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Biomass Plants Gaining Steam, But Do They Result in Less Carbon?

With the Obama administration hammering out its Clean Power Plan to reduce carbon emissions, the biomass industry is positioning itself as a leader in the renewable energy world. With that, a major U.S. utility has struck a deal with other mega-electricity consumers to provide all of their biomass-produced power.

Constellation, a subsidiary of [Exelon EXC](#) -1.45% Corp., is investing \$200 million in a Georgia-based biomass facility that will produce 50 megawatts when it is completed in 2017. Under a 20-year power purchase agreement, Southern Company's Georgia Power will buy all of the unit's electricity while [Procter & Gamble PG](#) -0.42% Co. will purchase all of the steam that will be used to dry its paper products.

The unit will be fired with wood scraps from Georgia's rich forestry — biomass materials that the state says must be cleaned up to allow those wooded acres to revitalize. By placing that sustainable fuel source in a new boiler, Constellation says that is producing the electricity to power homes minus much of the carbon. At the same time, the steam that would otherwise be released into the atmosphere will be captured and reused to complete a manufacturing process.

While the project is part of a renewable portfolio requirement in Georgia, it is also a company goal for Procter & Gamble — to fuel itself by using 30 percent green

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energy by 2020. This project, which is in Albany, Ga., will get the consumer product giant half way there.

To this end, the [Biomass Power Association](#) says that its fuel comprises 22 percent of the nation's renewable energy usage. As such, it would like the fuel to fully qualify as renewable under the US Environmental Protection Agency's Clean Power Plan that would require a 30 percent cut in carbon by 2030.

The question, though, is whether biomass actually cuts carbon. If trees are trimmed to produce the woody chips that would fire up boilers, then there would be fewer trees to absorb carbon emissions. Newly plant trees, meanwhile, can't absorb that carbon at the same rate as older trees.

Constellation's project is using abandoned wood scraps that it says would otherwise get sent to landfills where methane gas is released, or it would be allowed to just decay. Now, the woody material is used in a plant that still produces carbon, although much less than if coal or natural gas were the primary fuels.

"Georgia wants to replant its forests and to retreat them so that they are cyclically sustainable," says Gary Fromer, senior vice president of Constellation, in an interview. "It needs the waste wood cleared. And the most efficient way is to consume it in a power plant in a co-generation way."

Co-generation refers to the creation of electricity that Georgia Power will buy and the creation of heat, which is captured in the form of steam that Procter & Gamble will use to dry its paper products. The plant needs natural gas to get the heat up so that the wood can be properly combusted. After that, it relies solely on wood fuel.

The biomass plant is to be located at the current site where Procter & Gamble has its paper producing facility. It will cost \$200 million and have an expected life of 30 years. According to Fromer, the payback on the utility's investment will be no more than nine years, possibly less: "The economics of this are no different from any other power plant we build and operate. We look at the risk and the return."

For more than 30 years, the [Albany facility](#) has been using a smaller onsite biomass boiler to convert wood scraps into renewable steam, which has been providing 30 percent of the total energy consumed there. The new unit will replace that older one and it will provide 100 percent of the steam and between 60-70 percent of the total energy used to manufacture the products.

Procter & Gamble says that it has 140 operations around the world. In 2010, it had made a goal for itself to use raw materials that would be recyclable — where



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nothing would go to the landfill in the form of waste. That is in addition to using renewable energy 30 percent of the time to run its facilities by 2020.

“As a company, when we look at the Albany facility, we integrate this into the rhythm of our business,” says Len Sauers, vice president of global sustainability for Procter & Gamble, in an interview. “It has to meet the same economics. In this situation, we have to be competitive with other fuel sources. This will save us \$2 million a year compared to using natural gas.”

Beyond the concept of using biomass to create both electricity and to capture the steam, biomass in the form of waste wood has been co-fired along with coal. That’s what Dominion Resources D -1.03% has been in doing in Virginia, providing as much as 700 megawatts from four different plants as part of a renewable portfolio standard.

Dominion maintains that the wood fuel is “carbon neutral,” although some disagree. Not only do trees need to be cut down in many other cases but the wood chips do not create the same amount of energy — the Btus — as does burning fossil fuel straight up: The Manomet Center for Conservation Sciences says, “Forest biomass generally emits more greenhouse gases than fossil fuels per unit of energy produced,” at least until the trees regrow.

For its part, the biomass association says that EPA has previously concluded that waste-derived products and forest-derived industrial products have minimal-to-no-impact on carbon emissions. However, the EPA must still decide what constitutes such waste wood and whether the gathering of it depletes or rejuvenates forests.

By nearly all accounts, the deal that Constellation struck with Procter & Gamble and Georgia Power will move the biomass sector up a notch on the renewable energy hierarchy. And that’s something that will bode well as the Obama administration rolls out its Clean Power Plan.

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