

Biodiesel Industry Outlook

Quality and partnerships are key in 2011 market

For years, renderers have watched the ups and downs of the emerging biodiesel industry. As soybean prices shot up in 2007, biodiesel producers looked to the rendering industry as its next generation feedstock supplier. Since then, the biodiesel industry has struggled through market volatility but has become a significant market demand center for the rendering industry. Today, biodiesel industry forecasts call for more stable markets and growing demand through the Environmental Protection Agency's (EPA's) renewable fuel standard, or RFS2, and improved production technology.

Steady Growth as Reliable Partners

U.S. Census Bureau data paints the picture of a growing marketplace for non-soybean oil feedstock in biodiesel consumption. While data categories for feedstock are clearly divided, there are some months when there is not enough data in particular categories (e.g., inedible corn oil) to report non-soybean oil feedstock that moves within the marketplace. What is clear is that since January 2007, non-soybean oil feedstock utilization in the biodiesel industry has grown by nearly 40 percent. That's 40 percent more beef tallow, pork lard, inedible corn oil, yellow grease, and used cooking oil being converted into biodiesel (Chart 1).

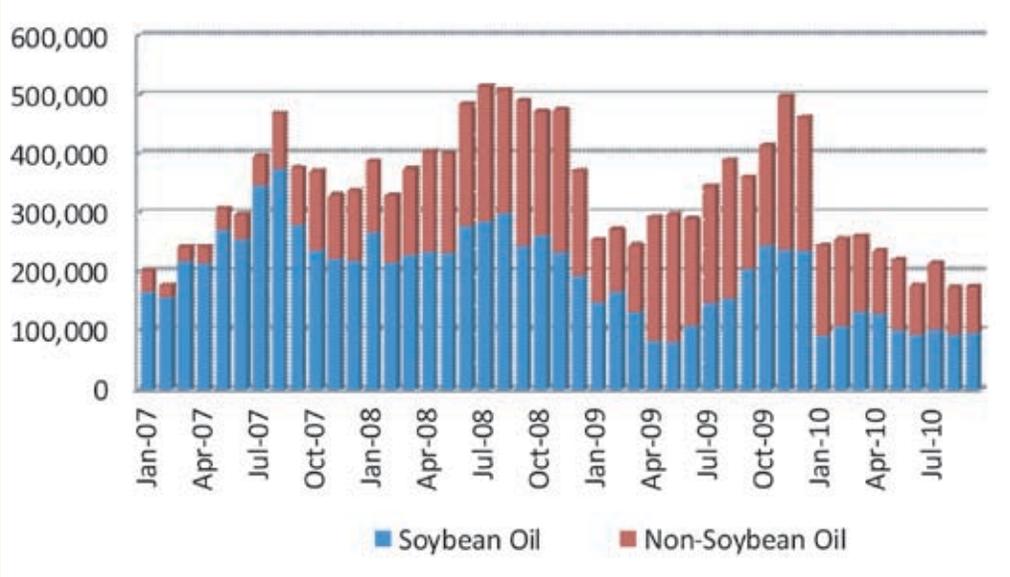
In 2008, the U.S. biodiesel industry produced more than

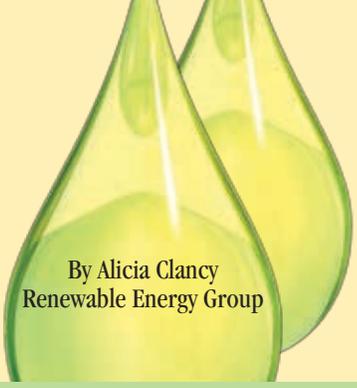
750 million gallons of biodiesel. During that record production year, nearly 80 percent of all biodiesel was produced from soybean oil. Approximately one-third is estimated to have been shipped to Europe before a 2009 tariff essentially closed the U.S. market overseas. With a closed export market, U.S. biodiesel production dropped to approximately 450 million gallons in 2009 as biodiesel producers shifted their marketing efforts back to U.S. distillate blending. In 2010, biodiesel producers faced limited demand (approximately 350 million gallons) due to uncertainty created by the lapse of the federal biodiesel blenders' tax credit.

While it's true that U.S. biodiesel plants ran at severely reduced rates in 2010, the industry is capable of responding to demand by bringing back idled production capacity in 2011. More than 2.2 billion gallons of production capacity is registered with EPA to generate renewable identification numbers (RINs).

