

Biofuels Market Alert

Markets

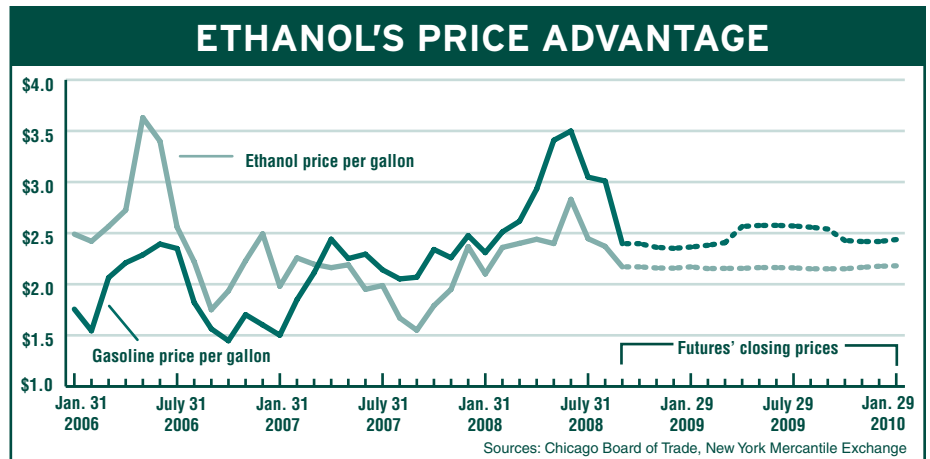
E85: Where Are All the Flexfuel Vehicles and Pumps?

Gasoline shortages in the southeastern U.S. are no problem for motorists driving flexfuel vehicles (FFVs), who are able to fill up on readily available E85—15% gasoline and 85% ethanol. Moreover, the fuel is cheaper than gasoline, even with gasoline prices down from their summer peak.

About 30 stations with E85 dispensers in the Atlanta area are pumping as fast as they can—some stations as much as 1,700 gallons a day. Drivers of FFVs are happy to have the fuel, even though they get fewer miles per gallon with E85 than with gasoline.

Zane Miller, part owner of Atlanta-based **Testing LLC**, a company that installs E85 pumps in the Southeast area, says station owners are happy, too, they're making a profit of 30¢ to 40¢ per gallon of E85 sold, compared with the 8¢ to 9¢ they make on regular gasoline.

"The sweet spot," as Miller puts it, for E85 pricing, is 49¢ per gallon below the cost of regular gasoline.



With gasoline averaging \$3.50 a gallon, gas station signs reading \$2.99 a gallon for E85 are turning heads.

Not too long ago, wholesale ethanol was priced higher than wholesale gasoline. But with the reversal of the pricing relationship in March 2007—plus the federal tax incentive to blenders—E85 is in a position to be priced far enough below gasoline to make it attractive to consumers.

Judging from futures prices for ethanol and gasoline through January 2010, the favorable relationship will continue, even when the blenders' tax incentive drops from 51¢ to 45¢ a gallon in January. Should gasoline prices decline far below expectations—and ethanol prices firm—ethanol producers would have cause for concern. But we don't see that in the cards.

So why isn't ethanol making greater inroads? Two huge reasons: Throughout the country, there are

still only about 7 million vehicles equipped to run on E85 and other so-called mid-level blends—E20, E30 or E50. And few gas stations are equipped to pump the stuff.

That's changing—albeit slowly. Domestic automakers have promised that half of their new car production by 2012 will be flexfuel vehicles. And the installation of E85 dispensers at service stations is also picking up steam, though there's a long way to go. Reaching 80% of the U.S. population would require about 12,000 stations with at least one E85 pump each. There are fewer than 1,800 today.

In the current 2009 model year, there are about 50 cars and trucks capable of running on E85.

Chrysler offers 10 flexfuel vehicles, including the Town & Country and Grand Caravan minivans and the Sebring sedan. **Ford [F]** also has a dozen models, including the

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best selling vehicle in the U.S.—the F-150 pickup truck—as well as the Ford Ranger pickup, Explorer sport utility vehicle (SUV) and Taurus sedan. **General Motors** [GM] has the most FFV models—13—including the Cadillac Escalade, Chevy Silverado pickup truck and Hummer H2.

