



Iowa Renewable Fuels Association

September 25, 2009

Environmental Protection Agency
Air and Radiation Docket and Information Center
Mailcode 2822 T
1200 Pennsylvania Ave., NW
Washington, DC 20460

**RE: Regulation of Fuels and Fuel Additives; Changes to Renewable Fuel Standard
Program: EPA-HQ-OAR-2005-0161-0996**

With 40 ethanol biorefineries capable of producing 3.3 billion gallons annually and 15 biodiesel refineries capable of producing 325 million gallons annually, Iowa is the nation's premiere biofuels producer. Iowa is also the largest producer of both corn and soybeans in the U.S. Therefore, as the largest representative of Iowa's ethanol and biodiesel producers, the Iowa Renewable Fuels Association (IRFA) is uniquely suited to comment on the proposed rule implementing the 2007 Energy Independence and Security Act (Act) and its renewable fuels program (RFS2).

IRFA would like to commend the Environmental Protection Agency (Agency) for its diligence in gathering information from a wide variety of sources as it continues work on the draft rule. We were pleased to be able to meet with EPA staff in Washington, DC this June as well as to be part of fact-finding visits to Iowa by EPA staff in August and September. We found the Agency staff and directors to be extremely earnest in their desire to "get it right" and we hope the Agency has found us to be as earnest in providing its staff with factual data and first-hand industry observations so they can do just that – get it right. Quite frankly, IRFA believes some of the decisions made in DC over the next few months will set the tone for agriculture and biofuels for the next decade. It's not an overstatement to say our future is in your hands.

Overview/Background

IRFA members individually, and the association collectively, worked for years on the legislation that became known as RFS2. As such, we can say with no reservation that the intent of Congress was to promote the increased production of domestic renewable fuels in order to:

- 1) reduce greenhouse (GHG) gas emissions;
- 2) lessen U.S. reliance on foreign sources of energy; and,
- 3) boost rural economies while creating green-collar jobs.

Certainly, there was a desire to do this in the most appropriate and sustainable manner, protecting native habitat and preventing unintended consequences such as increased carbon emissions due to indirect land use change (ILUC).

However, as the EPA works to implement the letter of the law as enlightened by Congressional intent, we urge the Agency not to lose sight of the undisputed goal of Congress – to increase domestic renewable fuels production and use. While the Agency cannot ignore other stipulations or safeguards in the Act, when dealing with areas of great uncertainty we strongly believe the Agency must seek to fulfill Congressional intent and not unnecessarily impede it without clear science that has the consensus of credible interested parties. To do otherwise ignores the aforementioned three goals of Congress.

ILUC Caution a Virtue or Vice?

There is no better illustration of this point than the discussion over ILUC in general and international ILUC in particular. We will address several specific aspects of ILUC later, but for context let us first consider two hypothetical scenarios.

First, if outdated data, incorrect assumptions and flawed models combine to result in a rule that places unnecessary road blocks to expansion of domestic biofuels production and use, then the result is fewer gallons of low carbon biofuels replacing high carbon gasoline and diesel produced from the Canadian tar sands or Venezuelan heavy crude. This equates to greater world carbon emissions than necessary.

Second, if the EPA slightly underestimates the supposed international ILUC impact of biofuels, then there is the potential for greater production and use of domestic renewable fuels. In either case one could argue that world carbon emissions would be higher than the theoretically perfect case. But in this second scenario, the rule would at least positively impact two of the three Congressional motivations for enacting the RFS2 program – reducing foreign energy dependence and boosting rural economies.

IRFA is not suggesting the Agency ignore sound science. We are suggesting that in the absence of definitive scientific consensus, the Agency promulgate a rule that takes into account *all three* public policy goals, not solely the reduction of GHG emissions. It would be wrong to think that being “cautious” with assumptions regarding international ILUC is virtuous. From the perspective of Congress’ multifaceted public policy goals, it would be a vice.

Is International ILUC Assessment Required?

The Clean Air Act (CAA) specifically regulates activities inside the United States. Further, through numerous venues including public statements, official letters, and even a vote of the House, Congress has made clear that it did not intend the ILUC assessment to be applied internationally. In the past when Congress did desire an international scope for certain CAA policies, it expressly directed the EPA to expand the normal scope of the Act. No such direction was given with regard to RFS2 and ILUC. The combination of the CAA’s legal scope, Congressional intent and overwhelming scientific uncertainty strongly argue for the EPA to not attempt to assess the international ILUC of biofuels. IRFA urges the EPA to reconsider its position that international ILUC must be included in the final rule.

