direct-contact condenser technology for geothermal power plants. The condenser technology increases the efficiency (5%) and generating capacity (17%) in electric power plants while significantly reducing pollution and plant maintenance cost. DOE's Office of Geothermal Technologies provided funding for the condenser research. The technology was demonstrated by Pacific Gas and Electric Company and licensed and marketed by Alstom Energy Systems of Easton, Pennsylvania. NREL researchers were honored with a Year 2000 Federal Laboratory Consortium Award for Excellence in Technology Transfer and an R&D 100 Award for the technology. These R&D awards included the condenser technology as among the most important of all recent technological advances. ③④

What's Next

Request for Proposals Issued for Small-Scale Geothermal Plants

In March 2000, NREL issued a Request for Proposals for a new cost-shared project on behalf of DOE's Geothermal Energy Program. The primary objectives of this project are to:

1. Determine and validate, in different regions of the U.S., the performance and operational characteristics of small-scale (net electrical output = 300 kW - 1 MW) and geothermal electric power plants; and
2. Determine their ability to provide distributed power to facilitate their increased use in the western United States.

Distributed Power - Removing Deployment Barriers

Distributed Power Marketplace Barriers Identified

On May 31, 2000, Energy Secretary Bill Richardson announced the release of a comprehensive NREL report that documents the marketplace barriers that prevent electric utility customers, developers, and vendors from creating projects that would allow consumers to generate their own electricity. The report, *Making Connections: Case Studies of Barriers to Interconnection of Distributed Power*, is the first to document the problems developers of distributed electricity generation projects encounter while attempting to interconnect to the electric grid. It lays a market-driven foundation for developing technology, market structure, and policy development plans that would remove barriers to deploying distributed power systems. ④

What's Next

Distributed Power Interconnection Standards Due Next March

As chair of the IEEE committee, NREL is leading a significant nationwide effort to arrive at distributed power interconnection standards through stakeholder consensus. More than 200 committee members are contributing to a resource document and draft standard. The IEEE Standards Board anticipates approval of the consensus standards by March 2001. Some stakeholders have stated that developing and adopting standards is the single most important near-term effort to removing barriers to distributed power deployment. ④



Solar Energy - at Home and in Space

2000 Solar Rooftops in 2000; the Federal Sector Meets Its Goal

Over 2000 solar hot water and photovoltaic rooftop systems were installed on federal facilities over the past three years, exceeding the federal government's year 2000 goal for the Million Solar Roofs (MSR) Initiative. This represents an investment of over \$10 million and provides an offset of over 16,000 MBTUs of energy from fossil fuels each year. NREL's FEMP team provided technical assistance supporting 95% of the agencies installing these systems. In addition, the NREL State and Local Initiatives Team coordinates all national laboratory activities in support of the MSR Initiative. The labs provide direct assistance to MSR partnerships when technical expertise is needed to overcome critical barriers to deployment. In addition, NREL directly supports the Initiative through Web site development, as well as the creation of a variety of communication and educational tools. ③④

NREL's Solar Cells Go To Space

NREL technology for tandem solar cells has been licensed to three suppliers of power systems for satellites - TECSTAR (supplier to Lockheed-Martin Missiles and Space), Spectrolab (supplier to Hughes Aircraft) and EMCORE. With technical support from NREL, these companies have transferred technology into full-scale production capability of more than 500,000 Watts of cells annually. These high efficiency cells are the exclusive source of power for their satellite systems. NREL also expects to expand this technology transfer soon by completing a license with Spectrolab for terrestrial use of tandem cells. ④

Lakeland Electric Pilots Solar Water Heating Enterprise


NREL facilitated an innovative solar water heating pilot project in Florida. A local utility installs solar water heaters on customers' homes, then meters and sells the energy delivered from them. Besides NREL, the Lakeland Electric project also involves the Florida Energy Office and the Florida Solar Energy Center. Twenty-five systems were successfully installed by June 1999. This deployment effort not only moved technology into the marketplace, but also provides visible examples of successful applications of the technology for other energy consumers and utilities. ③④

