



# Renewables and Distributed Energy Resources

California is rich with renewable energy resources that provide a natural and valuable fit with distributed energy goals. For example, there is a close match between the power generation profile of photovoltaic (PV) systems and peak electricity demand. Consequently, used in combination with energy efficiency strategies, building integrated PV systems offer California's residential and small commercial customers an environmentally clean way to insulate themselves from volatile electricity prices. Similarly, California abounds in dispersed supplies of biomass resources. Harnessed properly with small modular technologies, biopower systems can help defer expensive T&D upgrades while simultaneously reducing use of landfills, decreasing air pollution from open-field burning, and preventing costly and agonizing wildfires. In addition, hybrid "mini-grids" composed of combinations of modular renewable and fossil-based power systems offer promising new ways to rapidly and cost-effectively locate generation close to demand centers while meeting requirements for high reliability, dispatchability and green power.

## Partnerships for Developing Distributed Renewable Energy Systems

The PIER Renewables Program is interested in pursuing partnerships in renewable-based distributed energy projects that encompass private industry, local, academic, state and federal interests. At the federal level, the Department of Energy has a number of programs or initiatives that can possibly be used in conjunction with PIER Renewables including: Million Solar Roofs; Wind Powering America; GeoPowering the West; the BioEnergy Initiative and Small Modular BioPower Program, the Brightfields Initiative and the Distributed Power Program. Similarly, possible partnership opportunities available through the Environmental Protection Agency include the Landfill Methane Outreach Program and the AgStar Program. At the state level, the Energy Commission is partnering with other state agencies to use California's renewable resources in ways that will improve California's environment and economy; including their use in distributed energy systems.

## PIER Distributed Renewable Energy Projects

To date, PIER has provided approximately \$3.4 million towards the development of renewably based distributed energy projects. Examples of these projects include:

### *Distributed Biomass Energy Projects*

- \$983,000 to FlexEnergy Inc. for development of an innovative new distributed generation system that will convert biomass resources into electricity using microturbine technology.
- \$645,827 to Community Power Company to further advance a small biomass gasifier/engine system that can use forest thinnings to provide dispatchable electricity in capacity-constrained rural areas of California.

### *Distributed Solar Energy Projects*

- \$958,991 to PowerLight Corporation to help expand the availability of distributed generation options to commercial and residential electricity customers by reducing the cost of manufacturing building-integrated PV systems.
- \$426,343 to Utility Power Group to design, fabricate and test a residential PV system that will offer lower costs and higher reliability through innovations on the power collection, conversion and control system, by adopting standardized hardware and installation kits, and a lower-cost battery.

## Opportunities for PIER Renewables Funding

A number of opportunities exist for research funding related to distributed renewable energy technologies. The PIER Renewable Program is releasing an \$18 million solicitation in November 2000: "Making Renewables Part of an Affordable and Diverse Electricity System in California." Use of renewable-based distributed energy systems will likely be among the key methods to be considered by applicants. Two additional solicitations are planned for Spring and Summer of 2001. The Spring 2001 solicitation will focus on renewable energy research that will help increase the reliability and quality of California's electricity system. The Summer 2001 solicitation will focus on renewable energy research that will enhance the state's environmental quality and public health.