

With the EPA enacting tougher rules on coal-generated power, energy providers may turn to biomass as a transition

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SALISBURY —

When the first pulverized coal boiler in the eastern U.S. came online in 1926 at Duke Energy's Buck Steam Station, named for company founder James "Buck" Duke, it represented the latest technology for producing electricity.

The idea was to pound the coal into a fine, hot, dry dust and blow the atomized fuel into the boiler where it burned, suspended in the air, creating steam to drive the giant turbines, generating power. The mammoth plant is still operating 86 years later, running 24/7 during peak energy consumption. But its days are numbered.

Buck Steam Station and other coal-fired power plants like it, which supply half the nation's electricity, are gradually being pushed out of service by the federal government. The last nail in the coffin was conceivably the tougher, long-awaited fed-



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eral emissions rules unveiled Dec. 20 that will dramatically reduce harmful coal emissions by limiting mercury, sulfuric acid, soot and heavy metals.

EPA officials chose to make the announcement at a Washington, D.C., children's hospital, underscoring the hazards of coal that include not only acid rain, respiratory diseases and groundwater contamination from ash disposal, but also premature and still births, and brain damage in children linked to high mercury levels, particularly in the coal-dependent Southeast.

For now, at least, the transition away from coal in the Southeast is decidedly low-tech, and not without controversy. Next to the huge coal pile standing ready at Buck Steam Station is the transitional fuel of the future: a towering pile of biomass, basically sawdust. To fulfill a state mandate that a portion of its fuel be from renewable



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Changing practices in energy production, including replacing aging coal-fired plants with factories that turn sawdust and wood chips into pellets, are being accelerated by EPA regulations and incentives such as North Carolina's Renewable Energy Portfolio Standards.

resources, Duke Energy is mixing wood with the coal it burns. But the process has its limits.

Because wood contains much more moisture and burns differently from coal, using too high a percentage of wood in the fuel mixture would disrupt the operation of the boiler. There is also the issue of storage: Unlike coal, which is compact, wood is fluffy and takes up more space; so it is not feasible to stockpile a 30-day supply of the fuel.

"It would be a mountain," said Eric Meyers, Duke's director of energy and envi-

ronmental policy, surveying a pile of sawdust that towered high above the coal pile at Buck Steam Plant. "Very few plants that run 100 percent biomass keep that much on hand. It's a physical impossibility."

A clue to how the role of biomass will play out may

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Photos by Lorraine Ahearn

Buck Steam Station, near Salisbury and named for James "Buck" Duke, was the first pulverized coal boiler to come online in the eastern U.S., in 1926.

Wood

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lie in European markets. Power producers in Europe have long been under more stringent renewable energy guidelines, forcing them to curb coal consumption.

Demand for biomass fuel by markets such as England, Germany, Norway and Sweden has created a burgeoning industry in the timber-rich southeastern U.S. that has so far remained under the radar: wood pellet mills that produce a high-grade, low-ash fuel for industrial and residential use.

An example is WoodFuels in Bumpass, Va., where whole logs from mostly hardwood trees are stripped of their bark, pulverized and compacted into shiny, 1-inch round pellets that are sold by the bag, like charcoal, or by the rail car, like coal.

Stateside, these pellet mills proliferate across the South supply such retailers as Home Depot and Lowe's, for homeowners who use high-end residential woodstoves. But the bigger market is the industrial power producer, and pellet mills are shipping enough product offshore that deepwater ports such as Chesapeake, Va., and Brunswick, Ga., have

expanded their capacity to keep up with pellet shipments.

"The big electrical producers in Europe are far more advanced in using alternative fuels than the United States is," said Ron Hickman, an engineer for WoodFuels, which had a 2011 production goal of 130,000 tons. "Right now, it's still advantageous for them to ship from the U.S. They don't have a large enough local source to bring in wood."

Emblematic of the boom in the pellet industry was WoodFuels' partnership announced in fall 2011 with Enviva, a biomass firm that is building three larger-capacity pellet plants in 2012, in Ahoskie, another in Northampton County and a third in Courtland, Va. Meanwhile, new pellet factories are going up in Georgia and Texas, where a German investor is building a large-scale facility.

The increasing demand in 2012 is related to massive wood-fired utility plants coming online in Europe. For example, a new wood energy plant in Tilsbury, England, supplied by Georgia Biomass is expected to use 2 million tons of wood pellets annually when it reaches capacity.

Environmental advocates in the United Kingdom opposed construction of the plant, arguing that burning wood on

this scale would add to global warming with carbon dioxide emissions on the one hand, and loss of North American forests on the other. The European Climate Foundation estimates that some 60 million tons of pellets will need to be imported into Europe in order to meet the continent's 2020 renewable energy targets.

The Southern Environmental Law Center, noting that more than two-dozen pellet plants are already operating in the South, predicted that demand would outstrip supply and lead to deforestation. Moreover, the EPA's exemption last summer of wood-energy producers from carbon emissions regulations for the next three years was "irresponsible," argued Frank Rambo, a senior staff attorney for the environmental group. There are nearly 30 biomass energy facilities in the South, with more planned.

"This rule," Rambo said, "casts a shadow over the Southeast's forests which are vulnerable to the burgeoning biomass industry's need for fuel to generate heat and electricity here and overseas."

At the same time, environmental groups this month saw a major victory with the final implementation of the Maximum Achievable Control Technology for boilers,

sweeping measures which were two decades in the making. This is of particular importance for the Southeast. The rules take aim at toxic pollutants from fossil-fuel burning power stations in this region, blamed for 20 percent of the country's mercury emissions.

The rules limit arsenic, lead, nickel, selenium and cyanide, but the key concern has been the high levels of mercury dissolved into rivers and streams, building up in fish and other animals, and passed up the food chain to people. The rules force scrubber technology and other clean-up efforts to limit mercury emissions by upwards of 90 percent and will dramatically reduce particulate matter, dioxins, carbon monoxide, and various heavy metals.

In effect, this is the most significant move since the 1990s to curb all harms associated with coal-fired electricity. For the Southeast, the challenge will be how to transition away from a plentiful fossil fuel that has kept the region's utility rates relatively stable, without trading coal for yet another environmentally harmful substitute.

In this short-term transition, at least, the timber-rich South could well become the energy "Biomass Belt."