# From Wood Residues to Wood Pellets

## Measuring the Environmental Impacts of Making Wood Fuel Pellets

### The Challenge

Several factors are driving the recent interest in developing fuels and products from plants—high petroleum prices, a desire for energy independence, the need to diversify rural economies, and concern about the environmental impacts of using fossil carbon sources. From an environmental impact standpoint, intuition suggests that products and fuels made from plants inherently have environmental advantages. However, there is growing debate about these potential environmental benefits. People are paying more attention to the volume of fossil carbon resources needed to produce energy from plants and the potential tradeoffs that are involved, such as between food and fuel. While the environmental advantages of using bio-based resources remain important, they can no longer be assumed—they must be demonstrated.

### The Solution

The Northeastern Area State and Private Forestry Wood Education and Resource Center awarded a grant to the Forest Products Center at the University of Tennessee. Researchers used this funding to measure and analyze the environmental impacts of making hardwood fuel pellets from hardwood flooring residues in the Southeastern United States. They did this by documenting the life cycle inventory of this process—the environmental impacts from resource extraction to the finished product. The inventory is an important first component in evaluating the environmental profile of hardwood products as a whole.

After completing the life cycle inventory, researchers presented their information at a workshop and Webinar on wood pellets for existing and prospective pellet manufacturers. The presentations included Pellet Making 101, Getting into the Wood Pellet Business: A Case Study, Environmental Aspects, and Markets and Marketing.

***Turning hardwood flooring manufacturing residues into wood pellets produced a net energy gain of 10.6 million BTUs.***

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*Researchers analyzed the environmental impacts of making hardwood fuel pellets such as those pictured from hardwood flooring residues in the Southeastern United States.*

### Resulting Benefits

- The study documented that it required 5.8 million BTUs (British thermal units) of fossil carbon resources to turn hardwood flooring manufacturing residues into wood pellets that in turn could produce 16.4 million BTUs of bioenergy, resulting in a net energy gain of 10.6 million BTUs.
- The life cycle inventory provides a foundation for building a more complete and broader life cycle inventory of woody biomass materials.
- Sixty-four people participated in a workshop on wood pellets for existing and prospective pellet manufacturers.

### Sharing Success

- Forest Products Center personnel presented a Webinar, which can be viewed at http://160.36.161.128/UTK/Catalog/pages/catalog.aspx?catalogId=3526d222-44e8-4c05-aee4-e61d8e71e7d1.
- Published an article in *Wood and Fiber Science*, the official journal of the Society of Wood Science and Technology
- Presented *Life Cycle Inventories for Wood and Switchgrass Pellets* at the Forest Products Society meeting in Portland, OR, in 2011.
- Presented a poster, *Life Cycle Inventories for Wood and Switchgrass Pellets*, at the Life Cycle Assessment XI Conference in Chicago, IL, in 2011.

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