Siemens, NREL, and California Energy Commission Win R&D 100 Award

Siemens Solar Industries, a subcontractor in NREL's Thin Film PV Partnership project, has introduced copper indium diselenide technology to the marketplace for the first time. Siemens delivered to NREL a 1-kilowatt array of these modules having an average module efficiency of 11.4%. One module set a world record for the thin-film module having the highest efficiency of any kind (12.1%), an efficiency comparable to conventional crystalline silicon modules. Siemens, NREL, and the California Energy Commission were jointly selected for a prestigious R&D 100 Award for the new module products. ④

Web-Based Measurements and Characterization Improve Accessibility

The National Center for Photovoltaics' (NCPV) Measurements and Characterization Division has implemented a successful Web-based "virtual laboratory," which allows collaborators from remotely located universities and industry to view data collection from their samples in real time. This technique has



been applied to the Auger electron and X-ray photoelectron spectroscopy systems, providing compositional information on materials used by the PV community. This approach allows a more interactive venue that enhances NREL's ability to disseminate data rapidly to speed up technology transfer and provide better service to customers. More than 50 research groups currently participate in this Web-based data transfer approach. ③

Progress Continues in Manufacturing R&D of PV Modules and Components

NREL subcontractors in the PV Manufacturing Technology (PVMaT) project continue to significantly advance module and system manufacturing and bring new products to the marketplace. This progress demonstrates the ability of cost-shared manufacturing R&D to contribute to an acceleration of PV technology to a point where individual companies can afford to commercialize their own proprietary approaches. Noteworthy accomplishments have been made by many manufacturers, including Ascension Technology, Inc. (microinverter to produce AC module), PowerLight Corporation (PV modules mounted on styrofoam board coated with proprietary cementitious coating), Spire Corporation (automated module buffer storage and automated module testing system), and First Solar, Inc. (high-speed cadmium telluride film coating). ④

NCPV Supports the Visibility of PV in Nation's Capital

NCPV staff members at NREL have been involved in activities in the Washington, D.C. area that showcase PV's suitability for urban applications and highlight DOE's leadership. One example is the use of PV systems mounted on the south wall of the

DOE Forrestal Building. In another project, a 15-kilowatt, grid-connected PV system at the Pentagon uses 60 SunSine modules manufactured by Ascension Technology, Inc., and is the largest installation of AC modules to date. NCPV staff also conducted a highly successful PV consumer's workshop at the Smithsonian Institution that attracted many consumers from the Washington, D.C. area. ③

International Efforts Boost Activities of U.S. PV Industry

International markets are about two-thirds of the total U. S. PV business. NREL maintains high-level, government-to-government relationships in strategically important countries of the world such as China, India, Brazil, Indonesia, South Africa, and Russia, bringing the credibility of the U.S government to help U.S. industry compete with foreign companies that have direct support from their governments. NREL relies on core activities such as technical assistance, education, training, testing, and building of infrastructure. For example, NREL has supported the U.S DOE/China Bilateral Protocol on Cooperation in the Fields of Energy Efficiency and Renewable Energy Technology Development and Utilization, which has expanded markets for U.S. industry in China. The Gansu Solar Home Systems Project installed nearly 600 household PV systems. And in the Inner Mongolia Autonomous Region, more than 100 wind/PV hybrid systems were installed. ③④



Biopower and Biofuels – Home Grown Fuel Poised to Ease Reliance on Fossil Fuels

Biodiesel Accepted by California

NREL has been working closely with the California Air Resources Board (CARB) to legalize biodiesel as a CARB fuel in California. These joint deployment efforts have prompted CARB to 1) register a biodiesel marketer to legally distribute biodiesel and 2) recommend registering biodiesel as an air quality control technology. NREL also provides EPA with technical data to support modifying or expanding EPA regulations to expand biodiesel use. EPA recently announced its intention to promote biodiesel blends in Low-Emissions Vehicles (LEV) standards and include biodiesel as an alternative fuel under the Clean Fuel Fleet Program. EPA is also willing to issue a memo allowing biodiesel consumers to retard engine timing to prevent NOx emission increases. These milestones are significant steps toward reducing U.S. dependence on imported petroleum by substituting biomass-derived fuels. ②③

