COMMENTS OF THE NATIONAL BIODIESEL BOARD ON REGULATION OF FUELS AND FUEL ADDITIVES: CHANGES TO RENEWABLE FUEL STANDARD PROGRAM; NOTICE OF PROPOSED RULEMAKING, 74 FED. REG. 24,904 (MAY 26, 2009), and NOTICE OF AVAILABILITY OF EXPERT PEER REVIEW RECORD, 74 FED. REG. 41,359 (AUG. 17, 2009)

EXECUTIVE SUMMARY

The National Biodiesel Board (NBB) appreciates having the opportunity to comment on the Proposed Rule for Changes to the Renewable Fuels Standard to implement the amendments to the program in the Energy Independence and Security Act of 2007 (EISA) (P.L. 110-140), enacted in December 19, 2007 (commonly referred to as RFS2). NBB is the national trade association representing the biodiesel industry as the coordinating body for research and development in the United States. It was founded in 1992 by state soybean commodity groups who were funding biodiesel research and development programs. Since that time, NBB has developed into a comprehensive industry association which coordinates and interacts with a broad range of cooperators including industry, government and academia. NBB's membership is comprised of biodiesel producers; state, national and international feedstock and feedstock processor organizations; fuel marketers and distributors; and technology providers.

In EISA, Congress sought to further incentivize U.S. production and use of Advanced Biofuels, including Biomass-based Diesel. The U.S. biodiesel industry wants the RFS2 program to succeed, and under the statute, the EPA has ample authority to implement a workable program. The Proposed Rule, however, does not achieve this goal and, in fact, stands to undermine Congressional intent in establishing the Advanced Biofuel and Biomass-based Diesel mandates -- integral parts of the program.

NBB appreciates the difficult task before EPA, and appreciates its efforts. Nonetheless, we urge EPA to keep in mind the purposes of the program to promote renewable fuels as part of America's move toward energy independence, as well as obtaining their numerous environmental and economic benefits. In particular, we are concerned that EPA has not yet implemented the Biomass-based Diesel volume mandate under EISA, and that the lifecycle analysis in the Proposed Rule has essentially eliminated a substantial portion of the U.S. biodiesel market from meeting the Advanced Biofuel requirements, which includes Biomass-based Diesel -- nearly 60 percent of the feedstock used today will not be able to meet the requirements of the advanced biofuels program under the Proposed Rule.

Policy consistent with the following would ensure that the advanced biofuel goals established by statute are met:

- Recognize that existing facilities produce biodiesel from existing feedstocks that does not require or result in any land use changes, and should for practical purposes be grandfathered in the advanced biofuels program.

- Utilize a greenhouse gas (GHG) emission methodology for rulemaking purposes that is based on sound economics and science and the most updated information, is valid for regulatory purposes, and does not unfairly penalize U.S. biofuel production for unrelated land use shifts in foreign nations. The EPA's proposed approach for addressing emissions from international indirect land use does not meet this standard.

- Implement a workable program that is simple and efficient while not imposing undue burdens on the renewable fuel industry.

While we believe EPA's proposed approach for addressing emissions from international indirect land use does not meet the requirements above and should be excluded, key corrections need to be made to EPA's lifecycle analysis for biodiesel in the final rule. These include, for example:

- Nitrogen fixing in soil was incorrectly included and if corrected would decrease GHG lifecycle emissions by an additional 20.9 percent.

- The energy balance data is out of date, co-product allocations for glycerin were not incorporated, and global market drivers for feedstocks are not considered when updated and included these factors would further decrease GHG lifecycle emissions by an additional 19.1 percent.

- EPA should analyze indirect emissions for all fuels or for none, and should compare biofuels to the more expensive and higher carbon sources of crude they will be replacing such as tar sands and heavy crude.

- EPA's reference case underestimates the volume of biodiesel production in absence of an RFS, and therefore overestimates the land use change resulting from RFS implementation.

- Although NBB agrees that EPA should use a 100-year time frame, EPA should eliminate the arbitrary 2 percent discount rate.

- EPA has relied upon questionable data and assumptions relating to international indirect land use change, which disproportionally penalize U.S. biodiesel producers for unrelated land use changes outside the United States. Although NBB questions the inclusion of international indirect land use changes at all, the following uncertainties and assumptions must be addressed.

    - The Winrock satellite data has a high error rate of 30 percent.

    - EPA calculations attribute all forest harvesting emissions to indirect land use emissions to agriculture. Further, emissions resulting from natural deforestation, forest fires, disease and climate damage were also charged to agriculture. Yet events or land use changes that resulted in the land having more carbon was excluded from the calculations. EPA must consider and assess these other uses and causes.

    - EPA's assumption that trees live forever is incorrect and contrary to established United Nations Intergovernmental Panel on

Climate Change (IPCC) guidelines. Carbon losses associated with natural disturbances and mortality should be included in the calculation. These factors have a far greater impact on GHG emissions than lost sequestration and can have a huge impact on emission calculations.

- Accurately accounting for natural disturbances in soy-based biodiesel's GHG emission profile would decrease GHG emissions by an additional 25 percent compared to baseline petroleum.

- The inclusion of accurate assumptions regarding both natural disturbances and mortality could decrease GHG emissions by an additional 55 percent compared to baseline petroleum.

- EPA's methodology assumes that 20 percent of the new land dedicated to soybean cultivation comes from Paraguay. In the absence of credible land use data for Paraguay, EPA relied upon a "world average" based on 10 countries. This is highly unreliable. Properly accounting for this would reduce the GHG score for soy-based biodiesel by 20 percent in relation to petroleum.

- EPA's international indirect land use calculations assume that 10 percent of new land comes from India. India currently has over 61 million acres of fallow land, of which approximately 60% is currently fallow. Emissions associated with international indirect land use changes in India will be zero under any reasonable assumptions relating to increased production demand.

- EPA inaccurately assumes that significant amounts of pastureland would be converted to cropland. Appropriately allocating grassland would decrease GHG emissions by an additional 25 percent compared to baseline diesel fuel.

o EPA's assumptions regarding the rate of wood harvesting is inconsistent with actual harvesting practices and other assumptions with respect to biomass inventory. Correcting these assumptions could reduce GHG emissions associated with indirect land use emissions by as much as 10 percent.

The following table highlights the potential impacts of all of the changes that are recommended for the direct and indirect emissions for soybean biodiesel, as calculated in the proposed lifecycle analysis.

Table ES- 1 Summary of the Impact of the Largest Issues

Scenarios (Cumulative)	Emissions[1], g CO_2/mm BTU	% Reduction from Diesel	Percentage Change
Petroleum Baseline	4,173,768		-
Soy Biodiesel EPA	3,255,109	22.0	-
Less nitrogen fixing crops	2,383,009	42.9	20.9
Glycerine co-product	1,652,196	60.4	17.5
Biodiesel Energy	1,587,696	62.0	1.6
No Pasture Replacement	1,001,019	76.0	14.0
HWP rate	850,027	79.6	3.6
Natural Disturbances	32,740	99.2	19.6

NBB supports EPA's decision to build on the current RFS1 program, as well as to move toward an EPA-moderated trading system. NBB supports various proposals by EPA, which it believes would improve renewable fuel producers' ability to compete in the RIN market, but believes there is ample access to RINs and rejects attempts by EPA to become a market regulator.

While NBB generally supports EPA's approach at utilizing pathways for identifying the proper D code to be used for a RIN, NBB is concerned that the proposed pathways are too limiting and do not adequately address additional feedstocks used by biodiesel producers, such as camelina. NBB urges EPA to allow facilities to present facility-specific lifecycle analysis to show that the 50 percent reduction requirement can be met, and that EPA act promptly on such requests, rather than only periodically updating the pathway lookup table.

NBB also is concerned with some additional registration, certification, and reporting requirements that EPA is proposing, which NBB believes are impractical, burdensome and unnecessary. Generally the current RFS RIN program has been working, and EPA should not add undue burdens that may be cost prohibitive and, in fact, may result in having the opposite of the intended effect, including:

- EPA should presume the existing agricultural lands are met, and not require certification and, at most, should utilize an approach similar to the baseline production approach identified in the Proposed Rule (taking into account increased yields).

- Price information, on-site engineering reviews, and production outlook reports are unnecessary and burdensome, may require release of confidential business information, and should not be required.

NBB appreciates EPA's efforts at reaching out to stakeholders during this rulemaking process, and we look forward to working with EPA to improve the proposal and implement a final rule prior to January 1, 2010. To ensure continued investment and realization of the

[1] 100 Year-Time Frame, 2 percent discount rate.

environmental and economic benefits derived from a vibrant biodiesel industry, ***we support timely implementation of a workable RFS2 program***. However, with all the work that still needs to be done on the lifecycle analysis,[2] it is unlikely that a final rule will be issued and implemented until after January 1, 2010. In the interim, we urge EPA publish a rule that will implement the Biomass-based Diesel mandates for 2009 and 2010 (and until final regulations become effective). An interim rule is necessary to effectuate Congressional intent. Specifically, to effectuate its statutory obligation, NBB believes EPA must issue, in November, renewable volume obligations (RVOs) for each of the EISA mandated volumes, not just the overall renewable fuel standard as was done for 2009. The RVO for Biomass-based Diesel must include the 2009 volume requirement, which has yet to be implemented by EPA. Because RFS1 RINs distinguish biodiesel and renewable diesel, as well as cellulosic biofuel, the current RFS1 program can continue to operate until EPA can finalize the rule. In the alternative, though not ideal, EPA can finalize portions of the RFS2 proposal as an interim rule for implementation January 1, 2010, while EPA continues to work on the final program to address the concerns raised by the public.

An interim program is not only statutorily required but also necessary to address the adverse impacts any further delay of implementing the RFS2 requirements will have on the biodiesel industry. Despite recent growth, the industry is in the midst of an economic crisis largely due to the uncertainty created by the delay in implementing the RFS2 Biomass-based Diesel mandate. This uncertainty has affected investment and the ability for plants to access investment and operating capital. A reliable policy framework is needed for the U.S. biodiesel industry. The U.S. biodiesel industry is not seeking the creation of new programs. Instead, common-sense improvements and thoughtful implementation of existing initiatives will help the industry survive and produce the low-carbon fuel that is needed to meet the RFS2 volume requirements for Biomass-based Diesel.

These comments are divided into three main sections: Part 1 begins on page 1 (Sections I & II) and addresses the immediate need for implementation of a Biomass-based Diesel program in 2010; Part 2 begins on page 10 (Sections III through VIII), and addresses implementation issues with the RFS2 program; Part 3 begins on page 51 (Sections IX through XIV, and addresses on EPA's lifecycle analysis and regulatory impact analysis.

