

# Agenda for Action

## NEWEST RENEWABLE FUEL TECHNOLOGY Biomass Gasification

The forest products industry has been working with the Department of Energy's Agenda 2020 program to develop biomass gasification technologies. If fully commercialized, these technologies could make the U.S. forest products industry totally energy self-reliant and generate a surplus of 22 gigawatts of power to the grid—the equivalent of one-half of California's peak summertime electric use.

The carbon displacement from biomass gasification could be even more dramatic, transforming the industry from *emitting* 24 million tons of carbon each year to *displacing* at least 18 million tons of greenhouse gas from fossil fuels – before taking into consideration the carbon sequestration benefits of forests! But as great as these benefits are, developing and commercializing this technology is a risky business. The continued partnership with DOE is critical to the success of these breakthrough technologies.

### **The Forest Products Industry's R&D Helps Meet U.S. Energy Needs Using Carbon-Neutral Solutions.**

Ranking sixth among domestic manufacturing sectors based on gross domestic product (GDP), the forest products industry is the nation's most capital-intensive manufacturing industry and one of the country's most energy-intensive. It also is the #1 producer of cogenerated electricity, which is derived along with useful heat from a single energy source – principally biomass. These wood-based fuels are ideal because they can generate power cleanly and efficiently, at a comparatively low cost. Moreover, renewable biomass fuels are considered carbon-neutral in relation to greenhouse gas emissions when combusted.

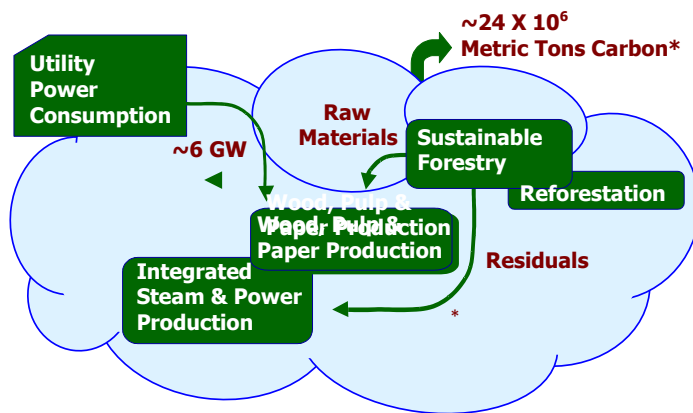
The forest and paper industry already produces more than 41% of the nation's self-generated electricity through cogeneration. It also far outpaces all other manufacturing industries by generating nearly 85% of that onsite electricity from renewable resources. The industry's next goal is to add biomass gasification to its energy portfolio.

Black liquor is one biomass fuel created during the chemical pulping process. Gasification converts these pulping extractives and other forms of biomass into combustible gases that can be efficiently burned like natural gas. If fully commercialized, these technologies could produce enormous energy and environmental benefits:

- Biomass gasification could make the U.S. forest products industry totally energy self-reliant and generate a surplus of 22 gigawatts of power to the grid—the equivalent of one-half of California's peak summertime electric use.

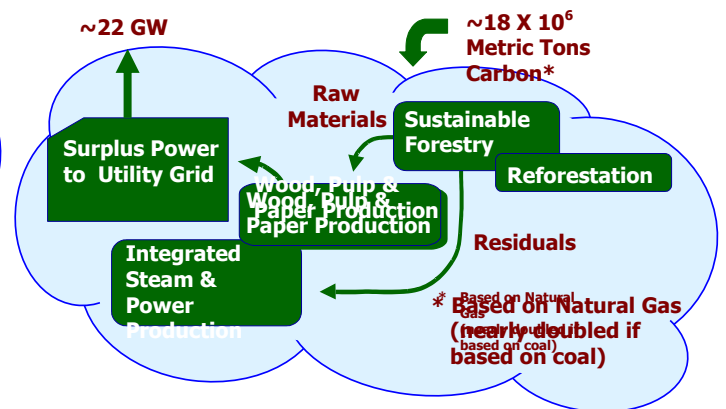
- The carbon reductions from biomass gasification could be even more dramatic. The forest products industry could go from *emitting* 24 million tons of carbon each year to displacing at least 18 million tons of greenhouse

## Today's Plant Technology



Utility Grid Power Consumption: 6 GW  
Carbon Emissions: 24 MM tons

## Total Replacement (if everyone is able to use the technology)



Utility Grid Power Contribution: 22 GW  
Carbon Removal: 18 MM tons

gas from fossil fuels – before taking into consideration any carbon sequestration benefits from forests.

- Gasification could have the positive collateral effects of reducing nitrogen oxides and sulfur dioxide emissions by 80%-90%. Emissions of other pollutants (particulate matter and volatile organic compounds) from boilers also could be reduced by 80% to 90% compared with traditional solid or liquid combustion technology.

## Continued partnership with DOE is needed to Make the Promise Of Biomass Gasification a Reality.

As with any investment with great potential for positive return, biomass gasification research and development is costly and risky. The forest products industry is moving forward, but it can't succeed alone. The industry needs a consistent and committed partner to ensure successful commercialization.

The first commercial-scale biomass (black liquor) plant is being built by Georgia-Pacific Corp. in Big Island, VA. It is slated to go on-line in 2003. Other commercialization tests will continue over the next 10 years, if adequately funded. Industry participants are putting up 50% of the investment capital for these demonstration projects. Continued partnership and cost sharing with DOE is essential to the successful commercialization of biomass gasification technology.