Models Vs. the Real World

However, as the Agency has indicated in recent Congressional correspondence its intention to attempt to quantify the international ILUC impact of biofuels in the final rule, we will address some of the many shortfalls of the current modeling.

In public policy the purpose of modeling is to replicate the real world close enough to make sound policy determinations. In the case of ILUC this simply does not currently exist. Further, it is not acceptable to justify actions based on phrases like “the best science available” if that so-called “best” science is not also *good* science. To date the Agency has taken the supposedly cautious “best science” approach to ILUC that ignores two of the three policy goals of the RFS2 program discussed above.

If the Agency’s combination of models was correctly forecasting the international linkages and impacts of increased biofuels production in the future, they would also be able to accurately “backcast” the same linkages and impacts. However, the real world data does not even remotely support this conclusion. For example, production of ethanol and biodiesel surged from 2004 to 2008 as a result of high oil prices, MTBE replacement and the 2005 Energy Act. Yet, for example, Brazilian soybean acreage decreased by roughly 1.5 million hectares during the same time. Further, it is *extremely* important to keep in mind that the growth in annual production of starch-based ethanol and biodiesel from 2004 to 2008 (5.8 billion gallons and 665 million gallons respectively) exceeds the future growth needed to fulfill the RFS2 schedule. If there was no observable international ILUC connection during the most rapid expansion of biofuels production in the nation’s history, it is hard to accept a model that predicts drastic ILUC impacts in the future under more moderate biofuels production growth requirements.

The lack of an international ILUC impact during the last five years is not surprising when you consider this undisputed fact: biofuels production has never consumed a “baseline” bushel of corn or soybeans. Seed improvements and better farming practices over the last decade have allowed U.S. farmers to supply the same or more bushels of corn and soybeans for food, feed and exports while at the same time supplying feedstocks for the growth in biofuels production. It should also be noted that cultivated acres were reduced during this time. These facts alone illustrate that while international ILUC may be theoretically possible, it is simply not a reality under current conditions, nor will it become a reality given any reasonable assumption of future U.S. farm productivity.

International ILUC Model Sensitivity

If this is true, how can the current EPA models be so wrong? Recent scholarship by Professor Dermot Hayes and his team at Iowa State University (ISU) sheds some light on this. (Their paper can be found at: www.card.iastate.edu/publications/synopsis.aspx?id=1108)

In a nutshell, their work found that the models being used by the Agency are extremely sensitive to small changes in assumptions, especially for yield growth and land conversion. Their improved model finds that if you use “the same assumptions” as lawyer Tim Searchinger did in his work published in *Science*, you “get very similar results” – a payback period for ethanol of over 180 years. However, the ISU study found that if you modify the assumptions, such as

including more up-to-date biorefinery energy use and crop production data and add a 1% yield response to the predicted higher commodity prices, “then the payback period is about 15 years.” This is well within the expected lifespan of an ethanol plant. The ISU team goes on to note: “The lesson for policymakers is that the results from economic models depend heavily on assumptions...”

We also remind the Agency that Professor Hayes noted during his presentation to EPA leadership on September 3rd at ISU’s BioCentury Research Farm that other very reasonable assumptions would yield a negative payback period for starch-based ethanol. If we had included a decision flow chart within this document, there would be a large arrow pointing from this section to the “Virtue or Vice” section.

Bifurcated Rule Implementation

Given the current model’s sensitivity and uncertainty combined with the lack of a clear Congressional directive to include international ILUC in the RFS2 rule, if the Agency will not simply drop the calculation we strongly urge it to consider a bifurcated rule implementation. We urge the Agency to put in place interim rules for the RFS2 schedule while taking more time to develop a strong scientific consensus on international ILUC, its models and its assumptions (some of which we’ll address in more detail below). In short, before it is used to make public policy, international ILUC science must go from being the “best” science currently available to being “good” science with broad scientific support. This was the clear will of the House expressed during the recent votes on the cap and trade legislation.

Moving quickly on the RFS2 schedule is the critical factor for today’s biodiesel industry. In Iowa alone more than 10,000 farmers and other investors responded to the passage of the RFS2 by rapidly investing in biodiesel production facilities based on RFS2’s 500 million gallon usage requirement for 2009. The lack of a final RFS2 rule combined with the recent economic downturn (reducing domestic diesel demand) and Europe’s specious tariffs on U.S. biodiesel continue to devastate the industry. Large petroleum companies are waiting on the sidelines for rules to be implemented before making biodiesel purchases. Meanwhile industry officials report that only about 20 out of more than 200 biodiesel refineries are operating today. With every passing day another of the 180 non-producing biodiesel refineries slides toward bankruptcy – taking its investors and green collar jobs with it. Without quick action to spur domestic demand, most of the 20 plants operating today may be forced to shut down production in the near future.

