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# THE ADVOCATE

**Baton Rouge, Louisiana, USA**

**Louisiana biofuels industry branching out**

**Louisiana's piney hills may hold key to growth of green fuels industry in state**

BY TED GRIGGS

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*Louisiana possesses the most renewable diesel production capacity in the country and possibly the world. The bulk of that production lies in the Baton Rouge and New Orleans regions.*

Emerald Biofuels' 85-million-gallon plant in Plaquemine will lift that capacity to around 300 million gallons.

Still, nearly a decade into the green fuels push, the state's biofuels industry appears quite different than many imagined it would.

Most of the state's renewable fuels spring from animal fats and grease, rather than so-called energy crops: the corn, sugar cane and other plants once considered the most promising feedstocks. Recent studies have shown corn-based ethanol is more harmful to the environment than gasoline.

Meanwhile, trees and forestry waste are key to two different businesses. One turns the woody biomass into pellets that will be burned in overseas power plants. The other converts the same materials into gasoline.

"There are some ingenious things going on," Agriculture Commissioner Mike Strain said.

One is Sundrop Fuels' planned \$450 million plant in Alexandria. The facility will take natural gas and cellulose, the inedible, fibrous part of a plant, and use a chemical reaction to turn the feedstock into synthetic gasoline.

Another is Cool Planet Energy's mini-refinery, also in Alexandria. The \$56 million facility will also turn trees into high-octane gasoline, 10 million gallons a year to be exact.

But Cool Planet says its process also creates a second product that may prove even more valuable: a high-tech charcoal that allows soil to retain more nutrients, helping plants grow faster.

Those sorts of technological breakthroughs — when combined with the vast amounts of cellulose available in Louisiana and transportation via the Mississippi River, railroads and the interstate system — eventually could make the state a power in cellulosic biofuels.

"There's an avenue if we can figure out how to turn that into an economically viable industry, and the whole key is economically viable," Strain said.



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That goal will have to be achieved without a longtime federal support: tax credits. On Dec. 31, Congress allowed the credits to expire for ethanol, 45 cents per gallon; cellulosic biofuels, \$1.01 per gallon; and biodiesel, \$1 per gallon. It's unclear whether those subsidies will be restored.

In addition, the Environmental Protection Agency has proposed cutting the amount of renewables in the nation's fuel supply by close to 3 billion gallons. With less gasoline being consumed, the agency hopes to prevent refiners from hitting the "blend wall," the maximum amount of ethanol that can be safely added to the fuel supply.

Under the EPA proposal, the advanced biofuels segment, which includes the Louisiana biodiesel facilities, would be reduced from 2.75 billion gallons to 2.2 billion.

Cellulosic biofuel, whose development has lagged, will be 17 million gallons. When the Renewable Fuel Standard passed in 2007, lawmakers expected production of 1.75 billion gallons in 2014.

"So the two most important programs that Congress put in place to try to encourage the development and give certainty around the market for advanced biofuels ... are clearly in suspended animation for the moment," said Michael McAdams, president of the Advanced Biofuels Association. "... Which has been very bad for my members and very bad for the overall industry."

The most important question for the biofuels industry, McAdams said, is: What will the EPA do with the Renewable Volume Obligation?

The RVO determines how many gallons of advanced biofuels refiners must blend into their diesel and gasoline, which sets the market for renewable fuel credits known as Renewable Identification Numbers.

When the EPA's proposed standard leaked in August, the value of those credits dropped by about 50 percent, McAdams said.

Strain said the tax credits' expiration will hamper the development of cellulosic projects. The EPA's proposed Renewable Fuel Standard will not.

Corn-based ethanol will be replaced by biofuels produced through other processes, Strain said.

At the end of the day, the marketplace will determine most of what happens.

And he expects rapid advances in science and technology will help overcome the lack of federal support because of the massive supply of cellulose and the value of the end product.

Alex Rindler, policy associate with the Environmental Working Group, said while the organization supports the use of biofuels, it favors moving away from first-generation fuel, or corn-based ethanol.

However, Rindler said the Advanced Biofuels Association's concerns are understandable.

"It doesn't send the best signal to the market, that at the exact moment some of these technologies are coming online, EPA is looking to reduce them substantially," Rindler said.



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McAdams said his members don't understand why the EPA would cut the target volume when the advanced biofuels industry's production exceeded that amount in 2013.

"We view that as moving backward," he said.

Others are more sanguine.

Neither the proposed fuel standard nor the end of the tax credit will affect production at the largest renewable diesel facility in the country, Diamond Green Diesel in Norco, Valero spokesman Bill Day said. Diamond Green is a joint venture in St. Charles Parish between Valero Energy and Darling International.