Foreign brands have remained largely on the sidelines of FFV production, although **Nissan** [NSANY] has two models—a pickup truck and a SUV—and **Toyota** [TM] offers a flexfuel option for its large trucks—the Tundra pickup and Sequoia SUV. **Daimler** [DAI] produces one FFV model—the C300 sedan.

To help prime the pump, so to speak, North Carolina and South Carolina have passed laws requiring oil companies make pure gasoline available to local fuel distributors so they can add ethanol to it themselves, making them eligible for the blenders' fuel credit. Why? So independents can pass the savings on to motorists. (See "Big Oil on the Hot Seat," *KBMA*, July 9, 2008, Page 5.)

After years of fighting E85, large, integrated oil companies—smelling the profit potential—are also poised to sell more high blends of ethanol. Or at least their franchises are, protected by last year's energy law, which amended the Petroleum Marketing Practices Act by prohibiting franchise agreements from restricting the installation of E85 pumps and sales of the fuel alcohol.

Southeastern service stations bearing names such as BP, Chevron and Shell are installing E85 and/or blender pumps—which let motorists choose a gasoline-ethanol blend. The trend that began in the Midwest is spreading to other parts of the country.

Big-box retailer **Costco Wholesale Corp** [COST] is poised to sell E85 in and around Orlando, Fla., as soon as **Kinder Morgan Energy Partners LP** [KMP] begins shipping ethanol commercially through its pipeline from Tampa next year. (See "Piping Ethanol," *KBMA*, Aug. 20, 2008, Page 5.) Ethanol producers are keeping their fingers crossed that Costco's involvement

will open the doors for other big-box retailers to sell E85. More retailers will also be spurred to install E85 pumps once Underwriters Laboratories puts its stamp of approval on them—a move likely to come next year.

A fly in the ointment: America's sudden love affair with smaller cars and plug-in hybrid technology may put a crimp in the automakers' push to produce more FFVs. Most FFVs are SUVs and trucks, and before gasoline prices took off, these vehicles were the Detroit Three's most popular and profitable sellers. The recently announced \$25-billion federal loan to automakers to spur development of advanced technologies, including plug-ins, could also divert attention from FFV production.

In a bid to keep ethanol in the alternative fuel mix, Sens. Tom Harkin (D-IA) and Richard Lugar (R-IN) recently introduced legislation that would mandate 50% FFV production in 2011 and 2012 and rising to 90% in 2013 and beyond. This would force foreign automakers to begin offering significant numbers of FFVs in the U.S., as they already do in Brazil.

The legislation has a decent chance in the next Congress, particularly if Sen. Barack Obama (D-IL) wins the White House. Obama has said he intends to make biofuels a major component of his administration's energy policy. Prospects are iffier if Sen. John McCain (R-AZ) wins because of his opposition to government mandates. ■

At press time, a wide range of tax incentives for biofuels and other alternative energy were being injected into the \$700 billion financial rescue package on Capitol Hill. Congress is expected to pass the legislation and it will soon be signed into law by President George W. Bush.

The measure includes a one-year extension of the \$1 per gallon tax break for making biodiesel as well as the 30% incentive for installing E85 pumps and storage tanks at service stations and other locations. The E85 infrastructure incentive is capped at \$30,000 per facility.

Lawmakers will also broaden the types of diesel fuel that are eligible for the tax break to include any made from biomass feedstocks, no longer limiting it to vegetable oils and animal fats. The tax incentive for renewable diesel is limited to 50¢ per gallon when it is coprocessed with petroleum.

Another change is likely to speed the use of petroleum pipelines for moving ethanol to market. Many pipeline companies are organized as limited partnerships, and as such, may not earn more than 10% of their income from nonpetroleum sources. The bill removes this restriction. ■

Kiplinger's Biofuels Market Alert

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Investing

Corn Ethanol Stocks at a Turning Point?

A difficult 2008 for ethanol stocks has deteriorated into a rout for some investors after both **BioFuel Energy Corp.** [BIOF] and industry leader **VeraSun Energy Corp.** [VSE] disclosed sizable hedging losses that raise doubts about their futures. Can conditions get any worse, or are corn ethanol producers poised for a turnaround?