[2] In addition to the numerous issues identified by NBB in its comments, EPA itself identified over 25 additional analyses it is conducting with respect to its lifecycle analysis for inclusion in the final rule. This is in addition to other numerous analyses it is conducting for the final regulatory impact analysis.

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PART 1.

I. GENERAL BACKGROUND

A. Biodiesel Production in the United States.

Biodiesel is a diesel replacement fuel made from agricultural oils, fats and waste greases that meets a specific commercial fuel definition and specification. The fuel is produced by reacting feedstock with an alcohol to remove the glycerin and meet the D6751 fuel specifications set forth by the American Society for Testing and Materials (ASTM International). Biodiesel is one of the best-tested alternative fuels in the country, and the only alternative fuel to meet all of the testing requirements of the 1990 Amendments to the Clean Air Act.

Biodiesel is primarily marketed as a 5 percent blending component with conventional diesel fuel, but can be used in concentrations up to 20 percent. It is distributed utilizing the existing fuel distribution infrastructure with blending occurring both at fuel terminals and "below the rack" by fuel jobbers. Biodiesel is beginning to be distributed through the petroleum terminal system. To date, biodiesel is available in over 40 fuel distribution terminals. In the past year, two major pipeline companies have successfully tested B5 blends in pipelines, and the biodiesel industry has committed funds to continue to study the technical needs required for moving biodiesel through existing U.S. pipelines. Already, biodiesel is moved through pipelines in Europe and extending that capability in the United States. would significantly increase biodiesel penetration in the U.S. diesel fuel market.

Our membership, the U.S. biodiesel industry, produces a high-quality, low-carbon renewable diesel replacement fuel that is readily accepted in the marketplace. As EPA moves forward with the RFS2 rulemaking, it is important to remember that the U.S. biodiesel industry produces the only renewable fuel in the marketplace today when it comes to commercial scale production of Biomass-based Diesel as defined in RFS2.

B. Congress Sought to Promote Use of Biodiesel, Imposing a Mandate as of 2009.

Congress expressly recognized the value of displacing petroleum diesel fuel with renewable fuel when it passed the Energy Policy Act of 2005 (EPAct) and again in passing the EISA. While the RFS established under the EPAct expressly recognized the benefits of biodiesel by providing for credits applicable to the program, the RFS2 for the first time requires a renewable component in U.S. diesel fuel. Under RFS2, the following volumes of Biomass-based Diesel must be used domestically:

Year	Volume in Millions of Gallons
2009	500
2010	650
2011	800
2012	1,000
2013	1,000 minimum

From 2013 through 2022, RFS2 requires the use of a minimum of 1 billion gallons of Biomass-based Diesel, and the Administrator of the EPA has the authority to increase the Biomass-based Diesel use requirement. To qualify as Biomass-based Diesel, the renewable fuel must be biodiesel (as defined in 42 U.S.C. § 13220(f)) and must reduce greenhouse gas (GHG) emissions by 50 percent compared to the petroleum diesel fuel it is replacing, and the Administrator has the authority to reduce the GHG emission reduction target to 40 percent.

There are compelling public policy benefits associated with the enhanced production and use of biodiesel in the United States.

Biodiesel Reduces our Dependence on Foreign Oil: Biodiesel can play a major role in expanding domestic refining capacity and reducing our reliance on foreign oil. The 690 million gallons of biodiesel produced in the United States. in 2008 displaced 38.1 million barrels of petroleum, and increased production and use of biodiesel will further displace foreign oil. In addition, biodiesel is an extremely efficient fuel that creates 4.56 units of energy for every unit of fuel that is required to produce the fuel. Energy Balance: an Update; Dev Shrestha, A. Pradham, A. McAloon, M. Haas, W. Yee, J. A. Duffield, and H. Shapouri; presentation at the National Biodiesel Conference and Expo, San Francisco, CA, February 2009.

Biodiesel has Numerous Environmental Benefits, Including Reducing Greenhouse Gas Emissions: Biodiesel is an environmentally safe fuel, and is the most viable transportation fuel when measuring its carbon footprint, life cycle and energy balance. The U.S. Department of Agriculture (USDA)/Department of Energy (DOE) lifecycle study shows a 78 percent reduction in direct lifecycle CO_2 emissions for B100. *See* John Sheehan, *et al.*, *An Overview of Biodiesel and Petroleum Diesel Life Cycles*, NREL/TP-580-24772, at 18 (May 1998), *available at* http://www.nrel.gov/docs/legosti/fy98/24772.pdf ("NREL Report"). One billion gallons of biodiesel will reduce current lifecycle GHG emissions by 16.12 billion pounds, the equivalent of removing 1.4 million passenger vehicles from U.S. roads. In 2008 alone, biodiesel's contribution to reducing GHG emissions was equal to removing 980,000 passenger vehicles from America's roadways.

Biodiesel Provides Air Quality Benefits: Biodiesel's emissions significantly out perform petroleum-based diesel. Research conducted in the United States shows biodiesel emissions have decreased levels of all target polycyclic aromatic hydrocarbons (PAH) and nitrited PAH compounds, as compared to petroleum diesel exhaust. These compounds have been identified as potential cancer causing compounds.

Biodiesel is the only alternative fuel to voluntarily perform EPA Tier I and Tier II testing to quantify emission characteristics and health effects. That study found that B20 (20 percent biodiesel blended with 80 percent petroleum diesel fuel) provided significant reductions in total hydrocarbons; carbon monoxide; and total particulate matter. Research also documents the fact that the ozone forming potential of the hydrocarbon emissions of pure biodiesel is nearly 50 percent less than that of petroleum fuel. Pure biodiesel typically does not contain sulfur and, therefore, reduces sulfur dioxide exhaust from diesel engines to virtually zero.

The Biodiesel Industry is Creating Green Jobs and Making a Positive Contribution to the Economy: In 2008 alone, the U.S. biodiesel industry supported 51,893 jobs in all sectors of the economy. This added $4.287 billion to the nation's Gross Domestic Product (GDP) and generated $866.2 million in tax revenue for federal, state and local governments. *See* John Urbanchuk, *Economic Contribution of the Biodiesel Industry* (Dec. 16, 2008) ("Urbanchuk 2008") (Attachment 1).

By conservative estimates, there is domestic feedstock available to support 1.77 billion gallons of annual biodiesel production in the United States. J. Alan Weber, *Feedstock Supplies for U.S. Biodiesel Production* (Jan. 2009) ("Weber Report") (Attachment 2). The domestic industry has the capacity to support this level of production. The production of 1.77 billion gallons of fuel would support 78,619 jobs; add $6.660 billion to the GDP; displace 97.8 million barrels of petroleum; generate $1.345 billion in revenue for federal, state and local governments; and reduce GHG emissions by 27.4 billion pounds -- the equivalent of removing 2.38 million passenger vehicles from U.S. roads.

The Biodiesel Industry Stimulates Development of New Low-Carbon Feedstocks: The feedstock used to produce U.S. biodiesel has increasingly diversified, with waste products such as animal fat and used restaurant grease (yellow grease) making up a larger portion of the feedstock used to produce fuel. Biodiesel production is currently the most efficient way to convert lipids into low-carbon diesel replacement fuel, and as a result, industry demand for less expensive, reliable sources of fats and oils is stimulating promising public, private and non-profit sector research on second generation feedstocks such as algae. Algae's potential as a source of low carbon fuel has been well documented, and a stable, growing biodiesel industry is necessary if the United States is to eventually benefit from the commercial scale production of algal-based biofuels. NBB estimates that for every 100 million gallons of biodiesel that is produced from algae, 16,455 jobs will be created and $1.461 billion will be added to the GDP. *See* Urbanchuk 2008.

II. EPA MUST ENSURE THE VOLUME REQUIREMENTS FOR BIOMASS-BASED DIESEL ARE MET EACH YEAR AND CAN NO LONGER DELAY IMPLEMENTATION OF THE STATUTORY VOLUME MANDATES FOR BIOMASS-BASED DIESEL.

A. Implementation of a Workable RFS2 Biomass-Based Diesel Program is of Vital Importance to the U.S. Biodiesel Industry.

The U.S. biodiesel industry is facing severe economic hardship. Despite the recent growth of the industry, it, like much of the rest of the country, is in the midst of an economic crisis. The delay in implementing the RFS2 Biomass-based Diesel mandate has caused great uncertainty in the market, making investors wary and giving excuses to obligated parties not to purchase biodiesel given cheaper alternatives to meet the overall standard. Volatility in commodity markets, reduced demand, and inability to compete in the European marketplace due to recent restrictions on U.S. biodiesel imports into Europe are making it difficult for producers to sell fuel. This uncertainty and volatility has resulted in plants having difficulty accessing operating capital. The uncertainty relating to federal policy that is vital to the

industry's survival is sending inconsistent signals to the marketplace and undermining investor confidence in the industry.

If prolonged, this downturn will lead to a severe retraction in U.S. biodiesel production despite more than adequate existing feedstock and capacity to produce volumes to meet the RFS2 mandates, and despite Congress' clear intent to *promote* biodiesel use in the United States. Due to current market conditions, less than one-third of the industry's facilities are currently producing fuel. NBB estimates that absent any change in federal policy, U.S. biodiesel production used domestically could fall to as low as 300 million gallons in 2009, which would cost the U.S. economy more than 29,000 jobs. The ability to meet the advanced biofuels goals established in the EISA could be threatened if today's economic crisis is not addressed.

B. EPA Must Implement the Biomass-Based Diesel Mandates for 2009 and 2010 Today.

1. To effectuate the intent of Congress and to comply with the statute, EPA must implement the RFS2 volume mandates for Advanced Biofuel, including Biomass-based Diesel.

The intent of Congress was to promote use of renewable fuels in lieu of petroleum. In establishing the RFS, the EPAct expressly included biodiesel in the definition of renewable fuel and a provision to provide appropriate credits for biodiesel. 42 U.S.C. §§ 7545(o)(1)(C)(ii)(II), (o)(5)(A)(ii) (2005).[3] EISA then established the Biomass-based Diesel mandate, as part of the Advanced Biofuel requirement. 42 U.S.C. § 7545(o)(2)(B)(IV) (2009). The statute makes clear that Congress intended biodiesel to be key to meeting the RFS requirements.