Despite public assurances that a final rule implementing the RFS2 schedule will be in effect by January 1, 2010, it is hard to imagine, especially with the extended comment period, how the Agency will sort through thousands of comments and the numerous issues involved with RFS2 and have a comprehensive final rule implemented by the end of this year. Therefore, we urge the Agency to finalize an interim rule that would implement the RFS2 schedule, and especially the biomass based diesel carve-out within the overall RFS2 schedule, beginning on or before January 1, 2010. Such a rule needs to make clear that obligated parties must meet the combined 2009 and 2010 biomass based diesel requirement in 2010. Without domestic demand spurred by implementation of the RFS2 schedule, the prospect for farmer and locally-owned biodiesel refineries in the U.S. is extremely dire.

Assumption Uncertainty

There are several assumptions fed into the ILUC models that IRFA believes need major adjustment. As we discussed above, getting the assumptions right is just as important as having accurate, transparent models. We will address some of the points below and commend the Agency to fully consider other, more in-depth, submissions in this area from national biofuels associations.

Plant Efficiencies

Those of us living and breathing the biofuels industry every day feel that too many policymakers in DC, no matter how well intentioned, are prisoners of old “data sets” that fail to grasp the rapid evolution of biofuels production. Those relying on solely historical data simply cannot keep up with the dynamic innovation occurring daily in the renewables sector. As “modeling” of our industries is increasingly used to determine game-changing public policies, accurate and up-to-date “data sets” for biofuels and coproducts production must be used.

Also, the one-size-fits-all models fail to take into consideration how literally every biorefinery has adapted itself to its local environment and community. They may look the same on the outside, but every biofuels plant has optimized its unique efficiencies regarding energy inputs, water usage, transportation logistics and much more.

For example, over the past five years, the ethanol industry has seen tremendous gains in efficiency and reductions in energy intensity. These improvements are rarely captured in current lifecycle analysis models. According to a report by Argonne National Laboratory, between 2001 and 2006 the ethanol industry became far more efficient:

- Total energy use decreased 22%.
- Water consumption decreased 27%.
- Ethanol yield per bushel of corn increased 7%.
- More than 20% of ethanol producers captured and marketed some portion of their CO₂.
- A similar report by accounting firm Christianson & Associates found a 14% reduction in natural gas use and a 13% reduction in electricity use between just 2004 and 2007.

Ethanol producers are also innovating new ways to recycle water. Just 10 years ago, roughly 5 gallons of water was needed to process one gallon of ethanol. Today, the average is 3 gallons or less. New technologies promise to continue, if not accelerate, this trend.

Further, the ethanol industry is adopting new technologies that enable producers to maximize the value of their feedstocks. For instance, many plants are removing corn oil from the corn kernel on the back end of the ethanol production process. The extracted corn oil is then sold as feedstock for biodiesel, feed for the livestock industry, or for other value added markets.

Not only does corn oil extraction help a producer diversify his product stream, it also helps reduce energy usage by reducing the amount of coproduct that needs to be dried, in turn reducing energy inputs. As EPA leadership heard during their visit to Iowa on September 3rd, Golden Grain Energy near Mason City, Iowa benefited from implementing this technology by:

- Increasing revenue by almost 2%;

- Helping to lower acid requirements used to keep the evaporation system clean;
- Helping to keep the DDG dryers and duct work cleaner;
- Improving the dryer efficiency and reducing emissions; and,
- Improving water balance that in turn helps corn conversion to ethanol.

Most biodiesel refineries in Iowa report that current energy use is approximately 18% lower for soy biodiesel and approximately 13 to 14% lower for animal fats than the data used by EPA.

Crop Yield Projections

While “data set” concerns apply to many aspects of today’s farming and biofuels production, maybe no other area has such an important impact as projecting future yields of corn, soybeans and other key crops. Given the extreme sensitivity of current carbon and ILUC models as outlined in the aforementioned ISU study, even tiny changes to yield trends lead to large changes in final model outputs. Put simply, getting the yield projections right can literally change a red light into a green light.

There have been large periods of time when the use of a straight-line 30-year trend line worked well to predict future yields. However, this is not the case when new seed technologies lead to rapid yield gains. This can be seen in any historical yield chart broken down into open pollinated, double cross breeding, single cross breeding and biotechnology eras. During these technology-driven transformations, the straight-line projections were woefully inadequate.