Operating margins must improve for producers to return to profitability. The negative spread between wholesale ethanol and gasoline prices continues to hurt margins. Ethanol has been trading at a discount to gas since early 2007, a discount that reached over \$1 in May and stands at about 23¢ based on current futures contracts. Raymond James analyst Pavel Molchanov doesn't expect the spread to narrow much in the next three to six months.

On the plus side, feedstock and operating costs are coming down. A better than expected 2008 harvest has seen corn prices drop from a summer high of more than \$7 a bushel to around \$5. Price declines for natural gas, which fuels boilers at most ethanol plants, and transportation fuels should ease production and distribution costs.

Mixed economic conditions point to individual company performance in assessing the outlook for ethanol stocks. BioFuel Energy appears to be in the most precarious position. The company reported worse than expected second-quarter results, including significant hedging losses that caused shares to drop almost 65% on Aug. 12 to 93¢. BioFuel Energy amended its financing to access the cash that will keep its two new plants operating, but it still owes grain supplier **Cargill** \$22 million from its hedging activities. At a recent 60¢ close, the stock is down 35% since Aug. 12 and 91% for the year.

VeraSun shares fell 73% on Sept. 17 after the company disclosed hedging losses and announced a large stock offering to raise cash. It has since shelved the stock sale and hired Morgan Stanley to examine alternatives. Molchanov sees two possible scenarios for VeraSun: acquisition by a conventional or alternative energy company or a management buyout that would take the company private. Despite a strong rebound since the hedging sell-off, stocks are still off 74% in 2008. A call to the company for comment was not returned.

Aventine Renewable Energy [AVR] appears better positioned to rebound in the more favorable cost environment. The firm locked in half of its corn supply for the rest of the year at close to market prices and looks to build on a strong second quarter. UBS analyst Chris Shaw has doubled his 2008 earnings estimates to 65¢ per share and views the stock, down 76% this year to a recent \$3.10, as undervalued. He rates it a buy with a 12-month price target of \$9.

Shares of diversified grain supplier **The Andersons** [ANDE] have also held up well. Its ethanol and rail group, which accounts for about two-thirds of the company's overall revenue, has seen its operating income remain flat year over year, despite nearly a doubling in revenue, due to the drag of higher commodity prices. A strong contribution from its plant nutrient group has helped. At a recent price of \$35.75, shares of The Andersons are down 20% this year. Stephens Inc. analyst Farha Aslam, who sees the company as a possible buyer of distressed ethanol assets, rates the stock a buy with a \$53 price target. ■

		Key Facts for Selected Publicly Traded Companies							Analysts' Recommendations (Total in September/3 months ago)					
							Total Returns %							
Company	Symbol	Share price (as of 9/29/08)	Market value (as of 9/29/08)	Earnings per share (last 4 quarters)	Revenue (last 4 quarters)	P/E ratio*	Past 3 months	Past year	Three-year annualized	Strong buy	Buy	Hold	Underperform	Sell
The Andersons Inc.	ANDE	\$35.75	\$695.0M	\$4.76	\$3.2B	7.1	-12.0	-20.5	41.3	1/2	1/1	1/0	0/0	0/0
Archer Daniels Midland Co.	ADM	20.49	14.7B	2.84	69.8B	9.1	-38.9	-30.8	-0.03	0/0	1/1	7/7	0/0	0/0
Aventine Renewable Energy	AVR	3.10	158.0M	0.57	1.9B	7.6	-29.6	-74.1	NA	0/0	1/1	12/12	3/2	1/2
BioFuel Energy Corp.	BIOF	0.60	10.0M	-0.22	0.3M	NM	-76.5	-89.5	NA	0/1	0/0	6/5	1/1	1/1
Green Plains Renewable Energy	GPPE	5.00	39.0M	1.26	139.6M	NM	-16.3	-64.8	NA	0/0	0/0	0/0	0/0	0/0
Pacific Ethanol Inc.	PEIX	2.08	80.0M	-0.50	608.0M	NM	14.9	-88.4	NA	0/0	0/0	3/2	5/5	1/3
VeraSun Energy Corp.	VSE	4.00	349.0M	0.36	2.1B	NM	-3.2	-83.6	NA	0/0	1/0	13/15	3/1	1/2