With a strategic business model in a tumultuous market year, biodiesel producer and marketer Renewable Energy Group (REG) retained market share by maintaining a focus on domestic markets. While the biodiesel industry faced one of its most disruptive years in history, REG acquired six biodiesel businesses, including four manufacturing facilities. The company, headquartered in Ames, IA, is now the nation's largest biodiesel producer with more than 180 million gallons

Chart 1. Biodiesel Feedstock Source, in Pounds





By Alicia Clancy
Renewable Energy Group

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of manufacturing capacity and, in turn, has a growing appetite for triglyceride supplies. Like other major biodiesel producers, REG estimates it must run near maximum capacity to meet the nearly 65 million gallons of biodiesel demanded each month by this year's 800 million gallon RFS2.

"With RFS2 implementation beginning in 2011, we see the potential to double our feedstock purchases in 2011 as compared to 2010," explained Dave Elsenbast, vice president, Supply Chain for the company. As the demand for animal fats in biodiesel grew, REG looked to used cooking oil as an additional feedstock source. But as animal fat prices continue to track upward with energy prices and feed prices, inedible corn oil is playing a larger role in REG's feedstock sources.

Rendered Material Demand Doubling?

Some renderers are playing in the biodiesel marketplace while others remain on the sidelines. Those partnering with biodiesel plants are seeing the value in their bottom line. In 2007, renderers were receiving an average of 15 cents per pound for beef tallow. Today, prices are tracking in the upper 40-cent range due to increased demand in the fuel market (Chart 2). With RFS2, the market is about to get bigger.

"We wanted to see viability in the biodiesel industry and waited until we had a relationship with buyers before we offered too much of our supply," said Tim Norman, vice

president, Sales and Marketing for Mahoney Environmental, a renderer and used cooking oil collection agency headquartered in Joliet, IL. "We have been reluctant to work with biodiesel start-ups because

we often need to be in a pre-pay situation and it's more convenient for our business to wait to partner with biodiesel producers until they've matured."

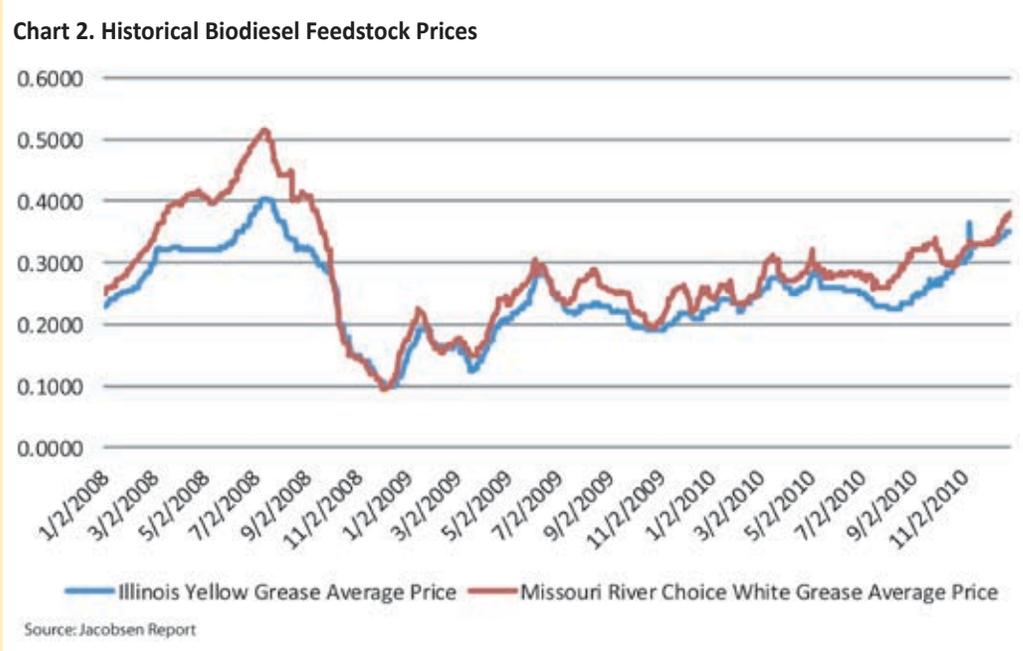
Mahoney, like most renderers, carefully monitors the spread between the feed and fuel markets.

"Up until September 2010, there was a divergence in the value as fat for fuel outpaced feed demand," explained Norman. "We've seen a pickup in the feed value in the last quarter and both markets seem to be on par again with corn prices and heating oil values. Today, we have feed and fuel value charts that overlap, but I think we'll see another separation. The fuel market could offer six to eight cents more than feed as biodiesel demand is driven by RFS2."

Norman added that the company is comfortable selling 35 to 40 percent of its total volume into the biodiesel marketplace and anticipates that number increasing in 2011.

"We are watching to see how the market corrects from the biodiesel blenders' tax credit and what RINs are doing," Norman commented. "Some renderers will still be reluctant, but the big players are ramping up production."