We urge the Agency to carefully consider comments from DuPont/Pioneer, Monsanto, Syngenta and other seed technology providers that make clear we are in the midst of a period of technology driven yield transformation. However, unlike previous examples when one new technology created a somewhat stable “new normal,” today’s research is bringing wave after wave of new seed technology in a constant transformation of yield potential. Combined with improved agronomics, yields are increasing at an increasing rate while energy inputs are simultaneously going down per acre. Therefore, the Agency must abandon its 30-year straight-line yield assumption when modeling ILUC and direct feedstock production efficiencies.

Let us use an example. If today we set about to determine the corn yield projection for 2020 and we used the traditional last 30 years of yield data, the trend yield for 2009 would be roughly 155 bushels per acre and the trend yield for 2020 would be almost 178 bushels per acre. If we did nothing else but switch to a 15-year trend line, dropping some of the old “pre-biotech” years, the trend yield for 2009 jumps to just under 160 bushels per acre (about what USDA projects for this year) and the trend yield for 2020 leaps to over 190 bushels per acre. But this doesn’t go far enough. Even the 15-year straight-line yield projection for 2020 of 190 bushels per acre is significantly below the consensus projection of between 200 and 210 bushels per acre from the seed technology providers and commodity groups. As EPA leadership heard from Monsanto’s Ted Crosbie on September 3rd, this is not “pie-in-the-sky.” These yield projections are based on seed varieties already in test plots today and proven technologies in the research pipeline.

In addition, new soybean varieties are expected to boost yields by 9 to 12 percent in just the next few years. At the same time, genetic research is promising to increase oil content in soybeans by

10 percent. Combined, the technological improvements will substantially increase the amount of soybean oil available for biodiesel production without increasing acreage demands.

If the extremely dynamic seed industry is not properly accounted for, the ILUC models will unnecessarily hold back renewable fuels and, ironically, lead to more carbon emissions and greater dependence on foreign oil while at the same time depriving rural America of a vital growth opportunity. We strongly urge the Agency to abandon the outdated “30-year” trend analysis and to immediately bring together the necessary government, academic and private industry experts to develop a consensus approach to future yield projections.

Coproduct Credits

Biofuels producers do not just produce renewable fuels, they also produce valuable coproducts that typically reenter the feed markets or substitute for oil-based products in manufacturing. In either case, these coproducts provide important revenue and carbon offsets for renewable fuels.

The current EPA model assumes that distillers grains replaces conventional feed on a pound-for-pound basis. This is not reality. With the starch gone, distillers grains is a high protein feed ration. Due to the high protein content per pound, one pound of distiller grains displaces more than a pound of corn and soybean meal. Factoring in the higher displacement rate and taking into account that soybean meal is also displaced from the feed ration, not just corn, there is a significant positive impact on the ILUC models.

EPA staff visiting Iowa during August heard this first-hand from Bill Couser, a cattleman near Nevada, Iowa. Bill explained that five years ago he used 75 bushels of corn to “feed out” a 500-pound steer calf to its slaughter weight of 1350 pounds. But today, biofuels coproducts like distillers grains, gluten and syrup have made the diet more digestible while providing the necessary protein and fiber. Therefore, Bill uses only 11-16 bushels of corn to feed out the same steer calf while substituting crop residues like bean hulls and soybean straw into the diet.

It has also been brought to the Agency’s attention that the draft rule seriously underestimates, even ignores, the value of glycerin from biodiesel producers. The increasing supply of glycerin from biodiesel production has spurred research into a plethora of new uses. As EPA staff heard in August during their visit to Central Iowa Energy near Newton, Iowa, there has been great interest in using glycerin in animal nutrition (laying hens, broilers, swine, dairy and beef cattle) and as a petroleum replacement for polypropylene among several other uses. The price of crude glycerin has averaged around 12 cents per pound but has gone as high as 30 cents per pound. Iowa biodiesel producers expect the value to be maintained or enhanced as the flood of new research is commercialized. Utilizing glycerin as a valuable coproduct and petroleum replacement in the GHG emissions calculations would increase soybean oil-based biodiesel’s GHG reduction percentage by roughly 17 percent.

Nitrogen Emissions from Soybean Production

The Agency has heard on numerous occasions that the draft rule used outdated and inaccurate data when figuring the nitrogen emissions from soybean production. We applaud the Agency for acknowledging this and pledging to incorporate the updated 2006 Guidelines for National

Greenhouse Gas Inventories from the Intergovernmental Panel on Climate Change into the final rule. Utilizing these guidelines for incorporating nitrogen values into the GHG emissions calculations would increase soybean oil-based biodiesel's GHG reduction percentage by an additional 20.9 percent.