* The P/E ratio is based on the current year's earning estimate
NA = Not Applicable
NM = Not Meaningful

Sources: MorningStar, Thomson One Analytics, Yahoo Finance

Interview**Hofmeister: Many Energy Options to Consider**

After retiring as president of Shell Oil earlier this year, John Hofmeister founded and is CEO of Citizens for Affordable Energy. The nonprofit group advocates for larger supplies of all types of energy, more effective and efficient use of energy, environmental stewardship and expanded energy infrastructure. He is also a member of the Department of Energy's Hydrogen and Fuel Cell Technical Advisory Committee.

Q. There's talk of blend pumps—giving motorists a choice of E10, E30 or E50. Are they a good idea?

A. If the motorist is driving a flexfuel engine—fine. But if the motorist is uninformed—and many motorists are—they may think they are helping the country and themselves by buying a higher blend than their vehicle is able to accept. If I was the retailer of such blends—before somebody was able to buy such a product at an E50 pump or at an E30 pump or anything else—I would want them to sign off on the purchase unless they have a flexfuel vehicle. And I think if people had to sign off, which they really should to protect themselves, they wouldn't buy it. The flexfuel engine is the key to success here. But it is going to take time to get many of those into the fleet. We're making progress but it will take time.

Q. How big of a factor will E85 be in the future?

A. I am not a big fan of E85, particularly if it is predicated on corn ethanol. I think the consumer would suffer significantly from the lower energy content: 20% to 25% loss of mpg [miles per gallon] is really a disservice to the consumer. I'm not sure Congress realized that E85 blends had such a negative impact on mpg at a time when we are trying to get more mpg per automobile. Use of a product that lowers mpg is going in the wrong direction.

Moreover, I think that the future of ethanol needs to be with cellulosic ethanol, and we are years away from cellulosic. So my suggestion would be to hold off on E85 promotion until we have a better sense of what we can do with cellulosic ethanol.

Q: What's your view on the environmental implications of producing more corn-based ethanol?

A: People complain of the environmental impact on the Gulf of Mexico by oil drilling. Well, nobody seems to want to talk about the environmental impact of the growth of the dead zone from the nitrogen fertilizer waste that is coming down the river systems. Keep in mind that the dead zone is exactly what it says: There is not enough oxygen to sustain life—whether it is fish or plant life.

We need public policy that is enlightened by the entire pain, from beginning to end of a product choice. Again, I think, moving toward cellulosic ethanol—where not needing such intensive use of chemical fertilizers, where we are able to use waste products—is just a better solution overall.

The point is not to delay the introduction of biofuel, it is really to put it forward in a sound, short-, medium- and long-term rational plan.

Q. Of the technologies for breaking down cellulose to make liquid fuels—thermochemical and enzymatic—which has the most potential?

A. I don't think we know yet. Both offer great opportunity, but I don't know which ultimately will be more commercial. I have a sense that the thermo will ultimately produce more, but I don't know at what cost, including environmental cost. Using enzymes to break down plant cellulose seems more natural and perhaps a less intensive use of energy to create energy, but it may produce less fuel on a per unit basis of input.

The capital cost of setting up the Fischer Tropsch thermochemical process is fairly expensive. It is energy intensive to get the process up and running, but hopefully the volumes of cellulosic ethanol will make it all worth while. Keep in mind one of the elements of cost that matters is how robust is the process. The Fischer Tropsch process is probably robust for more materials.

I don't think anybody should underestimate the volume requirements we are talking about here. When you are a major supplier, you think about the 10,000 distributors across the nation that need to be supplied.

Q. What about algae?

A. Algae is one of the most exciting ideas to come along. I sat in a laboratory with a group of scientists to look at the various carbon structures of molecules of various sources of biomass. Looking at the complex carbon structures of the molecular structures of multiple biomass products—whether it is switchgrass, corn or regular wood chips from different kinds of trees—when you see the carbon structure of the algae molecule, you say, “wow, let's go for that one.”