Industry Partnerships Support Biofuels Commercialization

NREL's Biofuels Program continues to effectively support many bioethanol deployment projects. Examples include:

- Providing technical and funding support for Masada's New York bioethanol project;
- Establishing a CRADA and license with Arkenol to develop an improved strain for their Sacramento project and demonstrate fermentation performance for project financing;
- Continue working under the BC International CRADA in support of the Gridley project;
- Placing a subcontract to support the Collins Pine project to perform bench-scale experiments later this year, and
- Continue technical and project management support of the Sealaska project.

Each of these projects has strong industrial partner involvement and leadership. Both industrial partner participation and NREL's technical and project management support have fostered accelerated deployment of these technologies into the marketplace. ④

Vermont Gasifier Demonstration Project Gets High Quality Analysis

The Vermont Gasifier project's goal is to demonstrate the scale-up and operation at near-commercial scale (200 tons of wood/day) of an indirectly heated biomass gasifier system that is able to produce a high-quality synthesis gas without using oxygen. Use of this technology in an integrated gasification combined cycle configuration will result in doubling the net electricity generation efficiency from biomass and considerably increase its fossil carbon substitution potential. It will also be important for applications with fuel cells and the production of synthetic, biomass-derived gasoline, and diesel fuels as well as methanol, other fuels, and high-value chemicals and products.

NREL provides high-quality technical and analytical support to DOE's Golden Field Office for this project. Recently, NREL engineering and analytical support were instrumental in identifying and correcting various process and design issues with the gasifier, which led to its successful operation under design conditions. The success also contributed to increased private investment in the project. An R&D 100 Award given to the partnership of NREL, Battelle, Future Energy Resources Company, and the Burlington Electric Department further recognized the deployment effort. ③④

What's Next

Market and Technology Analysis Supporting Biopower Commercialization

In the small modular biopower effort, NREL facilitates market and technology analysis for each of NREL's and Sandia National Laboratory's subcontractors. NREL will continue to assist the Biomass Power for Rural Development participants (the Salix Consortium in New York; the Chariton Valley switchgrass project in Iowa; and the Minnesota Agri-power project) who have cooperative development agreements with DOE's Golden Field Office. ①③

Facilitating Acceptance of Biopower in the Marketplace

NREL is working with a variety of regional interests (including the DOE Regional Bioenergy Programs), local and national environmental groups, utilities, and independent power producers to clarify the various environmental and public goods issues surrounding biopower and to educate consumers, stakeholders and the policy sector on these issues. These activities increase public and consumer support, open markets, and provide incentives for all biopower options. ③



Building More Efficiently

Over 1250 Energy-Efficient Houses

NREL collaborated with builders on the design of 1258 energy-efficient houses with new, smaller air-conditioning units that perform 30% to 70% better than conventional houses. Through the Building America Program, NREL conducted systems engineering research with residential developers. NREL provided technical expertise and knowledge that developers used in providing housing stock. For example, air-conditioning systems were downsized to match reduced cooling loads and lower overall system costs. Test results are being used as the basis for redesigning houses to meet the DOE program multi-year goal of 50% average energy performance improvement. ③

One Million Copies of Energy Savers Handbook Distributed

Working with Dow-Corning, Home Depot, and local utilities, NREL published and distributed over one million copies of the Energy Savers Handbook—a compact, colorful booklet that details hundreds of energy and money-saving tips for homeowners. The Handbook, which is the most widely circulated publication produced by NREL, contains tips on home weatherization and energy efficient heating and cooling systems, windows, and appliances. Dozens of contacts are included where consumers can find more information about energy-saving products and systems. The Handbook makes it easier for homeowners to adopt energy efficiency technologies and practices. ③