Petroleum Baseline and the Marginal Barrel of Oil

As set out in the Act, the greenhouse gas reduction thresholds biofuels must meet are in comparison to a 2005 average gasoline and diesel fuel. However, there is consensus that as we move from 2010 to 2022, the carbon footprint of the average gasoline or diesel fuel will be much higher than in 2005. When the world economy rebounds, the marginal barrel of oil will come from nontraditional sources, such as the Canadian tar sands, Venezuelan heavy crude, or super-deep drilling ocean rigs. In any of these scenarios, the carbon footprint of these fossil fuels is significantly higher than light, sweet crude oil from Saudi Arabia. As biofuels use increases, it will replace fuels from these nontraditional sources, not Saudi Arabian oil.

When IRFA members visited with EPA staff in DC in June, we were caught off guard when one staffer suggested that many in the Agency felt that even in 2022, the marginal barrel of oil would still come from Saudi Arabia. Therefore, during the August biofuels tour in Iowa, we put that question directly to Department of Energy (DOE) senior analyst Zia Haq during a roundtable discussion on ILUC, which EPA staff observed. Mr. Haq stated that the DOE believes the marginal barrel of oil will come from the nontraditional oil sources referenced above.

Regarding ILUC, EPA's Office of Transportation and Air Quality Director Margo Oge once stated: "Not including or addressing indirect emissions due to land use changes would ignore a large part of the greenhouse gas emissions associated with different fuels and would result in a greenhouse gas analysis that bears little relationship to the real-world emissions impact of the fuels." If that is true for ILUC, then shouldn't the same reasoning apply for the marginal barrel of crude oil? If not, a large part of GHG emissions associated with different fossil fuels will be ignored, resulting in a GHG analysis that bears little relationship to the real-world emissions impact of the fossil fuels.

We urge the Agency to recognize the most likely fossil fuels that increased biofuels usage will displace and credit biofuels with the avoided emissions compared to the 2005 baseline fossil fuels.

Renewable Biomass Certification

IRFA supports Congressional intent that biofuels feedstocks should not come from virgin prairie and similar lands. However, a workable and cost-effective system to ensure this requirement is met must be incorporated into the final rule. To do otherwise jeopardizes the overriding intent of the RFS2 program.

As mentioned above, U.S. farmers are producing more bushels on fewer acres each year. Also, even if some small amount of "virgin" land was brought into production, there is nothing in the Act that prevents its output from being segregated and used in literally every other market segment other than biofuels. So any system that tries to track each kernel of corn or soybeans (or

even production by farm/field) would be exorbitantly expensive and would ultimately fail in its intent to protect virgin land. That is the hallmark of bad public policy.

EPA staff and leadership saw the current logistical system for ag commodities during their trips to Iowa in August and September respectively. Grain storage is co-mingled on farms and further co-mingled at regional elevators. Corn and soybeans have always been considered fungible – the very definition of a commodity.

We urge the Agency to work with the USDA to use an acreage baseline in which feedstock verification is only required if the baseline acreage is exceeded. Even in that case, the Agency should take a state-by-state or regional approach so that only the area realistically impacted would have to verify the lineage of its feedstocks.

Conclusion

In closing, we sincerely appreciate the hard work of EPA staff during this rulemaking process. We have found the staff to be open, ready to listen and earnest in their desire to “get it right.” We appreciate the time EPA staff and leadership took to meet with us in Washington, DC and to come to Iowa to see first-hand our agricultural production and biorefining systems. We hope that “hands on” experience helps the Agency better understand and incorporate the points we’ve made throughout this document.

Iowa biofuels producers are proud of producing an environmentally friendly product in a sustainable and environmentally friendly manner. We have much room for improvement, but we have already taken vast strides that must be reflected in the final rule. To a large extent, our future is in your hands. We are deeply committed to a more renewable, more energy secure future. We know the facts are on our side. If the RFS2 rule gives us a chance, we are certain the biofuels industry will not only meet the RFS2 schedule – we will exceed it while at the same time achieving a smaller carbon footprint than some in DC believe is possible. We ask the Agency for a final rule that incorporates good science with the three-fold goals of Congress for the RFS2 program.

We stand ready to work with you and to provide any further information or background on the issues discussed above or on any other topic where we may be of assistance. Please do not hesitate to contact me at mshaw@IowaRFA.org or 515-252-6249.

Sincerely,



Monte Shaw
Executive Director