EISA required EPA to issue regulations to ensure the volume mandates are met by December of 2008. These regulations must "ensure that transportation fuel sold or introduced into commerce in the United States . . . contains *at least the applicable volume of . . . advanced biofuel . . . and biomass-based diesel*, determined in accordance with subparagraph (B)." 42 U.S.C. § 7545(o)(2)(A)(i) (2009). Subparagraph (B) outlines the annual volumes required, starting in 2009 for Biomass-based Diesel and Advanced Biofuels. *Id.* § 7545(o)(2)(B) (2009). While EPA implemented the overall renewable fuel standard for 2009, it delayed the Biomass-based Diesel obligation, indicating it would defer implementation of the 2009 volume to 2010. 73 Fed. Reg. 70,643 (Nov. 21, 2008). This deferral has led to obligated parties' declining to purchase biodiesel, while waiting until EPA finalizes the RFS2 rule. The *Proposed* Rule, however, was not issued until May of this year. While NBB agrees that EPA's lifecycle analysis should be carefully considered and *must not be finalized prematurely*, the entire program should not be held up while EPA continues to work on its lifecycle analysis. Specifically, EPA must issue

[3] The EISA revised various provisions of Clean Air Act Section 211(o) as enacted by the EPAct. Where it is necessary to distinguish, references to Section 211(o) as amended by the EPAct, which became effective August 8, 2005, will be noted with the year 2005 (*e.g.*, 42 U.S.C. § 7545(o)(2005)), while references to Section 211(o) as amended by the EISA, which became effective January 1, 2009, will be noted with the year 2009 (*e.g.*, 42 U.S.C. § 7545(o)(2009)).

regulations to ensure the volume mandates are being met *each* year. This duty is non-discretionary. *See Escoe v. Zerbst*, 295 U.S. 490, 493 (1935) ("Shall . . . is the language of command.") (citation omitted); *LO Shippers Action Comm. v. I.C.C.*, 857 F.2d 802, 806 (D.C. Cir. 1988) ("[C]ongressional use of 'shall' indicates the absence of discretion.") (citing *MCI Telecomm. Corp. v. FCC*, 765 F.2d 1186, 1191 (D.C. Cir. 1985)). *See also* 42 U.S.C. § 7604(a)(2) (providing right of action to enforce a non-discretionary duty of EPA).

The continued delay in the implementation of the 2009 Biomass-based Diesel mandate will cause problems with the "valid" life of biodiesel Renewable Identification Numbers (RINs) generated under RFS1. According to 42 U.S.C. § 7545(o)(5)(C), RINs are only valid for 12 months. If the implementation of the 2009 Biomass-based Diesel mandate is delayed beyond the currently proposed combined 2009/2010 compliance, then there will be no mechanism to track the 2009 Biomass-based Diesel usage as the RINs will expire. Further delays in the program will effectively render these RINs valueless.

In summary, while EPA continues to finalize its lifecycle analysis,[4] it must issue regulations to implement the Biomass-based Diesel volume mandates.

2. EPA can rely on the current RFS1 program to implement the volume obligations for Biomass-based Diesel and Advanced Biofuel.

EPA can rely on the current RFS1 regulations to implement the Biomass-based Diesel mandate, as RFS1 RINs are already coded via the equivalence value in the RR code to track and establish compliance with the Biomass-based Diesel mandate. EPA has established RINs to implement the credit program under Section 211(o)(5) of the Clean Air Act. Section 211(o)(5)(C) gives RINs a valid life of 12 months. 42 U.S.C. § 7545(o)(5)(C). In the Proposed Rule, EPA has recognized that RFS1 RINs generated in 2008 and 2009 may be used to meet the RFS2 mandates. 74 Fed. Reg. at 24,962. To the extent that the final regulations become effective after January 1, 2010, the same holds true for RINs generated in 2010.

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[4] In addition to the numerous issues identified by NBB in its comments on the lifecycle analysis, EPA itself identified over 25 additional analyses it is conducting with respect to its lifecycle analysis for inclusion in the final rule. This is in addition to other numerous analyses it is conducting for the final regulatory impact analysis. To give the public a meaningful opportunity to comment, the Clean Air Act requires that EPA include a summary of its methodology and the factual data it relies on for the Proposed Rule. 42 U.S.C. § 7607(d). *See also Idaho Farm Bureau Fed'n v. Babbitt*, 58 F.3d 1392, 1404 (9th Cir. 1995) ("The purpose of the notice and comment requirement is to provide for meaningful public participation in the rule-making process."); *United States v. Nova Scotia Food Prods. Corp.*, 568 F.2d 240, 252 (2nd Cir. 1977) ("When the basis for a proposed rule is a scientific decision, the scientific material which is believed to support the rule should be exposed to the view of interested parties for their comment. One cannot ask for comment on a scientific paper without allowing the participants to read the paper. Scientific research is sometimes rejected for diverse inadequacies of methodology; and statistical results are sometimes rebutted because of a lack of adequate gathering technique or of supportable extrapolation. Such is the stuff of scientific debate."). The additional analysis being conducted for the final rule must be presented to the public in order for it to have an adequate opportunity to meaningfully comment. *Ober v. EPA*, 84 F.3d 304, 314 (9th Cir. 1996) ("These justifications should have been available for public comment *before* the EPA proposed approval of the Implementation Plan."); *Kennecott Corp. v. EPA*, 684 F.2d 1007, 1019 (D.C. Cir. 1982) (finding EPA improperly placed economic forecast data in record only one week before issuing final regulations).

As EPA has already recognized, RINs under the current system can be distinguished to show compliance with the Biomass-based Diesel mandate. 74 Fed. Reg. at 24,962. The current RFS regulations require designating an equivalence value of 1.5 for biodiesel and 1.7 for renewable diesel. 40 C.F.R. § 80.1115.[5] Obligated parties, therefore, should be required to obtain a sufficient number of RINs coded with these equivalence values to establish the actual volume required was used to meet their obligation (*e.g.*, to show 1 gallon of Biomass-based Diesel being sold, an obligated party would be required to provide one-and-one-half RINs coded as biodiesel).[6] This supports the proposal by EPA to combine the 2009/2010 compliance measurement for Biomass-based Diesel, since an obligated party that cannot meet the 2009 obligation can carry it over into 2010.

C. To the Extent EPA Cannot Finalize the Entire Rule to Become Effective January 1, 2010, EPA Must Immediately Finalize Provisions to Implement the Biomass-based Diesel Mandates for 2009 and 2010.

In the Proposed Rule for RFS2, EPA proposes to defer a showing of compliance of the 2009 Biomass-based Diesel mandate by adding the volume requirement to the 2010 requirement, which would not require a showing of compliance until 2011. While NBB supports EPA's proposal, this proposal is contingent on the rule becoming effective January 1, 2010. Further deferral of the 2009 requirement would violate the requirement that the mandates be met each year and goes against the deficit carryover limits in the statute. 42 U.S.C. § 7545(o)(5)(D). Because EPA's proposal essentially carries over a 2009 deficit, any deficit in 2010 cannot be carried into 2011. To the extent EPA cannot finalize the entire rule to be effective January 1, 2010, EPA must, at a minimum, finalize the provisions to implement the Biomass-based Diesel volumes for 2009 and 2010 in the proposal to be effective January 1, 2010.

In particular, EPA must issue RVOs for each of the volume mandates under RFS2. For the 2010 Biomass-based Diesel mandate, this would include the volume that is required for 2009. EPA can issue such RVOs in November of this year, and need not wait until a rule is finalized. As described above, EPA can utilize the current RFS1 program to ensure the volume mandates are being met.

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[5] The Advanced Biofuel mandate was also to begin in 2009. Biomass-based Diesel also qualifies as Advanced Biofuel and, therefore, could also be used to meet the Advanced Biofuel volume obligation. Similarly, the equivalence value for cellulosic ethanol and waste-derived ethanol is 2.5 under the current system. These values can similarly be used to show compliance toward the Advanced Biofuel mandate. Although cellulosic ethanol may include some corn-derived ethanol, 40 C.F.R. § 80.1011(a)(2), EPA proposes to allow all cellulosic ethanol RINs to be used to meet the RFS2 Cellulosic Biofuel mandate. 74 Fed. Reg. at 24,962. As such, there is no reason not to allow these RINs to also apply toward the advanced biofuel mandate. However, EPA should require two-and-one-half RINs coded as cellulosic or waste-derived ethanol to be used to represent 1 gallon. In the alternative, EPA can defer implementation of the specific Cellulosic Biofuel mandate for 2010 until 2011, similar to its proposal for the 2009 Biomass-based Diesel requirement.

[6] To the extent an obligated party cannot meet the 2009 requirement, its obligation can carry over into 2010, which is consistent with EPA's approach in the Proposed Rule.

D. There is Ample Evidence that Biomass-based Diesel Produced in 2009 and 2010 Will be in Compliance with the RFS2 Requirements, Allowing EPA to Essentially "Grandfather" Existing Production.

Although EISA revised the definitions of renewable biomass and added a requirement to show 50 percent GHG emission reductions for Biomass-based Diesel, EPA has already recognized the production of biodiesel in 2008 and 2009 will likely meet these requirements. 73 Fed. Reg. 70,643, 70,643 (Nov. 12, 2008). The same holds true for biodiesel produced in 2010.

The U.S. biodiesel industry sold 500 million gallons in 2007 and 690 million gallons in 2008, exceeding the 2009 (500 million gallons) and 2010 (650 million gallons) RFS2 Biomass-based Diesel volumes. In addition, in 2007, soybean oil was the feedstock used to generate approximately 80 percent of production (roughly 400 million gallons), while in 2008 soybean oil represented roughly 60 percent of production through November, indicating that the amount of soybean oil feedstock used for the production of biodiesel remained similar to 2007 figures and the use of animal fats, yellow grease, and other non-edible vegetable oils are largely responsible for the increase of biodiesel production in 2008. Weber Report at 3. This indicates no new feedstock sources are necessary and, thus, no new lands will be needed. *See* 74 Fed. Reg. at 24,962 ("[I]t is unlikely that renewable fuels produced in 2009 will have been made from feedstocks grown on agricultural land that had not been cleared or cultivated prior to December 19, 2007."). Therefore, there is no risk that the existing cropland requirements under EISA will not be met. Moreover, additional feedstock sources for biodiesel would fall under other parts of the renewable biomass definition including animal waste material and animal byproduct and separated yard and food waste.

USDA is expecting record soybean production in 2009 of 3.25 billion bushels. New records for production per acre are also predicted. Farmers are expected to produce 42.3 bushels per acre, up 0.6 bushel from last month and up 2.7 bushels from 2008. *See* USDA, World Agricultural Supply and Demand Estimates (WASDE) (Sept. 11, 2009), *available at* http://www.usda.gov/oce/commodity/wasde/latest.pdf. The projected increase in the soybean harvest this year over last year is 345 million bushels, which will provide additional vegetable oil feedstock to produce an additional 517 million gallons of oil. In addition, because production in 2008 was greater than that required for 2009 or 2010 under the RFS, even under EPA's proposed incremental analysis and as previously described,[7] there would be no land use changes for biodiesel and, therefore, no impacts on international land use decisions in 2009 and 2010 and, therefore, no indirect emissions.