They reproduce rapidly under certain conditions. The reproducibility and the fatness of the carbon molecular structure suggest that if you really put your mind to it and went into industrial algae production, with appropriate land use management, with appropriate water use management, you could have a reproducible source of algae to supply commercial levels of production.

Industry Outlook

Power Plants and Biofuels

LPP Combustion LLC, based in Columbia, Md., has developed a technique for vaporizing biofuels, such as ethanol and biodiesel, with the goal of using the vaporized fuel to run power plants.

Greenhouse gas emissions would be the same or less than emissions from plants fired by natural gas, according to the firm. Depending on the feedstock, power plants running on biofuels may have the same carbon neutrality as ones operating on wind or solar power—without the intermittency of these two leading green power sources.

LPP—which stands for lean, premixed, prevaporized—is currently looking for partners to demonstrate the technology. It's in talks with several utilities, including members of the Southern California Public Power Authority. One concept being floated is to use the LPP system to fuel a mobile 6-megawatt turbine generator to provide electricity during a localized blackout or power to a construction site.

Richard Roby, CEO of LPP Combustion, suggests the technology would be an ideal source of renewable backup power for T. Boone Pickens' 4,000 megawatt wind farm under construction in the Texas Panhandle.

With the technology in its infancy, it could be years before the electric power industry could represent a new source of demand for appreciable amounts of biofuels.

One thing's for sure: Vaporized biofuels won't win out on price alone. The fuels would cost two to four times more than natural gas. But, there are increasingly important environmental reasons for considering them.

By running on biofuels, power plants would be providing renewable-based electricity, which more and more states are requiring of utilities. And with states preparing to fine utilities for not meeting requirements, a viable biofuels option could be worth the added costs. In California, for example, the fine for not meeting the renewable requirement is 5¢ per kilowatt-hour. And the state's utilities are far from compliance.

Government controls on greenhouse gas emissions—whether at the state or federal level—will also prompt more utilities to look at biofuels. A major advantage of the LPP technology is that it can be applied to existing power plants without the need for major modifications. The system is mounted on a skid, requiring an area about one-sixth the size of a natural gas turbine and generator.

Were the technology to catch on, it could create a huge new market for biofuels. A 125 megawatt combined cycle turbine, running 24 hours a day, seven days a week, would burn about 60 million gallons of biodiesel—nearly a quarter of all the biodiesel demand in the U.S. last year. ■

Big Oil and Biofuels

An update on some major petroleum companies' investments in biofuels:

- **BP [BP]** and **DuPont [DD]**, the chemical manufacturing giant, are partnering to build a plant in the U.K. to manufacture biobutenal, which has a higher energy content than ethanol. The companies, along with **Associated British Foods [ASBFF]**, are also partnering on a \$400 million wheat-to-ethanol plant at the same location.

- **Royal Dutch Shell [RDS]**, currently the largest distributor of transportation biofuels, is taking a more scatter shot approach, making smaller investments in a range of technologies. These include a 50% stake in Canadian cellulosic ethanol producer **Iogen** and partnering with automakers **Daimler [DAI]** and **Volkswagen [VCKAY]** in the German biomass-to-liquids company **Choren**. The corporation also has made investments in a California enzyme company **Codexis** as well as in a joint venture with **HR BioPetroleum** to build an algae-to-fuel pilot facility in Hawaii.

- **Chevron [CVX]** is taking a hybrid approach. It had a 22% stake in a 30 million gallon per year biodiesel plant in Texas. Meanwhile, it's teamed up with the Department of Energy's National Renewable Energy Laboratory in Colorado to develop algae fuels. It's also working with Georgia Tech and others, researching the use of forest products and wood waste for making biofuels.

- **Exxon Mobil [XOM]**, the world's largest publicly traded oil company, has pledged \$100 million over 10 years to Stanford University's Global Climate and Energy Project. ■

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BUSINESS BRIEFS

Developing sustainable bio-jet fuel tops the agenda of a new organization, the Sustainable Aviation Fuel Users Group. It's made up of 10 airlines that account for 15% of global commercial jet fuel demand, along with **Boeing [BA]**, **Honeywell [HON]** subsidiary **UOP** and environmental organizations. The group wants to accelerate the development and commercialization of sustainable jet fuel that performs as well as kerosene-based fuel but has a smaller carbon footprint. The group's two initial research projects will look at jatropha and algae as sustainable feedstocks.

