

# Sustainable Energy

*Clean, Safe Energy That's  
Renewable and Efficient*

## in California

***Did you know ...  
that the price of  
photovoltaic  
electricity has  
dropped  
dramatically  
from \$15 per  
kilowatt-hour in  
1975 to less  
than 25¢ per  
kilowatt-hour  
today; the cost  
of wind energy  
has dropped  
over 50%?***

***And...  
that California  
produces 54%  
of the world's  
wind electricity,  
40% of the  
world's  
geothermal  
power, and 90%  
of the world's  
solar electric  
power?***

### **Jobs in Sustainable Energy**

The U.S. Department of Energy's (DOE's) National Renewable Energy Laboratory (NREL) leads the nation in research and development and lab-scale demonstration of sustainable energy technologies. In FY 1997, a total of \$15,811,341 in research contracts, service subcontracts, and procurements was awarded to California organizations by NREL.

NREL's many programs help facilitate technology development with interested consumers and potential partners from industry, business, academia, and the global community. NREL's technologies, which are clean and green, include:

- Photovoltaics (PV)
- Wind
- Biofuels
- Biomass power
- Hydrogen
- Superconductivity
- Solar thermal
- Geothermal
- Hybrid vehicles
- Building energy systems
- Industrial applications of solar power.

DOE's Federal Energy Management Program (FEMP) activities could add 1,290 jobs each year and save people in California an estimated \$67.5 million in annual energy costs.

### **Clean Energy = Clean Environment**

The clean electricity generated from renewable energy sources in California from both utility and nonutility generators displaces about 12,823 tons of carbon dioxide per year (measured in carbon units) that would be emitted by coal-fired power plants.

Between March 1996 and March 1997, the U.S. Environmental Protection Agency's Green Lights and Energy Star programs helped save 1,575,000,000 kilowatt-hours in California. This saved consumers in the state at least \$140 million in energy bills and prevented more than 1.55 billion pounds of carbon dioxide from entering the atmosphere. Projected cost savings through the year 2000 resulting from energy investments already made is \$440 million.

### **Economic Benefits**

In FY 1996, DOE's Office of Energy Efficiency and Renewable Energy (EE) invested \$73 million in California. California's consumer energy cost savings from EE research and development products are estimated to be more than \$3.3 billion.<sup>1</sup>

- Over six hundred businesses in California specialize in renewable energy-related products and services.
- State weatherization programs, aided by federal funding from DOE, helped at least 1,276 low-income and other disadvantaged California families last year.
- Solar Two, the largest solar thermal electric power plant of its kind in the world, is a 50-50, cost-shared project between EE and a team of utility and industry partners led by Southern California Edison Company. This 10-megawatt (MW) prototype plant demonstrates that clean solar energy is a reliable and economical way to produce large quantities of power. It began producing electricity in early 1996 and is designed to operate commercially for 25 to 30 years.

**Did you know... that 43.4% of California's electricity is generated from natural gas, 1.3% from petroleum, 25.3% from nuclear, 17.3% from hydroelectric, 9.9% from geothermal, and 2.8% from other sources, including biofuels, wind, solar thermal, and photovoltaics?**

**And...that California spends \$50 billion per year on energy—more than any other state, and it is the second-largest producer of greenhouse gas emissions per capita?**

- C Wind Corporation in Tehachapi, has won a \$20 million DOE contract that is expected to give a substantial boost to the domestic wind industry. Greater reliance on wind, an abundant source of nonpolluting, renewable energy, will significantly help the United States to lower its dependence on imported oil and reduce greenhouse gases that contribute to global warming.
- C The Schatz Energy Research Center at Humboldt State University is working through a \$696,000 cooperative agreement with EE to develop a clean and sustainable transportation system for the city of Palm Desert. The project demonstrates the practical utility of hydrogen through the development of a fleet of eight fuel-cell-powered vehicles, solar- and wind-powered hydrogen generating facilities, a consumer-ready fueling station, and a service center. The system offers a clean domestic energy supply that is predictable, safe, and abundant.
- The National Park Service's Presidio of San Francisco is receiving FEMP technical assistance including: audits, design assistance, energy savings performance contracting, and a federal Energy Efficiency Fund grant.
- The Sacramento Municipal Utility District developed a program that builds local demand for solar energy systems. The PV Pioneer program has put PV systems on 420 roofs and another 10 MW of PV systems are planned for installation from 1998 to 2002.
- Southern California Edison had planned to tear up streets and put in bigger electric transmission lines. Instead, it made a deal with nearby Huntington Library to put PV panels in its renowned botanical garden and send the nonpolluting power back into the neighborhood.

## Want More Information?

**Office of Energy Conservation  
Consumer Hotline**  
800-OEC-6662

**Energy Efficiency and Renewable  
Energy Clearinghouse (EREC)**  
800-363-3732  
<http://www.eren.doe.gov>

**National Renewable Energy  
Laboratory (NREL)**  
800-644-NREL  
<http://www.nrel.gov>

**Federal Energy Management  
Program (FEMP)**  
<http://www.eren.doe.gov/femp/>

**National Association of State  
Energy Officials**  
<http://www.naseo.org/>

**U.S. Environmental Protection Agency's  
(EPA) Green Lights and Energy Star**  
<http://www.epa.gov/energystar.html>

<sup>1</sup>Based on a GAO review and validation of the energy savings of EE research and development success stories.

Questions?  
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### National Renewable Energy Laboratory

NREL is a national laboratory of the U.S. Department of Energy (DOE), managed for DOE by Midwest Research Institute

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