Already, crop planting decisions in the Northern Hemisphere for 2009 and 2010 have been made and similar decisions for the Southern Hemisphere will be made prior to this Proposed Rule becoming final. Therefore, these regulations by definition cannot have an affect

[7] In this analysis, EPA compares the estimated production of renewable fuel with the RFS2 with the estimated production of renewable fuel without the RFS2. The increase in production was the basis for EPA estimating land use changes and indirect emissions. For the reasons outlined further in these comments, NBB disputes this approach.

on indirect land-use for the 2009 and 2010 Biomass-based Diesel mandates. Furthermore, the USDA has given a strong export outlook for soybeans in 2009 and stable export outlook for soybean oil, having forecasted a record level of soybean exports at 1.28 billion bushels, and ending stocks of soybean oil at a record high of 3.1 billion pounds. *See* USDA, *Outlook for U.S. Agricultural Trade, FY 2009 Exports Raised $500 Million to $96 Billion; Imports Lowered $1.5 Billion*, at 4 (May 28, 2009), *available at* http://www.fas.usda.gov/cmp/outlook/2009/May-09/AES-05-28-2009.pdf; USDA Office of Global Analysis/FAS, Fiscal Year 2009 U.S. Trade Forecasts for Agricultural Products, at slide 5 (Feb. 2009), *available at* http://www.fas.usda.gov/cmp/outlook/2009/Feb-09/Feb09.pdf.

This supports a finding that existing U.S. biodiesel production, which exceeds the volumes required for 2009 and 2010, meets the 50 percent GHG reduction requirement for Biomass-based Diesel. EPA's lifecycle analysis, excepting international land use changes, shows a reduction in GHG emissions of over 80 percent compared to the baseline. All other lifecycle analysis of biodiesel similarly show a reduction well-above 50 percent compared to diesel, including EPA's lifecycle analysis conducted in 2007.[8] This analysis has been presented to the public, which had the opportunity to review and comment.

When the EISA was enacted, a substantial investment already had been made in biodiesel plants based on USDA projections of feedstock availability, and Congress sought to protect that investment, as well as promote additional investment in enacting the Biomass-based Diesel volumes. At the time the bill was passed, DOE and USDA estimated that biodiesel provided a 78 percent reduction in GHG emissions compared to diesel, and even EPA indicated a 67.7 percent GHG reduction for biodiesel. There is no indication that Congress sought to impose a penalty on existing production of biodiesel, which would not impact land use changes post-enactment. Indeed, in passing the EISA, Congress understood that existing production of renewable fuels provided substantial reductions in GHG emissions compared to baseline petroleum and sought to preserve those reductions.

There is ample support, therefore, for EPA to essentially grandfather existing facilities by deeming these facilities to be in compliance with the 50 percent reduction requirement based on these traditional lifecycle analyses without land use changes.[9] The structure of RFS2 makes clear that Congress understood that existing production of renewable fuels provided significant reductions in GHG emissions compared to baseline petroleum and sought to preserve those reductions. There is basis for such an interpretation in the EISA, which deems ethanol facilities, fired with natural gas or biomass, that commenced construction in 2008 and 2009 to meet

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[8] *See, e.g.,* EPA Fact Sheet, *Greenhouse Gas Impacts of Expanded Renewable and Alternative Fuels Use*, EPA420-F-07-035, at 2 (Apr. 2007); NREL Report, *supra*.

[9] Grandfather clauses are intended to "prevent the harsh and often unfair operation of a statutory change." *Wilson v. Heckler*, 761 F.2d 1383, 1385 (9th Cir. 1985) (citation omitted). Grandfathering also recognizes the investments made in reliance on the current regulatory system. *See Norfolk S. Corp. v. Oberly*, 822 F.2d 388, 404 (3d Cir. 1987); *Buccaneer Point Estates, Inv. v. United States*, 729 F.2d 1297 (11th Cir. 1984). *See also Nat'l Ass'n of Casualty & Surety Agents v. Bd. of Governors of Fed. Reserve Sys.*, 856 F.2d 282, 286 (D.C. Cir. 1988) (noting "basic purpose of the grandfather clause" is "to provide stability to established business relationships").

EISA's 20 percent GHG reduction requirement for conventional biofuels. Congress clearly sought to protect existing investments in renewable fuels while creating incentives to promote future technological innovation. Fairness and good policy also dictate that EPA's regulations should not undermine investments made prior to the implementation of RFS2 regulations.

Thus, EPA can, and must, implement the RFS2 volume mandates for Biomass-based Diesel, regardless of when the final RFS2 rule is completed.

PART 2.

III. DEFINITION OF BIOMASS-BASED DIESEL

A. Definition of Biomass-Based Diesel

EPA defines Biomass-based Diesel as a renewable fuel which meets the requirements in paragraph (1) or (2):

> (1) A transportation fuel or fuel additive which is all of the following:
> (i) Registered as a motor vehicle fuel or fuel additive under 40 C.F.R. part 79.
> (ii) A mono-alkyl ester and meets ASTM D–6751–07, entitled ''Standard Specification for Biodiesel Fuel Blendstock (B100) for Middle Distillate Fuels.'' . . .
> (iii) Intended for use in engines that are designed to run on conventional diesel fuel.
> (iv) Qualifies for a D code of 2 pursuant to § 80.1426(d).
> (2) A non-ester renewable diesel.
> (3) Renewable fuel that is co-processed is not biomass-based diesel.

74 Fed. Reg. at 25,112-25,113 (proposed 40 C.F.R. § 80.1401). While NBB generally supports the definition, we urge consistency for purposes of complying with multiple federal agencies and recommend EPA utilize the most updated version of the ASTM standard, which would make the definition consistent with IRS tax guidance.[10] *See* Internal Revenue Bulletin: 2009-17, Notice 2009-34 Modification of Notice 2008-110; ASTM Standards for Biodiesel (Apr. 27, 2009), http://www.irs.gov/irb/2009-17_IRB/ar07.html. ASTM standards are necessary to ensure the quality of fuel is consistent, and it would be impractical for biodiesel facilities to have to comply with two different ASTM standards.

In addition, the statutory definition of Biomass-based Diesel expressly excludes biomass co-processed with petroleum feedstock. EPA seeks comments on two options to deal with this exclusion. The first option defines co-processing to occur only if both petroleum and biomass feedstock are processed in the same unit simultaneously. 74 Fed. Reg. at 24,923. Under this option, serial batch processing in which 100 percent vegetable oil is processed one day/week/month and 100 percent petroleum the next day/week/month could occur without the activity being considered "co-processing." *Id.* The second option defines co-processing to occur if renewable biomass and petroleum feedstock are processed in the same unit at any time; *i.e.*, either simultaneously or sequentially. *Id.* "Under the second option, if petroleum

[10] The statute defines biodiesel to have the same meaning as in 42 U.S.C. § 13220(f)(1), which requires that such fuel meet the registration requirements of 42 U.S.C. § 7545. The registration requirements, therefore, should also apply to renewable diesel. In addition, the IRS requires compliance with the requirements of the ASTM D975 or D396, or other equivalent standard approved by the IRS. EPA similarly should require compliance with the ASTM standard for renewable diesel.

feedstock was processed in the unit, then no fuel produced from such unit, even from a biomass feedstock, would be deemed to be biomass-based diesel." *Id.*

NBB supports the second option because it fulfills the intent of Congress. The 1 billion gallon requirement for Biomass-based Diesel was based on estimates of biodiesel capacity in the United States, which is currently 2.69 billion gallons. By excluding co-processing in the definition, Congress clearly did not intend for co-processed renewable diesel produced by conventional petroleum refiners to qualify as Biomass-based Diesel under the RFS2 program. Further, Congress clarified in P.L. 110-343, § 202(d) (2008), that co-processed renewable diesel does not qualify for either the renewable diesel tax incentive or the biodiesel tax incentive. As the U.S. House Committee on Ways and Means noted:

> The Committee believes that the tax incentives for renewable diesel should be used to encourage the building of new plants to provide new refining capacity for renewable diesel. The incentive was not intended to subsidize existing petroleum refining capacity. In the opinion of the Committee, IRS Notice 2007–37, which permits the co-processing of biomass with petroleum feedstocks is inconsistent with the statutory requirement that renewable diesel be derived from biomass.

H.R. Rep. No. 110-214, at 95 (2007). Indeed, by allowing only renewable fuel derived from co-processing biomass with a petroleum feedstock to be considered "advanced biofuel," and thus providing incentives for refineries to improve their overall emissions by using renewable feedstocks, Congress indicated its intent to treat refineries differently from biodiesel and renewable diesel-only facilities. There is no principled reason for EPA to treat refineries that happen to separate the feedstocks and then mix the fuels later to allow the fuel to be considered Biomass-based Diesel. Thus, EPA should exclude any renewable diesel co-produced at refineries from the definition of Biomass-based Diesel, and implement the second option.

B. Categories and Pathways

1. NBB Supports Use of Four D Codes with a D Code of "2" applying to Biomass-based Diesel.

In the EISA, Congress established four nested standards. NBB agrees with EPA's proposal to use four D codes numbered 1, 2, 3 and 4, and to only allow RINs with a D code of "2" to be able to be used to meet the RVO for Biomass-based Diesel, as described in the table below.

EPA's Proposed Change to D Code:

D value	Meaning under RFS1	Meaning under RFS2
1	Cellulosic biomass ethanol	Cellulosic Biofuel
2	Any renewable fuel that is not cellulosic biomass ethanol	Biomass-based Diesel
3	Not applicable	Advanced Biofuel
4	Not applicable	Renewable Fuel

Although NBB questions the validity of EPA's allowing for any rollover, *see infra* Section V.C, NBB further supports EPA's proposed treatment of RINs generated under RFS1 to show compliance with RFS2 requirements as outlined below:

2009 RINs	Treatment in 2010
RFS1 RINs with RR code of 15 or 17.	Equivalent to RFS2 RINs with D code of 2.
RFS1 RINs with D code of 1.	Equivalent to RFS2 RINs with D code of 1.
All other RFS1 RINs.	Equivalent to RFS2 RINs with D code of 4.

NBB opposes, however, EPA's proposed alternative treatment of cellulosic-based diesel, which would create five D codes and give the obligated party the choice to apply that RIN to either its Cellulosic Biofuel or Biomass-based Diesel obligation, but not both. 74 Fed. Reg. at 24,946. Congress clearly intended to treat Biomass-based Diesel separately from Cellulosic Biofuel, by creating two distinct RVOs and a higher volume mandate for Cellulosic Biofuel than Biomass-based Diesel. The definition of Cellulosic Biofuel and Biomass-based Diesel do not coincide, and EPA should require cellulosic diesel to be applied toward the Cellulosic Biofuel requirement.