1200 Architects Use Building Energy Simulation Tools

NREL developed the Energy-10 simulation-based design tool to assist architects and engineers in designing extremely energy-efficient buildings. Energy-10 is used by over 1200 architects, engineers, builders, and building owners, and by one-third of U.S. architecture schools. This NREL design tool won 1st place in the R&D category in Architecture Magazine's Annual Awards—the architecture industry's most prestigious awards. ③④

Building America Industry Teams: Accelerated Development of Energy Systems

DOE's Building America Program advocates a systems engineering approach to home building that unites segments of the building industry that have traditionally worked independently. Teams of architects, engineers, builders, equipment manufacturers, material suppliers, community planners, mortgage lenders, and contractor trades to provide integrated and informed deployment of energy efficiency technologies and building designs. Currently, there are four teams of more than 50 different companies.

Acting as field manager for the program, NREL used systems engineering approaches to assist these teams in evaluating cost and performance trade-offs required to reduce new housing energy use by 50%. NREL served as technical monitor for the industry team subcontracts, maintained the Web site, and produced communication packages for the program. NREL's deployment facilitation role included field performance testing and analysis; creation of national and regional research collaborations within the auspices of the program; and overall technical performance and technical transfer monitoring. ③④

What's Next

NREL Supports Building America Industry Teams

Building America Team efforts will be expanded as the Partnership for Advancing Technology in Housing (PATH) communities begin construction activities, and additional industry team members will be added to support development of advanced energy systems. NREL will continue to provide field management and performance testing and analysis. ③



Transportation Energy Savings

Encouraging Alternative Fuel Vehicles

NREL provided DOE's Office of Technology Utilization with primary support for the Clean Cities Program and information dissemination on alternative fueled vehicles (AFVs). NREL managed DOE's National Clean Cities Conference, operated DOE's National Alternative Fuels and Clean Cities Hotlines (700 calls/month, 10,000 documents per month) and developed and provided information to stakeholders through specification sheets, case studies, guides, and newsletters.

NREL also trained regional coordinators of Clean Cities; developed and maintained new Web sites for the Office of Transportation Technologies, Clean Cities, and Alternative Fuel Data Center; and improved an internet application for users to identify the location and availability of fueling stations for alternative fueled vehicles throughout the country. NREL also developed a Web-based interactive Clean Cities map collection using geographic information system tools. These activities provided stakeholders with key information to encourage and enable the deployment of alternative fueled vehicles in attempts to clean the air in U.S. cities. ②③

Alternative Fuels Data Center

NREL's Alternative Fuels Data Center Web site contains information on alternative fuels, alternative fuel vehicles, refueling sites, fleet information, news, and connections to other Web sites. NREL completely redesigned the fleet information section describing niche markets with case studies to encourage sharing of real-world experience with alternative fuel vehicles. Alternative fuel vehicle owners can now find refueling sites more easily. Reaching out to a broader audience, the Center's Web site and Fleet Buyers Guide now includes information on medium and heavy-duty vehicles. Finally, to encourage awareness of technical advances, NREL added information on advanced technology vehicles. ③

Low-Sulfur Diesel Dramatically Reduces Emissions

NREL is conducting an evaluation of 184 fleet vehicles in southern California to analyze the effectiveness of BP Amoco's new ultra-low sulfur diesel fuel. Results to-date show that this fuel, plus installation of catalytic exhaust filters, virtually eliminates diesel smoke and odor, plus 91-99% of all particulate matter, hydrocarbon emissions, and carbon monoxide. Industry partners have valued NREL's fleet demonstration study and its independent evaluation of vehicle performance and emissions. ③④

What's Next

Overcoming Technical Barriers to Diesel Technologies in the Marketplace

NREL has established working relationships with the Engine Manufacturers Association (EMA), Manufacturers of Emission Controls Association (MECA), and their R&D program members on advanced fuels for diesel engines and emission control systems. The NREL-facilitated group is now conducting a major fuels project and is planning joint R&D through 2005. As a result of these relationships, EMA and MECA members are leveraging DOE funding by matching DOE funding and in-kind services. These programs are overcoming the technical barriers for diesel technologies to enter the light-duty vehicle market and meet future emission requirements in both the light and heavy-duty vehicle markets. ④



