

What You Can Do

The options that make the most sense for you depend on your local renewable resources, energy markets, and the types of support available from federal and state government. A growing number of states are requiring electricity companies to provide some power from renewable sources, creating new markets. Other states have funds for renewable energy development. Most now allow net metering, which makes it easier and more affordable for farms to generate the power they need from renewables. And many states have companies that sell renewable energy directly to customers.

Several million dollars of federal incentives are also available through the 2002 Farm Bill to invest in renewable energy systems. For more information, go to the U.S. Department of Agriculture website at www.rurdev.usda.gov/rd/farmbill/9006resources.html.

We can provide you with renewable energy resource maps and tell you what types of markets and support are available or being considered in your state.

UCS fact sheets provide more information about agriculture and specific renewable energy sources:

- ◉ Farming the Wind: Wind Power and Agriculture
- ◉ Growing Energy on the Farm: Biomass Energy and Agriculture
- ◉ Up with the Sun: Solar Energy and Agriculture

To find out more about renewable energy and agriculture, visit the Clean Energy section of the UCS website at www.ucsusa.org/clean_energy. Or, write to: Clean Energy Program, Union of Concerned Scientists, Two Brattle Square, Cambridge, MA 02238, or call (617) 547-5552.



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FACT SHEET

Renewable Energy and Agriculture: A Natural Fit

Many farmers already produce renewable energy by growing corn to make ethanol. An increasing number of farmers and ranchers are now adding to their incomes by harvesting the wind that blows across their land to make electricity. And new options are becoming available.

Renewable energy and farming are a winning combination. Wind, solar, and biomass energy can be harvested forever, providing farmers with a long-term source of income. Renewable energy can be used on the farm to replace other fuels or sold as a “cash crop.”

Wind energy alone could provide 80,000 new jobs and \$1.2 billion in new income for farmers and rural landowners by 2020, according to the U.S. Department of Energy. Renewable energy can also help reduce pollution, global warming, and dependence on imported fuels.

This leaflet describes renewable energy options for farmers and ranchers and how they can help make renewables a growing source of energy and rural income in the United States. Other leaflets describe solar, wind, and biomass energy in more detail.



Wind power is at home in farm country.

Photo: Warren Gretz, NREL

Wind Power

Farms have long used wind power to pump water and generate electricity. Recently, wind developers have installed large wind turbines on farms and ranches in a number of states to provide power to electric companies and consumers. Where there are strong winds, developers may pay as much as \$2,000 to \$5,000 per year for each turbine installed. Each turbine uses less than half an acre, so farmers can plant crops and graze livestock right to the turbine's base. Some farmers have also purchased wind turbines; others are starting to form wind power cooperatives.

Today, most large turbines are being installed in the Midwest, Great Plains, and West, where state policies provide support. But farmers in many more states could benefit, since some of the best wind resources are found on agricultural lands.



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Solar power pumps water on this Colorado ranch.
Photo: K.C. Electric, NREL

Solar Energy

The amount of energy from the sun that reaches Earth each day is enormous. All the energy stored in Earth's reserves of coal, oil, and natural gas is equal to the energy from only 20 days of sunshine. While desert areas such as Arizona and Nevada get more sun than other parts of the United States, most areas receive enough sunshine to make solar energy practical.

Solar energy can be used in agriculture in a number of ways, saving money, increasing self-reliance, and reducing pollution. Solar energy can cut a farm's

electricity and heating bills. Solar heat collectors can be used to dry crops and warm homes, livestock buildings, and greenhouses. Solar water heaters can provide hot water for dairy operations, pen cleaning, and homes. Photovoltaics (solar electric panels) can power farm operations and remote water pumps, lights, and electric fences. Buildings and barns can be renovated to capture natural daylight, instead of using electric lights. Solar power is often less expensive than extending power lines.

Biomass Energy

Biomass energy is produced from plants and organic wastes—everything from crops, trees, and crop residues to manure. Crops grown for energy could be produced in large quantities, just as food crops are. While corn is currently the most widely used energy crop, native prairie grasses such as switchgrass or fast-growing trees such as poplar and willow are likely to become the most popular in the future. These perennial crops require less maintenance and fewer inputs than do annual row crops such as corn, so they are cheaper and more sustainable to produce.

Crops and biomass wastes can be converted to energy on the farm or sold to energy companies that produce fuel for cars and tractors and heat and power for homes and businesses. According to the U.S. Department of Energy, tripling U.S. use of biomass energy could provide as much as \$20 billion in new income for farmers and rural communities and reduce global warming emissions by the same amount as taking 70 million cars off the road. New incentives are available from the federal government and a number of states to help capture these benefits.

Switchgrass is a promising energy crop that can be handled with typical farm equipment.

Photo: Art Wiselogel, NREL