2. If necessary, EPA should adjust the Advanced Biofuel and Biomass-Based Diesel GHG reduction requirements to 40 percent.

If the final EPA analysis of the GHG reduction of any biodiesel pathway fails to meet the 50 Percent GHG reduction requirement for Biomass-based Diesel and Advanced Biofuel, then the Agency should use its authority as provided by Congress and adjust the 50 percent GHG reduction requirement downward to 40 percent to ensure U.S. biodiesel can meet the Biomass-based Diesel and Advanced Biofuel requirements, as intended by Congress. In establishing the mandates under EISA, Congress sought to ensure that this country move toward renewable fuels and to promote advanced biofuels, including biodiesel. The adjustment provision was included to provide additional assurances that the mandates created are achieved. Failure to do so would result in the country not meeting the volume mandates, despite the fact that these renewable fuels have been shown to have significant GHG emission reductions over petroleum.

As a result of EPA's inaccurate lifecycle analysis, as detailed further in Part 3 of these comments, the Proposed Rule restricts feedstock for Biomass-based Diesel to only animal fats and restaurant grease. Vegetable oils account for approximately 60 percent of the feedstock that is available to meet the RFS2 Biomass-based Diesel targets, and disqualifying these sustainable oils from the program will significantly inhibit the domestic industry's ability to meet the RFS2 volume goals established by law. Even under the so-called pathway for biodiesel that is briefly outlined in the Proposed Rule, *see infra* Section III.B.3, artificial feedstock constraints will make it nearly impossible to achieve the RFS2 volume goals for Biomass-based Diesel. Further, the EPA's proposal would cause significant disruption and regulatory burdens in the biodiesel marketplace. This outcome is not consistent with either sound science or sound energy policy. We are hard pressed to believe this potential outcome is consistent with the will of Congress or sound environmental policy that values the displacement of petroleum diesel with low-carbon renewable fuels.

Absent vegetable oils as a qualifying feedstock, biofuel producers will be forced to rely almost entirely on animal fats and yellow grease (used restaurant grease) to meet the RFS2 Biomass-based Diesel mandate. The U.S. biodiesel industry estimates that even with the most optimistic assumptions, the most biodiesel that could be produced in a year from this pool of limited feedstock would be 410 million gallons. Though animal fats and restaurant grease are important resources for biodiesel production -- and U.S. producers can make quality fuel that meets the ASTM D6751 fuel specification from this feedstock -- there simply will not be enough of these feedstocks to produce the fuel needed to meet either the 500 million gallons of Biomass-based Diesel required in 2009 or the 1 billion gallons that is ultimately required in 2012. By contrast, there is ample feedstock to meet the Biomass-based Diesel schedule if vegetable oils are permitted as a feedstock. Thus, it is consistent with the policy objectives of RFS2 to adjust the GHG emission reduction requirement for Biomass-based Diesel to 40 percent, as is authorized in the statute.

It is also important to note other potential unintended policy impacts if the Biomass-based Diesel feedstock is limited to animal fats and restaurant grease. For example, this would add significant volatility and disruption in the markets as it pertains to the pricing of these commodities, and could compel entities not impacted by the RFS2 program that currently use these commodities in the production of other goods to seek lipids from less-sustainable sources. In addition, given winter and summer fuel blending regimes that are widely accepted and used in the marketplace, a program that limits U.S. biodiesel production to animal fats and restaurant grease would in essence make the U.S. industry seasonal in nature. Neither of these unintended outcomes is consistent with sound energy or environmental policy.

3. NBB does not support EPA's proposed alternative 52/48 pathway to meet the 50 percent GHG reduction requirement.

After concluding biodiesel from virgin vegetable oils does not qualify for Biomass-based Diesel, EPA attempts to restore it, in part, by proposing a compliance pathway whereby virgin vegetable oils could be combined with waste oils in a 52/48 percent ratio. 74 Fed. Reg. at

25,053. The proposed pathway is impractical. Vegetable oils account for approximately 60 percent of the feedstock that is available to meet the RFS2 Biomass-based Diesel targets, and the RFS2 volume goals may be difficult or perhaps impossible to meet if vegetable oils are disqualified from the program. There currently is not sufficient waste oils to produce enough biodiesel to meet the RFS2 volume mandates, and may not be sufficient supply available to biodiesel facilities to be used in the ratio suggested by EPA. In addition, biodiesel plants cannot simply mix feedstocks as EPA suggests, as many facilities are not equipped to produce biodiesel using waste grease. Because vegetable oil biodiesel should meet the requirement on its own[11] and because biodiesel facilities often use more than one feedstock (not just vegetable oil and waste grease), this outcome is not consistent with either sound science or sound energy policy. Instead, feedstock supplies in the United States will inherently produce an industry wide feedstock mixture that, even utilizing the unfavorable GHG reduction values assigned by EPA, would meet the established thresholds for advanced biofuels.

Nonetheless, if in the final regulations vegetable oils do not meet the GHG reduction to qualify as Biomass-based Diesel or Advanced Biofuels, then a method does need to be developed to allow for the blending of vegetable oils into the Biomass-based Diesel produced from waste oils that do meet the GHG reduction requirement and still count as Biomass-based Diesel. EPA's proposal would allow renewable fuel producers to blend vegetable oil and waste oil together as feedstock as long as the GHG reduction of the mixture meets the GHG reduction requirement of 50 percent (or a lower number if adjusted by EPA). For example, if 100 gallons of vegetable oil with GHG reduction of 22 percent is blended with 100 gallons of waste oil with GHG reduction of 80 percent, then the mixture would have a GHG reduction of 51 percent and meet the definition of Biomass-based Diesel. As noted above, such an approach is not practical for the entire industry, even if it may work at specific facilities. Some plants can only process certain feedstocks, and may not be equipped to handle waste oil. Thus, in addition to allowing plants to blend feedstock prior to processing, NBB proposes allowing the blending of RINs by the obligated parties. EPA notes this as a possible option for comment in the Proposed Rule. 74 Fed. Reg. at 25,053. But, EPA notes that this approach would require a system with six D codes instead of four. *Id.* NBB does not believe that additional D codes are necessary as RINs are adequately coded under the current proposal to show compliance. The following outlines NBB's proposal:

> If biodiesel produced from vegetable oil has a GHG reduction of 22 percent in the final rule and would not meet the GHG reduction requirement, the applicable RIN would have a D code of "4" (for Renewable Fuel). At the same time, this RIN is differentiated from ethanol RINs because it has an RR code of 15 instead of 10. This allows for the differential tracking of this D code "4" RIN.
>
> Under EPA's proposal, biodiesel from waste oils/grease would meet the GHG reduction requirement for Biomass-based Diesel and, thus, would have a D code of "2". These

[11] NBB believes the lifecycle analysis for biodiesel from vegetable oils will be shown to be much higher than the 50 percent reduction requirement. NBB provides comments on EPA's lifecycle analysis for biodiesel in Part 3 of these comments.

RINs, therefore, would be differentiated from soy-based biodiesel without having to complicate the RIN system by including additional D codes.

The D code "4" RINs with an RR code of 15 will be allowed to be used in the fulfillment of a renewable fuel obligation or in combination with D code "2" RINs in the fulfillment of a Biomass-based Diesel obligation. The latter combination of RINs would work in a blend similar to the feedstock approach noted by EPA.

Assuming EPA requires one RIN generated for one gallon of renewable fuel and the GHG reduction of the D code "4" RIN with the RR code of 15 is 22 percent and the GHG reduction of the D code "2" RIN is 80 percent, then one hundred D code "4" RINs and one hundred D code "2" RINs can be combined to fulfill 200 gallons of a Biomass-based Diesel obligation. If the GHG reduction requirement is reduced to 40 percent for Biomass-based Diesel, then one hundred D code "4" RINs and 45 D code "2" RINs can be combined to fulfill 145 gallons of a Biomass-based Diesel obligation, as illustrated below.

	Number of RINs D Code of 4 (22%)	Number of RINs D Code of 2 (80%)	Biomass-based Diesel gallons/RINs
50 % reduction	100	100	200
40 % reduction	100	45	145

NBB believes this approach is more practical and would lessen the impact on the biodiesel industry than EPA's 52/48 approach.

4. EPA should expand the possible pathways for biodiesel to account for varying feedstocks used by facilities.

NBB maintains that all vegetable oils should qualify as Biomass-based Diesel and as a D code "2" RIN. The biodiesel industry uses a plethora of oil based feedstocks, many of which are not described in the Proposed Rule. These feedstocks do not have clearly described pathways. Instead, the EPA creates two categories: (1) "waste oils;" and (2) "virgin vegetable oils". There is no discussion of the lifecycle analysis of any feedstock except for the oil from a soybean. EPA analyzed a limited number of biodiesel production pathways and appears to assume all bio-refineries will "fit" into one of the pathways. EPA provides no support to assert every virgin vegetable oil should be classified as having the same impact on GHG emissions. EPA analyzed a limited number of biodiesel production pathways and appears to assume all bio-refineries will "fit" into one of the pathways.

We currently use and are developing a number of feedstocks that can be used for biodiesel, some of which would not have any land use impacts internationally, if at all. These include, but are not limited to:

- Oil from Camelina
- Oil from Crambe
- Oil from Jatropha
- Oil from Algae

In the event all virgin vegetable oils do not qualify for the Biomass-based Diesel program, then these additional sources should be incorporated into EPA's pathways, providing flexibility to biodiesel facilities to utilize a mixture of these feedstocks.

Fatty Acid Distillate Streams (FADS) should be classified as waste oils. FADS are generally known as the waste product of other refining and processing operations that require some high temperature treatment such as distillation. It can be produced from any fatty feedstock such as vegetable oils or animal fats. Due to its low quality, markets are typically the same as for high free fatty acid animal, rendered and recycled fats and oils. Biodiesel from this pathway should be considered a waste or recycled oil for purposes of RIN assignment. EPA should clarify the status of FADS in the final rule.

5. EPA should allow producers to present lifecycle analysis based on facility-specific configurations.

There are no processes established for site specific lifecycle analysis. Although many are similar, we doubt any two biodiesel facilities are the same. EPA should allow producers to present a lifecycle analysis based on facility-specific configurations to address both pathways that have not been analyzed by EPA and to establish that the facility can meet the 50 percent GHG requirement based on its specific processes. This would provide facilities incentives to continue to become more efficient and invest in new technologies to limit their GHG emissions, promoting further reductions. The opportunity should also be provided for facilities to submit updated lifecycle analysis where it undergoes an improvement to change its pathways.