Panda Ethanol [PDAE] will manage the completion of its 115 million gallons per year ethanol facility in Hereford, Texas, after firing its construction contractor, Lurgi Inc. The plant was supposed to take 17 months to complete but is still not finished 26 months into construction.

Sapphire Energy raised another \$50 million in its Series B round. The company, which uses algae to produce bio-oil, believes this added capital, along with \$50 million it raised in May, will be enough to scale up its production facilities. Sapphire hopes to reach commercial-scale production in three to five years. Investors in the round included Arch Venture Partners, Wellcome Trust and Venrock and Cascade Investment, an investment holding company owned by Microsoft founder Bill Gates.

logen shipped its first batch of cellulosic ethanol to Shell [RDS]. The 26,000 gallons of wheat straw-derived fuel was produced at logen's Ottawa demonstration facility and is part of a total 47,500 gallon order by Shell for use as transportation fuels.

Look for an increased amount of animal feed coproduct in the 2008/2009 marketing year (Sept. 1, 2008-Aug. 31, 2009). According to the Renewable Fuels Association, the ethanol industry produced 23 million metric tons this past marketing year with a value of \$3 billion and will increase to 30 million metric tons this year. The amount of distillers grains exported is also poised to increase, from the equivalent of about 100 million bushels of corn in the 2007/2008 marketing year to the equivalent of 160 million bushels of corn this marketing year.

GreenHunter BioFuels is being sued by Bioversal for \$14 million. Bioversal says that the two companies entered into a contract in which Bioversal would buy the feedstock for GreenHunter BioFuels. It asserts the pact, then called for GreenHunter to sell the biodiesel, which would meet ASTM and European biodiesel standards, back to Bioversal. According to Bioversal, GreenHunter BioFuels is not able to make biodiesel that meets these standards and has not delivered any biodiesel to Bioversal. GreenHunter BioFuels is a subsidiary of **GreenHunter Energy [GRH]**.

AROUND THE U.S.

Sen. Jeff Bingaman's (D-NM) to-do list for the next Congress: Speaking on Capitol Hill, the chairman of the Senate Energy and Natural Resources Committee said he plans to tackle energy infrastructure modernization, energy efficiency, shoring up fossil fuel supplies, advanced vehicle technologies and new energy research funding when the 111th Congress convenes in January.

Legislation to give algae a boost was recently introduced in Congress. Rep. Brian Bilbray (R-CA) introduced legislation to give algae-derived fuel a \$1.50 per gallon tax credit when it is produced and sold as a fuel. The credit would expire in 2013. The legislation was referred to the House Committee on Ways and Means.

WORLD BRIEFS

Brazilian President Luiz Inácio Lula da Silva talked up biofuels in recent statements at the UN General Assembly. He claimed that linking high food prices to biofuels does not stand up to objective analysis. He also cited Brazil as an example of how producing biofuels can help reduce dependency on fossil fuels as well as create jobs and regenerate degraded land.

Brazil will see two more ethanol projects, courtesy of **Bunge Ltd. [BG]** and Japanese firm **Itochu**. The two firms will invest about \$800 million to build a new ethanol refinery and expand an existing one in Santa Juliana from 37 million gallons per year (Mgy) to 97 Mgy. Bunge will own 80% of each facility, and Itochu, 20%. Both plants should be operating at full capacity in four years. Bunge also recently purchased a separate ethanol mill and plans to expand its production from 31 Mgy to 104 Mgy.

Ottawa is backing off its ethanol commitment. Premier Dalton McGuinty decided to stay at the current level of 5% ethanol instead of moving to 10% in 2010 as had been previously planned. Instead, Ottawa will focus on developing a low carbon fuel standard that was announced in May 2007. All of Canada will move to 5% ethanol by 2010.

India is proposing to raise the blending of biofuels to 20% by 2017. Currently, most of India uses a mandated 5% ethanol blend, scheduled to increase to 10% this month. Under the proposed plan, both ethanol and biodiesel would be blended with an emphasis on producing the biodiesel nationally from nonedible oil seeds.