Initial capacity was 137 million gallons per year.

"There's so little of this type of renewable diesel being produced that it really doesn't affect production at the plant, and it doesn't affect demand for it," Day said.

A lot of the plant's production is shipped to California, which has its own mandate for renewable fuel use. Diamond Green's fuel is actually a premium product there.

Valero built the facility because of the demand for biodiesel, Day said. The \$1-per-gallon tax credit wasn't a motivating factor.

"All of our plants, including Diamond Green and our ethanol plants, were set up to be competitive regardless," Day said. "These are all new plants, all very well run. They're efficient."

Diamond Green uses waste grease from restaurants, animal fat from rendering plants and industrial-grade corn oil to make green diesel. Darling collects the fats and grease from locations all over the country and ships it to Norco by truck and rail.

"There's plenty of that out there, and it's available at very attractive prices," Day said.

Valero is built to be profitable, even in an economic downturn, Day said. The company, like other large players in the industry, can weather the ups and downs of the highly cyclical biofuels business.

Diamond Green's fuel is made using the Ecofining process developed by UOP LLC, a Honeywell company with locations in Baton Rouge and Shreveport, and Eni S.p.A, Italy's largest energy company, said Veronica May, vice president and general manager of Renewable Energy and Chemicals at UOP.

"Unlike biodiesel, this fuel (Honeywell Green Diesel) is chemically identical to diesel made from petroleum, so it can be used in vehicles with no modifications, and producing it yields 80 percent less greenhouse gas than diesel from petroleum," May said.

Honeywell Green Diesel also outperforms biodiesel and petroleum diesel, with a cetane level 50 percent to 100 percent higher than diesel found at the pump today, May said.



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Honeywell Green Diesel has a cetane rating of around 80; cetane ratings for the diesel consumers buy at the pump ranges from 40 to 60.

In general, the higher the cetane rating, the better the fuel will burn.

Diamond Green's diesel can be blended with low-conventional diesel to raise the cetane, May said.

UOP expects additional capacity to go online at Diamond Green later this year, bringing total capacity to 150 million gallons of renewable jet fuel, also developed by UOP, and diesel per year, May said. And several other units are in the design phase.

The director of environmental affairs for the Louisiana Mid-Continent Oil and Gas Association, Richard Metcalf, said he expects to see more projects like Diamond Green.

The joint venture is co-located at Valero's refinery in Norco, Metcalf said, which makes it easier to blend in biodiesel.

The EPA has also ordered refiners to reduce the amount of sulfur in gasoline by two-thirds, and that will likely require more blending of biofuels, Metcalf said. The most efficient way to do that for a biofuels producer is to work with a nearby refiner.

## More Information

Louisiana's major biofuels projects:

[Diamond Green Diesel](#) in Norco, \$370 million joint venture between Valero Energy and Darling International, capable of producing 137 million gallons per year from 1.1 billion pounds of animal fat and used cooking oil.

[Cool Planet Energy](#) in Alexandria, \$56 million refinery will use wood to produce 10 million gallons of gasoline and biochar, a high-tech charcoal that helps soil retain more nutrients and boost plant growth.

[Dynamic Fuels](#), \$160 million joint venture between Tyson Foods and Syntroleum uses animal fat to make diesel and can produce 75 million gallons per year. The plant, financed with \$100 million in Gulf Opportunity Zone bonds, has not operated since October 2012. Renewable Energy Group, of Iowa, is in the process of acquiring Syntroleum and its share of the plant.

[Emerald Biofuels](#) in Plaquemine. Renewable diesel refinery on Dow Chemical Co. campus will make 85 million gallons of renewable diesel from grease and animal fat.

Renewable Energy Group, St. Rose. The \$80 million plant, if completed, will be capable of producing 60 million gallons of biodiesel from fat and grease. The project, about 45 percent complete, was to be built with GO Zone bonds, but the bond markets' meltdown halted construction.

[Sundrop Fuels](#) in Alexandria. The proposed \$450 million facility, if completed, will be able to produce 60 million gallons a year of "green gasoline" from natural gas. Chesapeake Energy paid \$155 million in 2011 for half of Sundrop. Sundrop bought the 1,200-acre site in 2013 and hired IHI E&C International



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Corp., a U.S. subsidiary of IHI Corp., of Tokyo, to build the facility. The facility is expected to begin operating at the end of 2015.

BP Biofuels Jennings Plant. Demonstration plant can produce 1.4 million gallons of cellulosic ethanol a year. BP uses the plant to generate information for scaling up its proprietary cellulosic ethanol technology. In 2012, Jennings supplied ethanol for some of the VIP vehicles at 2012 Olympic Games in London.

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