For renewable fuels that are not in the lookup table, proposed Table 1 to 40 C.F.R. § 80.1426, EPA proposes that the renewable fuel producer will be unable to produce RINs for the renewable fuel until the regulations are updated with the new pathway. 74 Fed. Reg. at 24,951-24,952. However, EPA states that it "will not conduct a rulemaking every year to adjust the regulations for new fuels, processes, or feedstocks," but only "will periodically update the regulations as necessary under CAA section 211(o)(4) and may take the opportunity to update the list of fuel pathways." *Id.* at 24,952. At a minimum, NBB requests that EPA develop and document a process for the treatment of new fuels and processes not specifically addressed by the lookup table, and that EPA agree to respond within 180 days of submission. This documentation will allow renewable fuel producers to estimate the length of time necessary to add a particular pathway to the regulations.

Additionally, NBB requests that EPA allow any new biodiesel, regardless of feedstock, to be able to generate a RIN with a D code of "4" until EPA accepts the new pathway. In this way, the biodiesel industry can continue to work toward newer and better feedstocks, but would not be hamstrung by any delay in approving a new pathway.

IV. RENEWABLE BIOMASS

EISA amended the definition of "renewable biomass" from the EPAct. The most important change from the definition is the incorporation of certain land restrictions for planted crops and crop residue, planted trees and tree residue, slash and pre-commercial thinnings, and biomass from wildfire areas. In particular, planted crops and crop residue are to be "harvested from agricultural land cleared or cultivated at any time prior to [December 19, 2007] that is either actively managed or fallow, and nonforested." 42 U.S.C. § 7545(o)(1)(I)(i) (2009). This provision is referred to as the "existing cropland" requirement. NBB believes EPA's proposal for the existing cropland requirement is arbitrary, unnecessary and cost-prohibitive.

A. NBB Does Not Support EPA's Proposal to Address the "Existing Cropland" Requirement.

NBB generally supports the definitions used by EPA to define cropland and forested land to the extent those definitions are consistent with USDA and generally used definitions. In particular, NBB supports EPA's determination to include pastureland and Conservation Reserve Program (CRP) lands in the definition of agricultural lands. However, EPA excludes rangeland, which USDA defines as agricultural lands.[12] While EPA notes that such land may include wetlands, USDA programs, such as the Wetlands Reserve Program, the Grassland Reserve Program, and the Wildlife Habitat Incentives Program, and other requirements restrict cultivation practices on environmental sensitive lands. There is no principled reason to treat rangeland differently from pastureland or CRP lands, particularly where rangeland may not be distinguishable from pastureland. In addition, land may be left fallow (*i.e.*, idle, not in use, unseeded) for numerous reasons. There is no justification to impose an intent requirement to define what may be "fallow" land. Nor should EPA impose a time limit on land that can remain fallow. Finally, EPA's definition of "forestland" may also limit the types of renewable feedstock that would otherwise qualify under the statutory definition. EPA proposes to define "forestland" as "generally undeveloped land covering a minimum area of 1 acre upon which the primary vegetative species are trees, including land that formerly had such tree cover and that will be regenerated." 74 Fed. Reg. at 25,113 (proposed 40 C.F.R. § 80.1401).[13] EPA's proposed

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12 Agricultural land is defined as "Cropland, rangeland, pastureland, forest land, (private non-industrial forest land if it is an incidental part of the agricultural operation for CSP) and other land on which crops, livestock, food, fiber, and other agricultural products are produced. This also includes tree farms." USDA Manual, M_440_502_A - Subpart A - Common Terms, Part 520.00, *available at* http://directives.sc.egov.usda.gov/View RollUp.aspx?hid=17140&sf=1.

13 USDA, on the other hand, defines forestland as:

> A Land cover/use category that is at least 10 percent stocked by single-stemmed woody species of any size that will be at least 4 meters (13 feet) tall at maturity. Also included is land bearing

definition, on the other hand, is too broad, which may restrict the types of land that would be considered "existing agricultural land."

Of most concern to NBB, however, is the definition of "existing agricultural land" Itself. The majority of feedstock used by the U.S. biodiesel industry is oil from planted crops, such as soybeans. The renewable biomass definition requires that such renewable biomass be from "[p]lanted crops and crop residue harvested from agricultural land cleared or cultivated at any time prior to the enactment of this sentence that is either actively managed or fallow, and nonforested" -- referred to as the "existing cropland" requirement. 42 U.S.C. § 7545(o)(1)(I)(i) (2009). EPA is proposing substantial requirements to establish compliance with the "existing cropland" requirement under the EISA, including obtaining and retaining documentation to establish that the "existing agricultural land" was cleared or cultivated prior to December 19, 2007, and that, *since December 19, 2007, has been continuously* "[a]ctively managed as agricultural land or fallow, as evidenced by any of the following:

> (i) Records of sales of planted crops, crop residue, or livestock, or records of purchases for land treatments such as fertilizer, weed control, or reseeding.
>
> (ii) A written management plan for agricultural purposes.
>
> (iii) Documented participation in an agricultural management program administered by a Federal, state, or local government agency.
>
> (iv) Documented management in accordance with a certification program for agricultural products.

74 Fed. Reg. at 25,113 (proposed 40 C.F.R. § 80.1401). EPA proposes a similar requirement for planted trees and slash from tree plantations. *Id.* at 25,114. Significantly, EPA imposes this high burden of proof squarely on the shoulders of renewable fuel producers, rather than the party obligated to submit the RINs to establish compliance with the statutory requirements.

The EPA's proposal on the "existing cropland" requirement would be cost-prohibitive and be difficult to implement in practice as part of the day-to-day operation of growing, transporting and handling feedstock and producing biodiesel. Given U.S. land use requirements, increasing yields and production efficiencies, and the availability of existing cropland, it is highly unlikely that new lands in the United States will be cleared for purposes of the RFS, and EPA further recognizes that the proposed requirements are not likely to change agricultural practices. Nonetheless, EPA's proposed feedstock certification provisions effectively require the agriculture industry to segregate or identity preserve commodity crops. As discussed further

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> evidence of natural regeneration of tree cover (cut over forest or abandoned farmland) and not currently developed for no forest use. Ten percent stocked, when viewed from a vertical direction, equates to an areal canopy cover of leaves and branches of 25 percent or greater. The minimum area for classification as forest land is 1 acre, and the area must be at least 100 feet wide.

USDA, Natural Resources Conservation Service (NRCS), *National Resources Inventory (NRI), 2002 and 2003 Annual NRI, Glossary of Key Terms*, http://www.nrcs.usda.gov/technical/NRI/2002/glossary.html.

below, review of literature published by academic and government groups estimates segregation of nonbiotech crops could add $0.22/bushel for corn and possibly more for soybeans. William W. Lin, *et al.*, *Biotechnology: U.S. Grain Handlers Look Ahead*, USDA Economic Research Service, Agricultural Outlook, at 32 (2000), *available at* http://www.ers.usda.gov/publications/agoutlook/apr2000/ao270h.pdf. Moreover, since feedstock certification programs do not currently exist at the scale required, and would take multiple seasons to implement (if even possible); EPA's proposal cannot be implemented in the timeframe EPA would require. EPA, therefore, is proposing an overly burdensome administrative requirement that is cost-prohibitive and would be difficult to impractical with little, if any, benefit.

1. EPA's definition of "existing agricultural land" is inconsistent with the statute.

EPA has imposed substantial administrative burdens on renewable fuel producers, as well as feedstock providers, based on an overly narrow reading of the statute. Congress sought to take a picture in time of agricultural land existing in December of 2007, excluding forestland. EPA is impermissibly adding "continuously" into the statutory definition to require that "land must have been actively managed or fallow, and nonforested, on December 19, 2007, and *continuously thereafter* in order to qualify for renewable biomass production." 74 Fed. Reg. at 24,933 (emphasis added). EPA asserts that this interpretation of the legislative language is reasonable and appropriate because:

> The EISA language uses the present tense ("is actively managed * * *") rather than the past tense to describe qualifying agricultural land. We interpret this language to mean that at the time the planted crops or crop residue are harvested (i.e., now or at some time in the future), the land from which they come must be actively managed or fallow, and nonforested. However, assuming that the land was cleared or cultivated at some point in time, then any land converted to agricultural land after December 19, 2007, and used to produce crops or crop residue would inherently meet the definition of "is actively managed or fallow, and nonforested," and the EISA land restriction for planted crops and crop residue would have little meaning (except in cases where it could be established that the land in question had never been cleared or cultivated). We believe that in order for this provision to have meaning, we must require that agricultural land remain ''continuously'' either actively managed or fallow, and nonforested, since December 19, 2007. In this way, the upper bound on acreage that qualifies for planted crop and crop residue production under RFS2 would be limited to existing agricultural land—cropland, pastureland, or CRP land—as of December 19, 2007, and the phrase "is actively managed or fallow, and nonforested" would be interpreted in a meaningful way.

Id. EPA misconstrues the statute, placing undue restrictions on the definition of renewable biomass and undermining Congressional intent.

EPA is correct in stating that land cleared or cultivated prior to December 19, 2007 could be broad, but, contrary to EPA's assertions, the "is actively managed or fallow, and nonforested" places the appropriate limits on what agricultural land existing on December 19, 2007 may qualify under the renewable biomass definition. Agricultural land in the United States is a broad definition, and the cleared or cultivated requirement could apply at any time regardless of the current land cover, as long as such land was cleared or cultivated prior to December 19, 2007. Agricultural land "cleared or cultivated" prior to date of enactment of the EISA was substantially greater than today's available acreage. Indeed, estimates indicate that existing cropland has been on the decline.[14]

The "is actively managed or fallow" distinguishes any previously cleared or cultivated land, which may now be residential or urban areas, from land that was still agricultural on December 19, 2007. Because planted crops cannot come from "fallow" lands, Congress could not have intended the term "is" to mean "at the time the planted crops or crop residue are harvested (i.e., now or at some time in the future)." Similarly, this would render the limitation that the lands be "nonforested" superfluous because cropland would, by nature, be nonforested "at the time the planted crops or crop residue are harvested." The only way to give meaning to the entire definition is to define "is" to refer to the period of time on December 19, 2007. The "upper bound" of the lands that could qualify were those agricultural lands that had previously been cleared or cultivated and were actively managed or fallow and nonforested on December 19, 2007. This was intentional by Congress to ensure a broad array of existing lands be used for renewable fuels, but that new, *forested lands*, after December 19, 2007, were not cleared.

