



## The Wheels Come Off the Biodiesel Wagon

Posted by [Robert Rapier](#) on January 12, 2010 - 10:13am

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### Domestic Biodiesel Production Plummet

One of my [Top 10 Energy Stories of 2009](#) involved the actions taken by the EU against U.S. biodiesel producers. U.S. tax dollars had been generously subsidizing biodiesel that was being exported out of the U.S. European producers couldn't compete against the subsidized imports, so the EU effectively cut off the imports by [imposing five-year tariffs](#) on U.S. biodiesel.

This was a big blow to U.S. biodiesel producers, and was one of the factors leading to a disastrous 2009 for U.S. biodiesel production. But there were other factors as well, which I will describe in this post.

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### How disastrous was 2009?

Per the [National Biodiesel Board](#) (NBB), here are the statistics from the past 6 years of biodiesel production:

2004: 25 million gallons

2005: 75 million gallons

2006: 250 million gallons

2007: 450 million gallons

2008: 700 million gallons

2009: 300-350 million gallons (estimate)

The NBB also reports that domestic biodiesel capacity is now operating at only 15%. There have been a number of stories in the past few days covering these developments:

#### [Bad start to 2010 after 'rough year' for entire biofuel industry](#)

A federal tax credit that provided makers of biodiesel \$1 for every gallon expired Friday. As a result, some U.S. producers say they will shut down without the government subsidy.

A one-year extension of the biodiesel tax credit was included in a bill that was approved

by the U.S. House recently, but it never made it through the Senate.

## Politics and Energy Policy

I have often complained about the chaos that political leaders cause with inconsistency on energy policy. I will get into the wisdom of this biodiesel tax credit in a moment, but government policy makers need to send clear, long-term signals so energy producers can plan. This has long been a problem for planning energy projects. Wind and solar developers have lived with this uncertainty for years. It seemed like at the end of every year, there was a tax credit that may or may not be extended. The uncertainty often froze project developers, and created unnecessary delays.

The same has long been true in the oil and gas industry. One of the reasons that it has been difficult to get a gas pipeline built in Alaska was government refusal to commit to long-term tax rates. Imagine that you are contemplating spending \$26 billion on a gas pipeline, but the government can't tell you what your tax rate is going to be. If my state income tax doubles, I can move to another state. But it isn't like you can pick that pipeline up and move it, so it is important that you know that the government can't double the tax rate in the event of a budget shortfall.

## Recap of Government Interference

A different kind of government interference - a tendency to attempt to pick technology winners - resulted in cancellation of what I believe was a promising 2nd generation renewable diesel process. I documented the saga in several posts.

To recap briefly here, there are two different types of renewable diesel that can be produced from vegetable fats. One is **biodiesel**, which is normally produced by reacting methanol with animal fats or vegetable oil. The product is actually an alkyl ester, which contains oxygen, and is structurally different from petroleum diesel. This is the 1st generation type of renewable diesel. But biodiesel changes consistency in cold weather, limiting the amount of biodiesel that can be blended into petroleum diesel.

The other type of renewable diesel is **green diesel**, which is chemically equivalent to petroleum diesel, and has promise as a 2nd generation renewable diesel. This product contains no oxygen and can be blended in any proportion with petroleum diesel. It can be made via gasification from any biomass or by hydrocracking the same fats and oils that you use to produce biodiesel. Besides the structural differences in the product, biodiesel results in a glycerin by-product whereas green diesel from oils or fats results in a propane by-product.

My former employer, ConocoPhillips (COP), developed a process for making green diesel that was both more efficient and more cost-effective than conventional biodiesel production, but still required the biodiesel tax credit to be profitable. But because an oil company was involved, Congress voted to specifically deny the biodiesel tax credit for the process.

By killing the credit, COP was placed at a \$42/bbl disadvantage relative to biodiesel producers who received the credit, and because of this decided to cancel the project. I documented that sorry saga [here](#). I explain the differences between 'green diesel' and biodiesel more fully [here](#).

## Where to Now?

So where to go from here? We now have a classic dilemma created by the government. Through

government fiat, an industry was created. Investments were made and infrastructure was put in place. The problem is that the particular industry that sprang up had little hope of ever really competing without the subsidy. The reasons are alluded to in the [link above](#):

"By the time you buy the feedstock and the chemicals to produce the fuel, you have more money in it than you get for the fuel without the tax credit," Francis said. "We won't be producing any without the tax credit."

I have long believed that there is no future for 1st generation biodiesel. I wrote in an [August 2007 essay](#): *"I have said it before, and I reiterate: Biodiesel's days are numbered."* Note that the year after I wrote that the U.S. biodiesel industry had their best year ever. But the handwriting was on the wall for very fundamental reasons, and the prediction I made in 2007 is playing out now.

There are multiple problems that will make it difficult for biodiesel to ever compete without subsidies. In a nutshell the key problem is that the feedstock costs are linked to fossil fuel prices. The feedstock is generally a vegetable oil and methanol - an alcohol typically produced from natural gas. A second big problem is that biodiesel is an inferior fuel to hydrocarbon diesel (especially in cold weather). Further, the by-product of the biodiesel process is glycerin, which has limited value (especially at the volumes produced when biodiesel production is ramped up).

But this story is worse than simply a fuel that can't compete. As evidenced by the opposition of the National Biodiesel Board to the extension of the tax credit for COP's 2nd generation process, 1st generation biodiesel isn't even a bridge to 2nd generation biodiesel - it is a barrier. Not only is biodiesel chemically different, but 1st generation producers have pulled out the stops to protect themselves against 2nd generation competition. So now we have a 1st generation industry that was already in trouble even with the subsidies that it was receiving, and a 2nd generation industry that could have been much further along were it not for 1st generation interference (which was aided by Congress).

If instead of picking technology winners, Congress had simply raised fossil fuel taxes, we wouldn't be in this dilemma. With the high level of embedded fossil fuels, biodiesel would have been unable to compete, and an industry with no future would not have been created by the government. Green diesel, on the other hand, would start to look a lot better because of the lower level of fossil fuel inputs (particularly for gasification), and we might find plants starting up to produce green diesel from both hydrocracking vegetable oils (the COP process I described) and gasification of biomass (described [here](#)).

What I expect to happen is that Congress will eventually extend the credit, and it will be applied retroactively. But there are no guarantees, so producers are once again left with uncertainty. What should happen - in my opinion - is announcement of a phaseout schedule. I wouldn't simply eliminate the tax credit cold turkey. That would be a blow to producers who invested on good faith that government support would be continued. But they also need to receive a message that this tax credit will be phased out over the next 3-5 years. At that point, prospective investors will be fairly warned that projects whose economics hinge on continued government subsidies are to be avoided.

This, by the way, is the sort of metric I try to apply to projects. I am looking for projects that can be viable without government support and can operate with low/no fossil fuel inputs. The first item means that governments have much less ability to wreck my project by withholding support,

and the latter means that the project should become more attractive in the higher oil price environment that I expect.

That doesn't mean that initial government support isn't often helpful, but unless the underlying economics are sound then government support is a crutch I will never be able to throw away. In my opinion this is the case for most U.S. biodiesel producers, which helps explain why industry capacity is presently at 15%.

**Disclosure:** I worked for ConocoPhillips at the time that it developed green diesel using left over chicken fat. I now work for a company (not a petroleum company) that has partial ownership of a company that is involved with the development of green diesel by gasification of biomass.



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