

Florida explores growing its fuel: Plants show potential for power

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Sunday, December 23, 2007

Editor's note: This is the fifth installment in a series examining alternative approaches to providing America's energy.

Maybe the weeds in your front yard deserve respect instead of Roundup.

One day, those plants could help keep your night lights burning and the air conditioner holding things at a perfect temperature.

That's the attitude of some in Florida, who say the formula for increased energy independence is simple: Plants, plus sun, plus water.

Together, they add up to an energy source commonly known as biomass.

One of the leading biomass advocates in the state is Agriculture Commissioner Charles Bronson, who thinks Florida could grow no less than 30 percent of its annual fuel supply.

That's a lofty goal, but there are plenty of projects in the works that suggest it might not be so far-fetched.

Five ethanol plants are on the drawing board for Florida, one that would use feed corn but others that would get the fuel from citrus peels or other plant waste.

The state has 11 waste-to-energy plants that burn trash to produce electricity, and two power companies have announced plans to build power plants that get their energy from wood waste and a special variety of grass.

There are at least 25 million acres of commercial land or forest that are ripe for making fuel, and the state has the longest growing season in the nation.

"If we want to reduce greenhouse gas emissions, we have to be producing renewables in Florida," said Gaston Cantens, vice president of West Palm Beach-based Florida Crystals, which operates the largest biomass-to-electricity plant in the nation, at 140 megawatts.

The electricity produced by the burning of sugar-cane waste is used to power the sugar mills. Cantens said Florida Crystals is hoping the state creates what's called a renewable

portfolio standard - requiring utilities to get a certain percentage of fuel from renewable sources - so there's actually a market for selling the alternative fuel.

"Now we produce it, we sell it, but no one wants to buy it from us," Cantens said. "The RPS will create a demand for renewable energy and spur economic development."

The push for biomass got a boost Wednesday when President Bush signed the Energy Independence and Security Act, which calls for the use of 36 billion gallons of renewable fuel as of 2022.

The White House says that's about five times what the nation uses today.

That should spur more work on alternatives to fossil fuels. For its part, Florida may have as much as 10 percent of the nation's biomass resources, one University of Florida researcher says.

"Biomass itself is going to be a big player," Bronson said, citing as potential fuel sources plants such as lemongrass, safflower, blue-green algae and oranges.

Using crops to make energy has two big benefits, says Tommy Boroughs, executive director of the Florida Energy Commission, created in 2006 by the state legislature to come up with a long-term energy policy.

"If you get the right kind of crops, you don't have to use water, you don't have to use fertilizer, and they suck the carbon out of the air," he said. "And, you get to make fuel out of them."

Staple crops must continue

But the yellow caution sign is out for a couple of reasons.

First off, Bronson doesn't want farmers to stop growing their staple fruits and vegetables in favor of crops for biofuels. Instead, they should add extra plantings and use that as an energy source, he said.

"A lot of the vegetable plants, they can plant those one time a year, get them off and then plant one or two more crops for other production," Bronson said.

Second, although researchers are bullish on the idea of using plants to make fuel, they say there's a better, more efficient way than how other states are going about it.

Eric Waschman, interim director of the Florida Institute for Sustainable Energy at the University of Florida, points out that states that produce ethanol from corn are using a lot of diesel fuel to power tractors, as well as additional energy on top of that to process the crop into fuel.

"You're going to put a lot of energy into it," Waschman said. "It is at best a break-even."

In contrast, he champions the idea of making ethanol from citrus peels and stems because it's taking advantage of waste from a crop that was going to be grown and harvested anyway.

"We don't want to be taking food and burning it into fuel," he said. "You want to take the products ... using the food, the residue. There's a positive energy balance on that."

Several alternative-fuel projects in the state are moving in that direction.