Continued on page 12



Reducing Seasonality with Advanced Biofuel

One of the biggest concerns renderers face in the biodiesel industry is seasonality due to product cloud point. If consumers want the lowest cloud point biodiesel possible, they often shy away from animal fat-based biodiesel. REG focuses on domestic winter markets for higher cloud material. In 2010, the company announced a three to seven million gallon contract to ship to Hawaii biodiesel produced from animal fats and used cooking oil.



Hawaiian Electric Cooperative's combustion turbine generator.

The high cloud point biodiesel performs flawlessly year round in Hawaiian Electric Cooperatives' 100 percent biodiesel-powered 110-megawatt combustion turbine generator unit. In August 2007, the Natural Resources Defense Council and Hawaiian Electric established an environmental policy for the procurement of biodiesel. REG is supplying high quality biodiesel processed from used cooking oil and animal fat. The council indicated that this is likely to represent a positive environmental approach.

"These warm winter regions and progressive local governments are a key part of our rendered material market strategy," said Elsenbast. According to EPA's RFS2 compliance requirements, biodiesel produced from used cooking oil and animal fats reduces greenhouse gas emissions by more than 80 percent as compared to petroleum diesel.

"Because we are utilizing used cooking oil, inedible corn oil, and animal fats in addition to vegetable oil, we are able to supply RINs for both the biomass-based diesel and advanced biofuels categories," Elsenbast stated. "Being a low carbon, advanced biofuel is a significant market opportunity for rendered material-based biodiesel. California's Air Resources Board and many other states are looking at solutions for emissions and energy independence. The rendering industry will be able to play a more active role in meeting national energy and air quality goal attainment going forward."

Confidence in Quality

Production technology at biodiesel manufacturing sites will be the true test of how rendered materials will play into the RFS2 biodiesel landscape. Bob McCormick, principal engineer for Fuels Performance at National Renewable Energy Labs, has been analyzing nationwide biodiesel quality trends since 2004. In early years of the industry, with so few producers, about 10 million gallons of mainly soy-based biodiesel was



Bob McCormick

produced and nearly every gallon was on-spec.

"In the 2006 range, the industry experienced explosive growth and a drop-off in quality," McCormick said. "Rendered material was becoming a larger portion of the marketplace, but when it came to quality, many producers weren't paying attention." In response, the voluntary National Biodiesel Accreditation Commission BQ-9000 program was implemented.

"In 2007, we saw improved quality overall," McCormick noted. "And rendered material accounted for 30 percent of the marketplace's feedstock." He added that while rendered materials such as animal fat can have some challenges in cold temperature areas, they offer biodiesel consumers a performance advantage.

"With more saturated fats, the cetane number gets higher in the finished fuel," explained McCormick. "Diesel's cetane minimum is 40. Animal fat biodiesel could improve that to 62 or 63, which offers easier starting, especially in cold weather, and smoother engine operation. Rendered material biodiesel blended to B20 [20 percent biodiesel] could improve the blended fuel's cetane by as much as four points, a noticeable performance difference."

REG's network of owned/operated facilities includes technology allowing for conversion of both low (vegetable oil) and high (animal fats, used cooking oil, inedible corn oil) fatty acids. In addition to its own construction technology, the company has upgraded several acquired facilities in order to add high free fatty acid capabilities.

The 45 million gallon per year facility in Danville, IL, was engineered by Desmet Ballestra. Production of biodiesel from low free fatty acid feedstocks began in September 2008, and in April 2009, construction upgrades, including a newly installed pretreatment process, allows the facility to now utilize a wider array of high free fatty acid feedstocks like animal fats, inedible corn oil, and used cooking oil. The facility was awarded BQ-9000 producer status in July 2009 and was purchased by REG in February 2010.

Continuing to Build with the Biodiesel Industry

Over the last decade, the rendering industry has steadily grown as a partner with the biodiesel industry. Biodiesel quality programs will continue to advance the performance and management of fuel for all climates, year-round. ASTM International's biodiesel committee continues to take aggressive action in making biodiesel a commodity fuel that will improve the distillate marketplace.

Federal, state, and regional policy programs continue to advocate for a sustainable multiple-feedstock approach to reducing the United States' dependence on foreign oil and improving air quality. RFS2 creates steady demand for biodiesel during the next decade and additional state incentive programs will drive demand for the product into retail locations.

Commercial-scale biodiesel producers with the advanced technology to utilize feedstock up and down the triglyceride spectrum will be the partners of choice for both petroleum and rendering companies. Confidence is growing along the supply chain and renderers should consider new partnerships in this exciting industry.

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