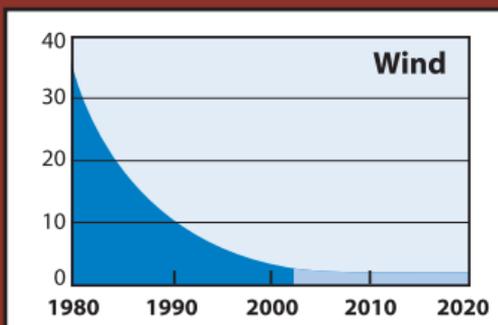
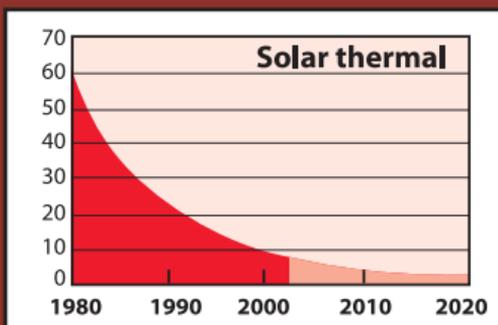
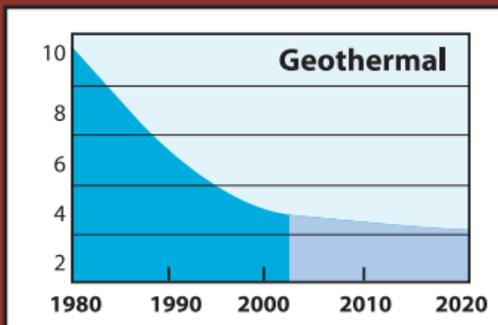
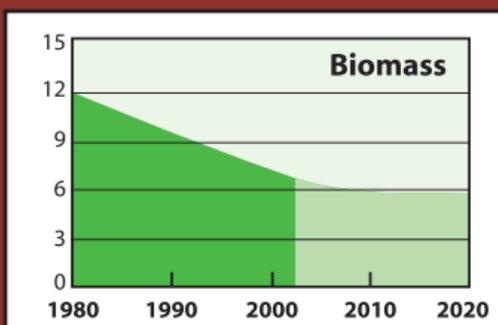
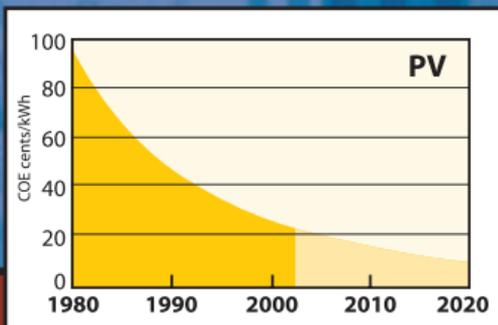


# Energy Analysis

## Understanding Energy Issues



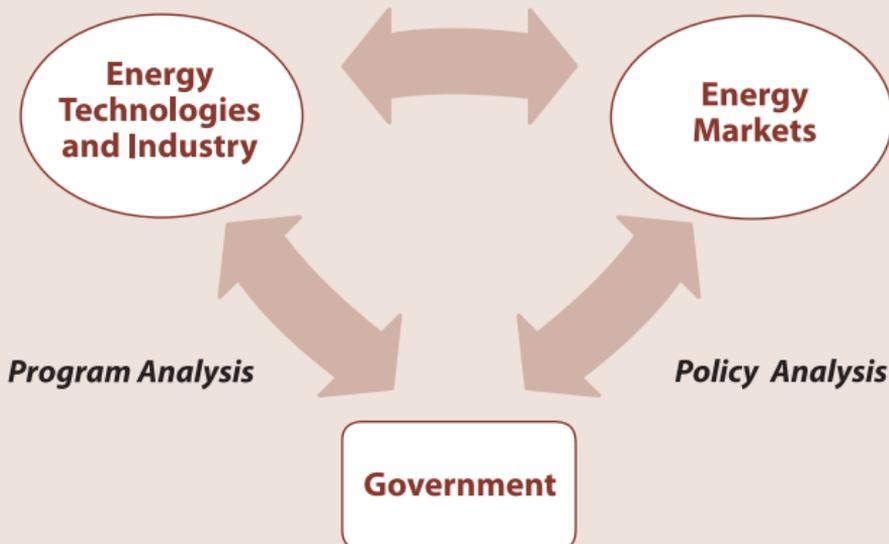
*“NREL’s Renewable Energy Cost Trends provide reflections of historical data, as well as projected costs of renewable energy technologies through 2020”*

