



WOOD ^{to} ENERGY

Fact Sheet

An Invitation to Explore Possibilities

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Communities across the South are experiencing rapid development, increasing energy demand, and rising energy costs (Figure 1). In many of these communities, nearby sources of wood could provide a significant source of fuel. This fact sheet introduces some important concepts behind this age-old idea of using wood for energy.

When considering the challenge of meeting increasing energy needs with the construction of a new facility, people often compare the new costs to current costs. This practice essentially compares the cost of a new facility to no facility. If we assume that we will need more energy, however, we should explore which type of facility and which source of additional energy best meets the local needs and compare the costs of two or more new facilities.

While improvements in home and appliance efficiency coupled with conservation efforts may decrease the need

According to the United States Department of Energy, in 2004 Americans consumed 98.05 quadrillion British thermal units (Btu) of energy, with the largest portion coming from fossil fuels: petroleum products, natural gas, and coal. For comparison, consider that one quadrillion Btu is equivalent to 470,000 barrels of oil every day for one year. By 2030 the U.S. is projected to use 34 percent more energy than we use today.

for some additional projected energy needs, concerns about climate change and security suggest that we should consider energy sources that reduce our dependence on fossil fuels. These factors indicate that renewable sources of energy will become an increasingly important part of meeting our nation's energy demands. Renewable resources have the ability to regenerate at regular intervals.



Why Is There Interest in Generating Heat and Power from Wood?

Interest in using wood for energy stems largely from the fact that wood is a locally produced, renewable resource available for harvest every month of the year in the South (Figure 2). It plays an important role in the governmental and nongovernmental initiatives to increase energy security, such as the federal Biofuels Initiative, "30 x 30," which calls for producing 30 percent of this nation's energy from biomass by the year 2030. Some of this energy may come from converting agricultural crops and

Figure 1. Energy demand and costs are increasing across the South.

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waste to ethanol to power vehicles, but wood waste is expected to generate heat and power directly.

Even the most ardent proponents of woody biomass as an energy source acknowledge that it does not represent a silver-bullet solution to our energy quest. Many scientists agree that no one solution (such as solar energy, increased efficiency, nuclear, biodiesel, or wood) can solve our energy challenges alone. It is more productive to look at each source as a piece of the puzzle. The question is not about which of these energy alternatives we should use instead of another, but rather how we can utilize *all* of the feasible alternatives in combination so that collectively they help us to meet future energy needs while reducing greenhouse gas emissions.

How Do I Know if a Wood-to-Energy Facility Is Right for My Area?

The following questions and comments can help you decide how suitable woody biomass may be as an energy source in your region. If any of the following circumstances match your situation, woody biomass may be a reasonable energy source to explore.

1. The population is growing and energy demand is predicted to rise. It is difficult to predict future energy needs, but in general one can assume that if a community is adding new homes and people, it will need additional electricity. Are there plans to expand an existing power plant or build a new one? Are there plans for a new hospital, school, industrial park, or prison?
2. Your community has local industries, such as saw mills or furniture manufacturers, that generate waste wood materials which can be used to generate heat or power for that industry, a school, or a hospital.
3. Your community currently burns natural gas to generate electricity and people are interested in switching to a different fuel because of the recent and projected price increases.



Figure 2. Woody biomass can be a local, renewable source of energy.

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4. The community is interested in generating power without producing more greenhouse gases that contribute to global climate change. Of course burning any fuel generates carbon dioxide, but wood products are renewable and when the forests are replanted, that carbon dioxide will be absorbed as the forest grows. This makes wood an attractive and carbon-neutral fuel. For more information, see the fact sheet, *Climate Change and Carbon*.
5. Working, productive forests are within one hour's drive of your community. Forests that are regularly harvested for lumber and pulp generate waste materials (treetops, branches, and stumps) that are often piled and burned. By collecting this material and transporting it to a power plant, school, or other facility, it can be burned in enclosed combustion chambers that allow the emissions to be controlled while at the same time generating electricity, heat, or steam power.
6. The community is willing to support the supplementation of available waste wood with a local forestry operation that produces fast-growing trees exclusively for energy.
7. Rapid growth of vegetation and regular tree trimming create enough urban waste wood to fuel a power facility. New development and road expansion require the removal of trees that can be used as fuel. All these activities create waste wood, which is a source of low-cost woody biomass.

8. Nearby overgrown forests are being thinned for wild-life management, reduced risk of wildfire, ecosystem restoration, and forest health, providing opportunities to generate waste wood that can be collected and burned for energy.
9. Industries—whether new or existing—need low-cost, secure supplies of energy to remain competitive in a global marketplace. The availability of clean, low-cost, secure energy supplies can be used to attract industry to communities, increase the number of local jobs, and provide more cash in the community.

How Do I Find Out More about Using Wood to Produce Energy?

There are a number of important questions that each community should discuss before deciding to use wood to generate electricity or combined heat and power. Sources of wood, cost of wood, competition from other

fuels, competition for wood, transportation, sustainability of forests, economic impact of using wood, and how the wood is converted to energy may be some of the issues that deserve exploration. For more information regarding specific concerns about wood-to-energy facilities, refer to the other fact sheets, case studies, and community economic profiles available in this series at <http://www.interfacesouth.org/woodybiomass>. Additional information is available at <http://www.forestbioenergy.net>.

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