NREL Leads in Achieving Federal Energy Savings

920 Million BTUs Saved Annually

NREL recently helped negotiate nine Super Energy Savings Performance Contract (ESPC) and utility service contracts for government agencies, with \$76.6 million in private-sector investments. The projects are anticipated to save \$15 million in energy costs annually, as well as an estimated annual displacement of 920 billion BTUs and more than 15,000 metric tons of carbon equivalent emissions. Besides providing significant energy, cost, and emissions savings, the success of these projects proves that the Federal Energy Management Program (FEMP) model resolves financing barriers over diverse geographical areas and a wide range of technologies.

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Federal Facilities Receive Technical Assistance

In FY 1999, NREL's FEMP program provided design assistance on 28 federal renewable energy, energy efficiency, or water conservation projects with average potential annual savings per project of 158,993 kWh and \$27,817. FEMP also provided direct assistance to 17 renewable energy projects and supported 72 energy audits at federal facilities (41 were completed in FY 99).

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What's Next

Federal Energy Management Continues

As federal appropriations become scarce, agencies are turning to FEMP for assistance on how to achieve their energy goals through private sector investment financing. FEMP has been, and is expected to continue to be, a highly successful energy management program. Through the DOE ESPC vehicles, agencies can contract for up to \$5 billion from energy service companies. Through partnerships with utility

providers, FEMP has leveraged over \$300 million through fiscal year 1999 in energy projects funded through utility investments. These investment vehicles allow the Federal sector to partner with the private sector to procure and install energy equipment without money up front. The contractor finances the project and is paid back over time using the savings resulting from the efficiency upgrades.

③

International

New Philippines Renewable Energy Policies Adopted

Recommendations developed with NREL through its Philippines Renewable Energy Project led Philippines Energy Secretary Mario Tiaoqui to modify regulations to catalyze renewable energy market development in the Philippines. The new policy eliminates many prohibitive regulations and makes renewable energy more attractive to the private investment and international donor communities. The Philippines government is looking at renewable energy to provide the electric service critical to economic growth and help alleviate poverty in areas of the country now without electricity.

④



state Energy Alternatives



▶ What is Renewable Energy?

▶ Why Consider Renewable Energy?

Getting the Information Out

Green Power Network

NREL established a Green Power Network on the Internet (www.eren.doe.gov/greenpower/home.shtml) to analyze and track developing green-power markets nationwide. The deployment purpose of this Web site is to be the preeminent source for information on green power activities, resulting in informed market players like energy consumers, policy decision makers, suppliers, etc. NREL also routinely works with utilities, states, and green-power providers to further green markets and has prepared green market topical-issue briefs and co-authored numerous articles on green marketing issues. Finally, NREL helped organize and conduct the highly successful Fourth National Conference on Green Power Marketing in May 1999.

DOE cited the Green Marketing Analysis and Technical Assistance effort at NREL as an excellent example of a well-executed activity supporting the deployment of renewable energy technologies: "The program closely coordinates with industry, state legislators and regulators and other stakeholders through person contact, conferences, and technical assistance, and NREL engages national experts and industry leaders, as well as other DOE laboratories, to participate in analyses, workshops and other program activities." ①③

State Energy Alternatives Web Site

NREL developed the State Energy Alternatives Web site (www.eren.doe.gov/state_energy) to provide information on efficiency and building technologies to state energy decision-makers who can effect public policy that would promote the deployment of renewable energy and energy efficiency in their states. The site gives specific information on the potential of selected renewable energy resources in each state, as well as background information on each state's electric sector, policy options for renewable energy, and education information on renewable energy technologies. ③④

Catalyzing Policy

On June 28, 2000, NREL hosted an Energy Efficiency and Renewable Energy Policy Forum on Capitol Hill to encourage and catalyze discussion of key research and development policies. Such well-known panelists as John Holdren, Jack Gibbons, and Dick Balshizer participated in this very successful event focused on the education of congressional staff members.

Notes



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