# Types of Analysis

*Technology Analysis*

*Market Analysis*

*Application Analysis*



## **Purpose of Energy Analysis**

To understand the characteristics, roles, and interactions of these players; and to use that understanding to inform energy-related decision making.

## **Overview**

Analysis at NREL aims to increase the understanding of the current and future characteristics, roles, and interactions of government, markets, and technologies. The acquired understanding is used to inform technology, benefits, market, policy, and program decisions as energy-efficient and renewable energy technologies advance from concept to commercial application.

## **Outreach**

NREL sponsors several outreach events to help educate people about analysis—and create a dialogue that helps determine analysis priorities. These events include monthly seminars, a yearly Energy Analysis Forum, a Renewable Energy Modeling Series, and an annual Green Power Marketing Conference. Visit the Energy Analysis Web site at [www.nrel.gov/analysis](http://www.nrel.gov/analysis) for more information.



*Analysis using Geographic Information Systems (GIS) technology (left) and the annual green power conference (below).*



## Capabilities and Expertise

Energy analysis at NREL is conducted in five major areas of interest, focusing on technology, benefits, market, policy, and program analysis. This analysis covers a broad range of research programs—from life-cycle assessments to vehicle systems to online renewable energy analysis applications. NREL's key analysis areas are outlined below:

### Technology Analysis

Examines RD&D areas in terms of potential costs, benefits, risks, uncertainties, and timeframes.

### Benefits Analysis

Looks at the economic, environmental, security, and other impacts of current renewable energy programs.

### Market Analysis

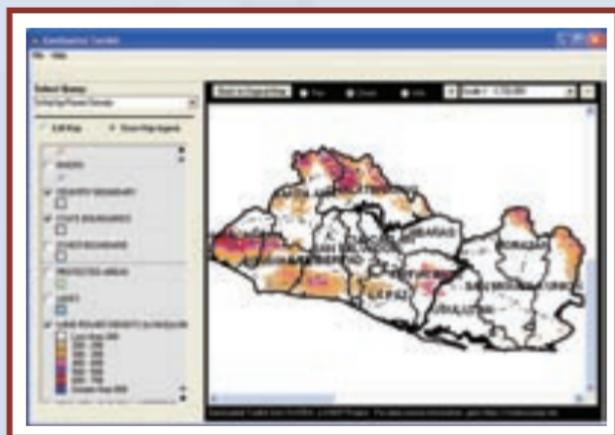
Helps key players increase the use of energy efficiency and renewable energy technologies in the marketplace.

### Policy Analysis

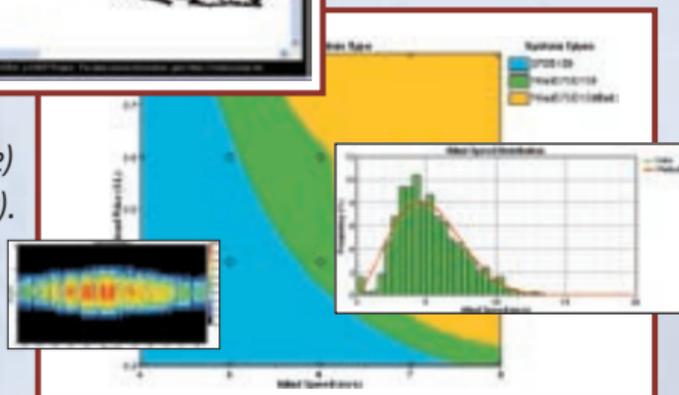
Evaluates policies that can advance—or provide alternatives to—renewable energy technologies in meeting national goals.

### Program Analysis

Conducts work that shapes the Department of Energy's (DOE) budgeting, planning, and management functions.