The inclusion of the term "continuously" impermissibly restricts the lands that would otherwise be available. *See Hercules, Inc. v. EPA*, 938 F.2d 276, 280 (D.C. Cir. 1991) (rejecting "EPA's action because it reads into the statute a drastic limitation that nowhere appears in the words Congress chose and that, in fact, directly contradicts the unrestricted character of those

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[14] USDA ERS estimated, based on the Census of Agriculture, cropland totaling about 442 million acres in 2002, representing all land in crop rotation. Ruben N. Lubowski, *et al.*, *Major Uses of Land in the United States, 2002*, at 1. Cropland used for crops -- cropland harvested, cropland failure, and cultivated summer fallow -- totaled 340 million acres, or 77 percent of total cropland acreage. Fourteen percent of total cropland was cropland used only for pasture, while 9 percent of total cropland was classified as idle cropland, including CRP lands. This was down from 455 million acres in 1997, which was 5 million less than in 1992. "Cropland has declined slowly but steadily since 1978 -- by about 3 percent." Marlow Vesterby and Kenneth S. Krupa, *Major Uses of Land in the United States, 1997*, at iv (2001). According to the 2003 NRI, cropland acreage in the U.S. declined from 420 million acres in 1982 to 368 million acres in 2003, a decrease of about 12 percent. NRCS 2003 National Resources Inventory (NRI), at 2 (2007), *available at* http://www.nrcs.usda.gov/technical/NRI/2003/Landuse-mrb.pdf. The 2003 NRI found that the percentage of total cropland that is non-cultivated increased continuously since 1982 through 2003. Non-cultivated cropland accounted for almost 16 percent (58 million acres) of cropland acreage in 2003, up from 11 percent (44 million acres) in 1982. NRCS 2003 National Resources Inventory. USDA estimates also show that land in farms has also steadily declined. In 2008, "[t]otal land in farms, at 919.9 million acres, decreased 1.56 million acres, or 0.2 percent, from 2007. . . . The decline in the number of farms and land in farms reflects a continuing consolidation in farming operations and diversion of agricultural land to nonagricultural uses." USDA, *Farms, Land in Farms, and Livestock Operations: 2008 Summary*, at 2 (Feb. 2009), *available at* http://usda.mannlib.cornell.edu/usda/current/FarmLandIn/FarmLandIn-02-12-2009.pdf.

words"). EPA's requirements further create confusion for farmers, which may have many reasons for determining whether and when to cultivate their (otherwise nonforested) lands. It also creates disincentives for lands that may have gone out of production after 2007 to go back into production for fear of not meeting the "continuously" actively managed requirement. States have long sought to return lands to agriculture to promote the rural economy and environmental benefits of agricultural land over urbanization. EPA's definition of existing agricultural lands, therefore, is contrary to law and arbitrary.

EPA applies a similar requirement to planted trees and tree residues (referred to as slash by EPA), which also uses the term "actively managed" in reference to tree plantations. However, Congress simply wanted to make sure that the tree plantation was or is planted on land that had been cleared prior to December 19, 2007, not that the tree plantation was in existence from that date forward. Unlike the existing agricultural land definition, a tree plantation is, by definition, actively managed at the time the planted trees or tree residues are collected. Congress sought to distinguish tree plantations from natural growth forests. Earlier versions of the bill sought to clarify that "renewable biomass" "does not include biomass harvested from Federal lands that is derived from the main stem of old-growth trees." S. Rep. No. 110-65, at 6 (2007). Further, EPA's definition creates disincentives to establishing tree plantations on otherwise cleared land, which may provide additional environmental benefits.

2. EPA's approach ignores an important aspect of the problem and therefore is arbitrary and capricious

EPA's proposal does not address the fact that the majority of feedstock is not obtained directly from the feedstock producer. This "entirely fail[s] to consider an important aspect of the problem," rendering EPA's proposal arbitrary and capricious. *Am. Wildlands v. Kempthorne*, 530 F.3d 991, 997-98 (D.C. Cir. 2008) (quoting *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto Ins. Co*, 463 U.S. 29, 43 (1983)).

The statute does not impose an affirmative duty on renewable fuel producers to use renewable biomass. Moreover, renewable fuel producers do not have access to the type of information needed to determine compliance with the existing cropland definition. The U.S. grain production and handling systems are similar to petroleum distribution in that commodity grains are fungible. Soybeans produced in Kansas enter the handling/distribution channel typically at a local elevator. From the local elevator, commodity grain may move to a processor or to terminal elevators. From terminal elevators, grain will typically move to processors or to export facilities. At all points along the chain, commodity grain is co-mingled with grain of similar quality from multiple production points in the United States.

In fact, the majority of feedstock used for soy-based biodiesel is obtained from centralized locations that receive feedstock from numerous sources and may sell the feedstock to numerous sources. Alan Weber, *Review of EPA's Proposed RFS2 Program for Biodiesel: Implications of Land Use Restrictions & EPA's Production Estimates*, at 6-7 (August 2009) ("Weber RFS2 Review") (Attachment 3). Even smaller facilities are not likely to obtain soybean oil directly from farms, as it must be processed first. Further, these smaller facilities likely would

not have the resources available to examine the farming practices and would necessarily need to rely on representations of the farmers themselves. Moreover, renewable fuel producers do not have access to the information and expertise to certify agricultural practices. Given the minimal benefit to substantial regulation, it would be unduly burdensome to require renewable fuel producers to track vegetable oil production. EPA wholly fails to recognize or address this issue in its proposal.

3. EPA's proposal creates unnecessary and overly burdensome administrative requirements.

A comprehensive and burdensome administrative program for the "existing cropland" (and planted trees) requirement is unnecessary and unwarranted. Given the history of the agricultural industry, the conservation programs in place under the auspices of the USDA and States, and the availability of non-cultivated agricultural land, it is very unlikely that any "new" land brought into production would be previously uncleared, uncultivated and forested.

As noted above, Congress' concern was with tearing down of forested and other environmentally sensitive lands, and there is little risk that such land in the United States will be cleared. By expressly excluding forested lands, the statutory language makes clear that Congress was concerned with tearing down forested lands for purposes of growing feedstock for renewable fuels. (Non-federal) Forested land has remained relatively constant since 1982, increasing from 402.4 million acres in 1982 to 405.6 million acres in 2003. NRCS 2003 National Resources Inventory. In addition, there are ample available non-cultivated lands for such production, and technological advances have enabled farmers to boost agricultural productivity to meet demands. *See* Section X.A.2.

Other regulatory programs create incentives for farmers to employ good farming practices, including conservation of lands. Farmers are required to meet a minimum standard of environmental protection on environmentally sensitive land as a condition of eligibility for many Federal farm program benefits. Producers who violate compliance requirements risk losing all Federal farm programs payments. Field reviews and crop history are used to monitor compliance. Federal law also requires protection of cropland classified as being highly erodible land (HEL) from excessive erosion. These provisions, known as Sodbuster, require an approved soil conservation system if HEL is to be converted to cropland. Federal law also requires agriculture producers to protect wetlands on the farms they own or operate if they want to be eligible for USDA farm program benefits (Swampbuster program). The majority of farmers are enrolled in USDA farm programs that have restrictions on clearing of new lands. There are additional programs, such as the National Organic Program, which further promotes sustainable farming practices, including conservation. These programs are more appropriately in the hands of those with expertise in agricultural practices. Congress gave no indication that EPA should regulate such practices through the RFS.

In any event, the RFS provides sufficient incentives to issue valid RINs and use renewable biomass. RFS2 will drive the biodiesel market, and obligated parties are likely to seek assurances that the RINs provided are valid. Moreover, the loss of RINs, because of invalidation

for failure to meet the renewable biomass requirements and potential penalties, could run a company out of business. Renewable fuel producers, then, will have substantial incentive to provide valid RINs, *i.e.*, ensure that the requirements of the Act are being met. EPA should, rather than implement such a burdensome administrative regime, focus its efforts on finding bad actors -- those that knowingly purchased feedstock from lands cleared post-enactment.

EPA notes that it anticipates the certification requirements will require "renewable fuel producers amending their contracts and altering their supply chain interactions to satisfy their need for documented assurance and proof about their feedstock's origins." 74 Fed. Reg. at 24,921. EPA does not explain what it means by alterations to the supply chain interactions. As described below, alterations to the supply chain are likely to be cost-prohibitive. Moreover, the implications of EPA's statements are to essentially put centralized locations of grain and processors out of business, requiring biodiesel producers to purchase feedstock directly from farmers. This would not result in greater efficiencies, as farmers would then have to transport their feed to numerous sources, rather than a centralized location.

In addition, such contract terms, however, would likely be resisted by many feedstock providers due to the potential liability and substantial burdens, potentially restricting the availability of supply. This could also substantially drive the price of feedstock up, which may result in the opposite effect that Congress intended and increase costs to consumers. EPA's approach then restricts the available biomass well beyond that intended by Congress, potentially undermining the program. Again, placing petroleum at an advantage over renewable fuels, against the purpose of the RFS.

In addition, administrative necessity supports a presumption that crops grown in the United States meet the existing cropland requirement. "Certain limited grounds for the creation of exemptions are inherent in the administrative process, and their unavailability under a statutory scheme should not be presumed, save in the face of the most unambiguous demonstration of congressional intent to foreclose them." *Alabama Power Co. v. Costle*, 636 F.2d 323, 357 (D.C. Cir. 1979).

> Considerations of administrative necessity may be a basis for finding implied authority for an administrative approach not explicitly provided in the statute. The relevance of such considerations to the regulatory process has long been recognized. *Courts frequently uphold streamlined agency approaches or procedures where the conventional course, typically case-by-case determinations, would, as a practical matter, prevent the agency from carrying out the mission assigned to it by Congress*.

Id. at 358 (emphasis added). Tracking cropland, as proposed by EPA, would be a large undertaking. EPA reported that, in 1997, there were 462,877 oilseed and grain establishments in the United States; 94,481 were oilseed establishments and 368,396 were grain establishments. EPA Office of Compliance Sector Notebook Project, Profile of the Agricultural Crop Production Industry, at 10 (Sept. 2000). USDA, not EPA, has the experience to track cropland. EPA can work with USDA to ensure that substantial amounts of "new" land are not

being cleared to comply with the requirements. In this way, EPA can focus its resources and enforcement on the bad actors, rather than become embroiled in potentially numerous disputes over what is sufficient documentation.

4. EPA's approach essentially seeks to "identity preserve" crops and should be rejected.

EPA's proposal seeks to "identity preserve" crops, which imposes substantial burdens on the industry that may be cost-prohibitive with no benefit in this case. Identity preserving refers to instances where growers choose to preserve the identity of their crops to meet specific markets. It is generally used, however, where specific physical property is requested. Here there is no physical distinction to determine when the land was cleared, and there is no objective test to determine if requirements are met. Moreover, the steps associated with this type of production are accompanied by incremental increases in cost of production and the goods sold, which would be substantial in this case due to the lack of objective testing available. Indeed, attempts at instituting an identity-preserve system in the United States has met with much resistance from the agricultural community, and has essentially been abandoned as too difficult and too burdensome.

