



RESERVE WASTE STOCKPILE—Waste wood fuel users need to maintain reserve stockpiles as a hedge against supply disruptions. While most reserves are stored in covered buildings—such as above—bins and silos, open air storage is not rare.

Industrial Wood Fuel Alabama's Growing Energy Resource

by Phillip C. Badger and C. David Stephenson

Forestry's contributions to the economy of Alabama, and indeed to the rest of the nation and world, are well known. Less appreciated but rapidly achieving recognition is the use of two industry "leftovers," sawdust and tree bark, as fuel to heat the boilers that provide an energy source to operate production-line equipment.

The forest products industry produces large amounts of what used to be called "waste," but actually is a high-quality wood fuel. In fact, in 1987 over six million tons of the fuel were used in Alabama, ranking it second in the nation utilizing this growing energy resource.

Today, more than 120 manufacturing facilities in Alabama use such "waste" wood fuels. The largest, Scott Paper in Mobile, burns over 3,000 tons a day to produce "process heat." Like many other

forest industries, Scott turned to burning the wood as a disposal option and because it's an environmentally clean fuel.

Russell Corp., the United States' largest manufacturer of sportswear, in 1976 became the first major domestic nonwood products industry to use wood. Russell installed two 60,000-pound-per-hour wood-fired steam boilers at their 6,000-employee textile mill in Alexander City.

Low Cost, Clean

As with many other nonforest product industry users since, the company was attracted to wood fuel because of its low cost, clean emissions and local availability. In fact, Russell first began to look at alternative fuels as a result of the oil crises of the 1970s. The sportswear manufacturer found wood fuels could provide

energy security in terms of price and supply because wood was renewable, locally grown and could be obtained from a number of sources.

In 1988 Russell doubled its wood fuel use from 200 to 400 tons per day. The company sees the use of wood fuels a fixture in its future. In fact, it has established ECON, a subsidiary company to broker wood fuel supplies for other wood fuel users.

The State of Alabama, building on the many successful prison projects of Georgia, has installed a wood-fired boiler

Phillip Badger and David Stephenson, TVA employees, manage the Southeastern Regional Biomass Energy Program in Muscle Shoals for the U.S. Department of Energy.

system at a prison in Bullock County. Here too, state officials see several environmental and economic benefits from the use of wood fuels in addition to energy security.

Stricter environmental regulations now prohibit incineration or landfilling of wood wastes. Use of these wood fuels by government and industry thus provides an environmentally acceptable method of disposing of this waste. For many industries, such fuel markets turn a waste into a value-added product that creates positive cash flows back to the company.

New Jobs, State Income

Of particular interest to any government is the creation of jobs and income, especially when such jobs are in rural areas and are primarily "low tech." Using wood fuels can mean new jobs for procuring, transporting, using and, in the case of forest residues, harvesting. A 1987 study for the Southeastern Regional Biomass Energy Program showed that wood fuels resulted in almost 13,000 jobs and over \$376 million in income in Alabama. This economic activity resulted in the generation of an additional \$10 million in state taxes and \$30 million in federal taxes.

Other studies have shown that for every dollar spent by a state to import energy, 80 cents leaves the state. Because Alabama must import over 70 percent of its energy, any increase in Alabama-produced energy immediately translates into large economic benefits. No wonder those in government are becoming interested in Alabama's "growing" energy resource!

Cogeneration, the simultaneous generation and use of heat and electricity, is an important part of energy production from wood. Over 575 megawatts of electricity are today being produced from 21 wood-fired systems in Alabama. Miller and Co., a manufacturer of hardwood flooring strips and large dimension lumber in Selma, is cogenerating 1,250 kilowatts of electricity with steam used for dry kilns. Although the company does not sell power back to the utility, it saves on electricity costs by reducing the amount of electricity it must purchase.

These savings can be quite significant, especially when electric generation is used to reduce electricity demand charges. Coupled with avoided waste disposal costs and costs to purchase fuel for the dry kilns, plus the value added to the dry lumber produced, Miller and others report they are most pleased with wood fuels.

New Industries

Jobs also are created by new industries that manufacture and install wood energy and cogeneration systems. McConnell Industries in Birmingham is a major North

American supplier of wood energy systems. Southern Engineering and Equipment Co. in Graysville has grown into a major player in the small-scale cogeneration markets. SEECO has engineered and installed as many as 40 such systems around the United States, and has recently sold a system in Honduras. Such marketing creates cash flows back into the Alabama economy.

The recent Clean Air Act has also

generated additional interest in biomass (i.e., wood plus other combustible vegetable matter) fuels, due to the fact that wood has relatively no sulfur content. Thus, burning creates no sulfur dioxide acid rain emissions. In fact, wood can be substituted or cofired with coal to reduce sulfur emissions.

Acceptability of biomass fuels has also benefited from extensive debate on the greenhouse effect and discussions of a tax

on carbon dioxide emissions. Carbon dioxide, the primary greenhouse effect gas, is released when anything is burned. However, green plants recycle carbon dioxide, which means that biomass fuels—inasmuch as they're from continually replanted sources—do not add to the accumulation of carbon dioxide in the atmosphere. As a result, users of coal and other fossil fuels are now considering switching to biomass fuels.

Part of the reason for the high level of wood fuel use in Alabama has been the result of good biomass development programs. The Alabama Forestry Commission, Alabama Department of Economic and Community Affairs (ADECA), Tennessee Valley Authority and others have assisted in promoting wood fuels.

Alabama currently has a joint agency industry assistance group, the Forestry TEAM, which responds to requests for information and assistance. In addition, ADECA has offered financial assistance packages to those interested in wood energy. For assistance or additional information on these programs, contact Ralph Stanford with ADECA at (205) 242-5283 or Jim Gober with the Alabama Forestry Commission at (205) 631-2552. •