The SWERA model (above) and HOMER results (right).



## Models and Tools

The Lab's models and tools can be used to learn more about our main renewable energy technologies and their uses. Key models include:

### **HOMER – Micropower Optimization Model**

[www.nrel.gov/homer/](http://www.nrel.gov/homer/)

Simplifies the task of evaluating design options for both off-grid and grid-connected power systems.

### **Renewable Electric Plant Information System (REPiS)**

[www.nrel.gov/analysis/repis/](http://www.nrel.gov/analysis/repis/)

Includes information on operating (as well as planned) renewable energy units for several technologies.

### **Solar and Wind Energy Resource Assessment (SWERA) Model**

<http://analysis.nrel.gov/swera3/>

Compiles solar and wind energy resource data in 13 developing countries, facilitating investments in energy projects.

### **ADVISOR (ADvanced Vehicle SimulatOR)**

[www.ctts.nrel.gov/analysis/advisor.html](http://www.ctts.nrel.gov/analysis/advisor.html)

Analyzes conventional, advanced, light, and heavy vehicles, including hybrid-electric and fuel cell vehicles.

### **Job and Economic Development Impact (JEDI) Model**

[www.eere.energy.gov/windandhydro/windpoweringamerica/software.asp](http://www.eere.energy.gov/windandhydro/windpoweringamerica/software.asp)

Calculates economic impacts from wind projects.

[www.nrel.gov/analysis](http://www.nrel.gov/analysis)



*The Green Power Network (above) and NREL's annual benefits analysis report (right).*



## Online References

### Green Power Network

[www.eere.energy.gov/greenpower/](http://www.eere.energy.gov/greenpower/)

Provides news and information on green power markets and related activities.

### Power Technologies Energy Data Book

[www.nrel.gov/analysis/power\\_databook/](http://www.nrel.gov/analysis/power_databook/)

Compiles—in one central document—a comprehensive set of data about power technologies from diverse sources.

## Publications

### Benefits Analysis for Programs

[www.eere.energy.gov/office\\_eere/ba/gpra.html](http://www.eere.energy.gov/office_eere/ba/gpra.html)

NREL produces an annual benefits analysis report, meeting requirements of the Government Performance and Results Act (GPRA) and documenting some of the economic, environmental, and security benefits (or outcomes) from achieving program goals.

### Distributed Energy

#### Technology Characterizations

[www.nrel.gov/analysis/pdfs/2003/2003\\_gas-fired\\_der.pdf](http://www.nrel.gov/analysis/pdfs/2003/2003_gas-fired_der.pdf)

This report documents the status and potential of distributed energy resource technologies, providing a consistent and objective set of cost and performance data in prospective electric-power generation applications.

## Working with Us

The Energy Analysis Office (EAO) integrates and supports the energy analysis functions located in many of the Laboratory's research programs and technology centers. With offices in Washington, D.C., and Golden, Colorado, the Energy Analysis Office promotes understanding and collaboration through all of its analysis activities.

NREL's staff analysts have capabilities that span a wide range of renewable energy technologies. To learn more about their crosscutting analysis capabilities, energy-modeling background, and technology expertise, access the Staff section of the Web site at [www.nrel.gov/analysis/staff.html](http://www.nrel.gov/analysis/staff.html).

If you need to talk directly with one of our analysts, please contact the appropriate office listed below.

In Washington, D.C.

### **Energy Analysis Office**

National Renewable Energy Laboratory

901 D Street SW Suite 930

Washington, DC 20024-2157

Tel: 202-646-5058

E-mail: [energy\\_analysis@nrel.gov](mailto:energy_analysis@nrel.gov)

In Golden, Colorado

### **Energy Analysis Office**

National Renewable Energy Laboratory

1617 Cole Blvd.

Golden, CO 80401

Tel: 303-384-7439

E-mail: [energy\\_analysis@nrel.gov](mailto:energy_analysis@nrel.gov)

For more information, access the Energy Analysis Web site at [www.nrel.gov/analysis](http://www.nrel.gov/analysis)

### **National Renewable Energy Laboratory**

1617 Cole Boulevard, Golden, Colorado 80401-3393

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