- FPL Energy, sister company to Florida Power & Light Co., has signed a letter of intent with Boca Raton-based Citrus Energy LLC to develop a plant that will convert citrus peels into ethanol. The plant would likely be built in Clewiston and be the first commercial-scale ethanol factory of its kind.
- Green Circle Bio Energy Inc. said it's building a \$65 million wood-pellet plant in Jackson County. Green Circle, a subsidiary of Sweden-based JCE Group, said it would ship the fuel to Europe.
- St. Petersburg-based Progress Energy Florida and Biomass Gas and Electric of Atlanta plan to build a 75 megawatt wood-waste plant in Liberty County. The plant, which will burn wood byproducts and yard waste, will create enough electricity to power 50,000 homes.
- Progress also has signed a long-term contract to buy power from Biomass Investment Group, based in Gulf Breeze. The group, which goes by the acronym BIG, plans to build a power plant in Central Florida and grow a crop dubbed E-grass. The energy from the plant will be enough to power 83,000 homes.

BIG is still in search of 20,000 acres to grow the grass - technically known as *Arundo donax* - which some scientists have criticized as invasive.

The utility remains optimistic.

"We're confident that Biomass Investment Group is going to generate electricity for our customers using E-grass, and we're also confident that they will grow and cultivate and harvest E-grass in a manner that is not going to pose any risk to the environment," spokesman C.J. Drake said.

Experts call for policy changes

But not everyone thinks throwing dollars at companies to build power plants for biofuels - especially ethanol - makes good economic sense.

"Fundamentally, the plants don't make money. The plants cost more to get the power to the grid," said Mike Bedley, a regulatory and commercial specialist with Apex Power Corp. in Davie. Bedley says goals such as growing 30 percent of the

state's fuel "is probably true," but isn't realistic.

"They are not economically viable at this time compared to natural gas, coal or nuclear," he said, mentioning that some ethanol processing plants in the Midwest have gone bankrupt and are being sold. "You can grow all the fuel you want, but with the cost of capital, the cost of the plant and getting the buyer to pay a premium for the output, many of the cases are not economically viable."

While getting fuel from citrus peels is still in the research stages, one method that includes biomass and other waste sources of energy - burning trash - has been around for some time.

Waste-to-energy plants began appearing in Florida in the late 1970s when state lawmakers "realized we couldn't just continue with waste, and they told the large populations to look into building energy-from-waste facilities," said Joseph Treshler, vice president for business development in Florida for Covanta Energy, based in Fairfield, N.J.

Covanta is expanding its Hillsborough County plant so it can process 1,800 tons of waste a day instead of 1,200.

The additional processing will power 40,000 more homes, Treshler said.

Closer to home, Wheelabrator Technologies Inc. has two waste-to-energy plants in Broward County.

The plants in Pompano Beach and Fort Lauderdale process 2,200 tons of municipal solid waste each day. Ten percent of it powers the plant, and FPL buys the rest.

"Waste-to-energy works in high-density populations where you don't have space for landfills," said Chris Carey, regional vice president of Wheelabrator, based in Hampton, N.H. "Areas where you can site a landfill, the economics don't work."

Residents also have to think "green" when it comes to these plants, which the U.S. Environmental Protection Agency recognizes as producing the cleanest energy.

Such plants are equipped with pollution-removing systems such as the ones on coal-fired or natural gas plants.

"The only thing that is cleaner is the combined-cycle natural gas plant, but they are a straight fossil fuel source," Treshler said. "What we produce is ... carbon-neutral."

Getting more of Florida's energy from biomass will take changes in government

policy, experts agree.

State policymakers have to figure out a way to make it worth the while. As with other forms of alternative energy, such as wind and solar, building a plant to produce ethanol, make energy from wood waste, or to take on some other form of biomass, is not cheap.

When stacked up against a conventional coal plant, it's too pricey, unless there is some sort of a tax or fee on carbon emissions.

"That makes the renewable more cost-effective," Treshler said.

Bronson, the agriculture commissioner, says government is going to have to step up with some money or incentives, and then eventually private enterprise will take over.

"We're looking at all the different options to get off of as much foreign oil as we can," he said.