

Biomass Power for Rural Development



The Benefits of Biomass

Using biomass, such as energy crops, crop processing waste, and agricultural residues, to produce energy benefits the nation, especially rural areas. The U.S. Departments of Energy and Agriculture work together to advance the development of electricity generation systems that use biomass instead of fossil fuels. The national benefits include lower sulfur emissions (which contribute to acid rain), reductions in greenhouse gas emissions, and less dependence on fossil fuels. Rural benefits feature new sources of income for farmers, more jobs, and economic development—all achieved while preserving the high quality of life, local control, and clean environment that help make rural America a good place to live.

When economic development happens without harming the environment or jeopardizing our well-being, we call it sustainable. In the projects established throughout the nation to demonstrate and validate biomass power production, we hope to embody the principles of sustainable development at its best. For more information about this new technology, see the fact sheets: “Biopower Program—Activities Overview” and “Biomass Cofiring.”



Warren Grez, NREL/PIX0836

With electricity production as an option, farmers can be more confident that their crops will have stable and profitable markets.

New Life for Old Ways

Using biomass to generate heat or to drive steam engines is not new. But old-fashioned methods of burning wood, field residues, or waste were not environmentally sound because they emitted polluting smoke and volatile organic compounds into the air. Today, scientists and engineers use improved processes to develop several new methods that cleanly and efficiently convert biomass to electricity. One new method uses biomass to replace a portion of the coal used to fuel a power plant. This is called cofiring.

Living Examples of Biomass at Work

Switchgrass Binds Prairie

Underutilized, marginal land will be put to work through a public/private partnership to grow switchgrass for energy generation in Iowa. Currently, switchgrass is grown for feed or to reduce soil erosion. By cofiring the switchgrass in coal boilers, this native crop can generate about 35 megawatts of electrical power, enough to serve about 30,000 homes. Fifteen organizations, representing a broad cross section of business, community, utility, and governmental interests, will work with hundreds of farmers and landowners to develop a biomass power system that will reduce acid rain. The partners plan a 4,000-acre demonstration project that will help farmers acquire new and sustainable income as a lasting alternative to traditional federal farm subsidies. In addition, increased use of home-grown renewable energy will keep more energy dollars in Iowa. Other important environmental benefits will also be realized—the local watershed and surrounding wildlife habitats will be protected and improved, and the use of chemical pesticides and fertilizers will decline.

Farmed Trees Grow Energy

In upper Minnesota, the WesMin Resource Conservation and Development District led a consortium that established 1,870 acres of hybrid poplar on Conservation Reserve Program land. Scientists manage and study these four-year-old trees extensively to learn how to grow dedicated crops for future energy uses.



Daniel Peck/PIX05082

Energy for the Country

Many rural areas are growing and experiencing increasing energy demand. But building big baseload power plants is no longer desirable. Smaller facilities have fewer environmental impacts and can operate with locally produced biomass fuel. Using biomass delivers a triple benefit by keeping the wealth nearby, paying farmers to grow and harvest biomass feedstocks, and providing clean energy to fuel a rural renaissance. With clean energy, people in rural areas can be more productive, work near home, and enjoy a clean, high quality of life.



Warren Greiz, NREL / PIX00083

Tim Volk, a biomass researcher, examines a willow growing on a plantation in New York. These trees can be used for cofiring in coal plants or may go to modern electricity generation facilities to create clean, renewable energy.

Farmers Dedicate Crops to Energy in New York

The first dedicated crops for energy production in the United States—willow trees—are growing on land set aside by 26 farmers and landowners near Syracuse, New York. The project is managed by the Salix Consortium, with 25 university, association, corporate, utility, and government partners. Every three years these trees produce a crop that can be efficiently harvested using machinery already in place. Several power plants will participate in the project, cofiring the harvested feedstock with other fuels to produce electricity and reduce emissions. Projections indicate that such willow crops could be competitive with coal for producing energy without government subsidies.

Even marginal lands can produce value when community leaders, conservation officials, and technical experts work together to develop biomass crops, such as switchgrass, that also prevent erosion and protect wildlife habitats.

For More Information

Visit the Biopower Web Site:

<http://www.eren.doe.gov/biopower>

For copies of print documents on renewable energy, call DOE's Energy Efficiency and Renewable Energy Clearinghouse (EREC) 1-800-DOE-EREC (1-800-363-3732)