Because there are no distinguishing physical traits to determine when the land on which the grain was grown first became cleared or cultivated, EPA's proposal will impose an identity preservation requirement on the agricultural community. Two primary distribution systems have traditionally existed for corn and soybeans -- one distribution system has focused on commodity crops, and the other distribution system has focused on very high-value traits. *See* Karen Bender, University of Illinois-Urbana Champaign, *Product Differentiation And Identity Preservation: Implications For Market Developments In U.S. Corn And Soybeans*, at 1 (2003), *available at* http://www.farmfoundation.org/projects/documents/Bender.pdf ("Bender (2003)"). The distribution system for commodity crops is focused on homogeneity. *Id.* A smaller percentage of trade in corn and soybeans has been in high value crops, such as certified organic corn and soybeans, which use an identity preserved supply chain. *Id.* This identity preserved supply chain typically consist of a specialty grain firm contracting variety specific grain production, with particular production and/or management requirements. *Id.* "The goals are to minimize the number of handlings so as to reduce quality deterioration and to minimize the potential for commingling with non-differentiated corn or soybeans." *Id.*

EPA's proposal will require farmers, elevators, and processors all the way down the line to identity preserve crops intended for biofuel production. This will have significant cost impacts on the feedstock and thus to consumers. "Crop segregation requires that crops be kept separate to avoid commingling during loading and unloading, storage, and transportation. This supply chain system thus requires cleaning of equipment such as augers, as well as transportation and storage facilities." William W. Lin, *et al.*, *Biotechnology: U.S. Grain Handlers Look Ahead*, USDA Economic Research Service, Agricultural Outlook, at 30 (2000), *available at* http://www.ers.usda.gov/publications/agoutlook/apr2000/ao270h.pdf. USDA estimated that segregation at elevators could add about $0.22/bushel on average for nonbiotech corn, noting

that segregation of nonbiotech soybeans at elevators could add $0.54/bushel, on average, excluding the nonbiotech producer premiums. *Id.* at 32. Those estimates reflected costs at elevators and not necessarily the costs incurred by any one elevator or other elevators in general. Those costs also did not take into account any additional costs that could be associated with segregation at the farm level and shipment expenses beyond export elevators to international markets. A survey of Illinois feedstock producers during the 2000-01 marketing year found an identity preservation supply chain would result in total added costs to the producer from $0.17/bushel for non-GM soybeans to $3.02/bushel for tofu soybeans. Bender (2003), at 5. For Illinois elevators, the total additional costs of handling value added crops ranged from a low of $0.06/bushel for tofu soybeans to $0.15/bushel for white food grade corn. *Id.*

The size of the U.S. soybean crop is approximately 3 billion bushels. Requiring the segregation of all soybean feedstock supplies to ensure that renewable fuel producers can legally comply with the RFS2 would add $660 million to the cost of feedstocks (assuming a conservative estimate of adding $0.22/bushel for identify preservation). These costs will ultimately be bourn by consumers. Weber RFS2 Review (Attachment 3).

B. Alternative Proposals Are Available to EPA for Addressing "Existing Agricultural Land."

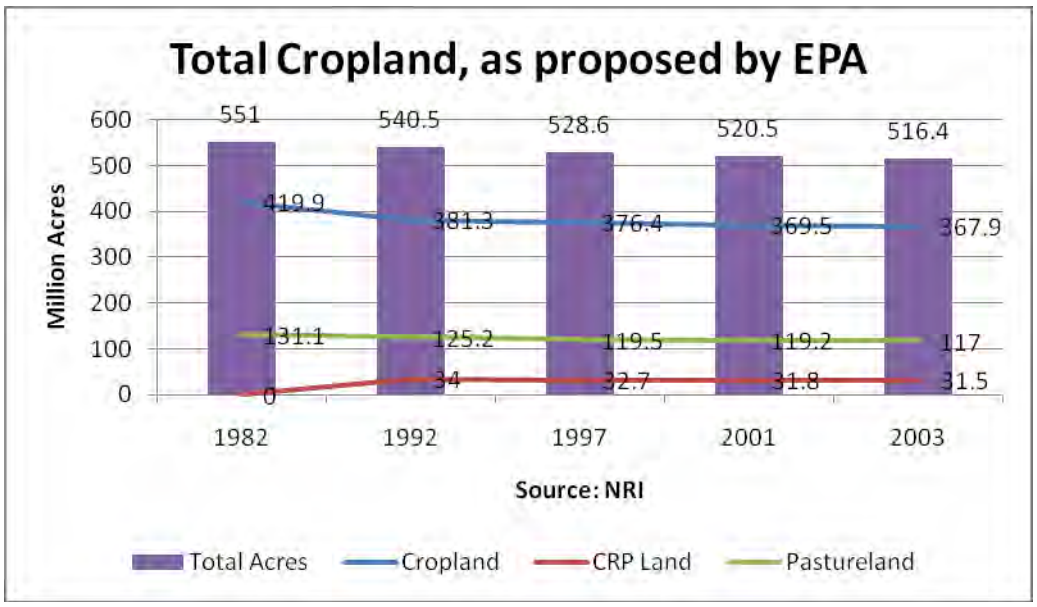
1. Of EPA's proposals, establishing baseline production of eligible land is the most efficient for industry and consumers.

The Proposed Rule outlines additional approaches for addressing domestic renewable biomass. 74 Fed. Reg. at 24,938-24,941. Other approaches identified by EPA are different in detail, but just as cumbersome for the renewable fuels industry as its proposal, and ultimately will be paid by U.S. consumers. In particular, NBB believes that EPA's "partial affirmative defense" under some of the proposals is inadequate. If the renewable fuel producer had a reasonable basis to believe the feedstock meets the renewable biomass, this should be a full defense and RINs should not necessarily be invalidated. Although NBB believes that EPA should presume that renewable biomass from the United States meets the "existing agricultural land" requirement for the reasons described above, the only approach EPA identifies that may be practical for industry is to establish a baseline level of production of biomass feedstocks such that reporting and recordkeeping requirements would be triggered only when the baseline production levels of feedstocks used for biofuels were exceeded. *Id.* at 24,940. Any such baseline proposal, however, must consider increases in yields per acre. NBB presents a proposal below.

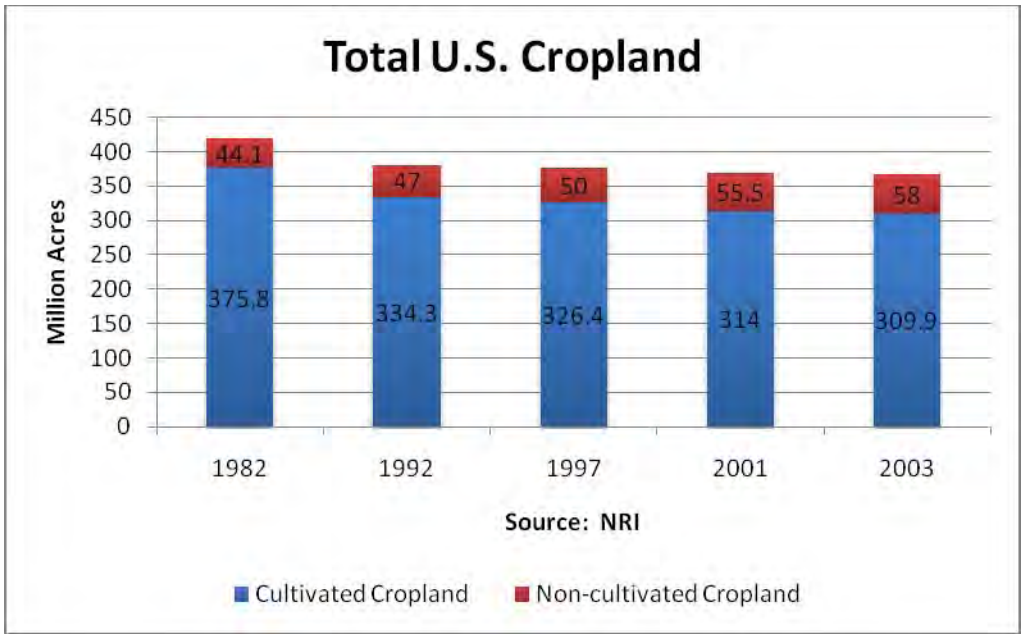
EPA's proposed definitions related to the existing agricultural land rely partly on land use categories used in the NRCS NRI.[15] 74 Fed. Reg. at 24,931. According to NRI data, total cropland (defined in the Proposed Rule as cropland, CRP, and pastureland) has decreased

[15] As noted above, EPA's definitions of agricultural land, including rangeland and forestland, should track all the definitions in the NRI.

during the time period of 1982 to 2003. NRI at 2. 2007 NRI data should be utilized as the baseline and if the total cropland acres are not eclipsed, no reporting requirements would be needed.



It is important to note that not all U.S. cropland is being cultivated although it would still meet the definition of cropland as it would be actively managed. In addition, many crops are interchangeable on existing cropland acres that are actively managed. Therefore, it is not appropriate to establish thresholds based on individual crop acreage reporting.



2. EPA can implement a similar "baseline" proposal for feedstock that includes feedstock imported from overseas.

It has been suggested that EPA look to USDA for information on how to certify feedstock for "renewable biomass" purposes. First and foremost, NBB encourages EPA to work with USDA in order to access information that can be used to determine minimum nationwide threshold levels of agricultural production. There may be instances where U.S. biodiesel facilities must import their feedstock, such as if a natural disaster restricts U.S. soybean production. In such a case, imposing certification requirements on imported feedstock may unduly restrict the market. In our view, the only practical approach to resolving this issue constructively would be to expand EPA's baseline proposal and create two "Country Categories" as follows:

1. Category 1: Countries that have stable to declining agricultural lands; and

2. Category 2: Countries where the agricultural lands are increasing.

As under EPA's "baseline" approach, for "Category 1" countries, we recommend that EPA establish a baseline level of production of biomass feedstocks that would trigger reporting and recordkeeping requirements only when the baseline production levels of feedstocks used for biofuels were exceeded. Functionally, EPA would create a list of countries that have flat to declining agricultural land use (such as United States, Canada, and Western Europe). EPA should update this list periodically with the cooperation of USDA, or it can review the status of any individual country at the request of a renewable fuel producer. Although NBB is concerned that even imposing a certification requirement on imports may cause foreign companies to decline to sell to the United States, in Category 1 countries, renewable fuel producers can certify feedstocks as renewable biomass from those countries on the EPA list by obtaining a certificate of origin from the feedstock provider stating it is from the appropriate country. The renewable fuel producer will use commercially reasonable efforts to verify the nature of the feedstock.

In "Category 2" countries, renewable fuel producers can certify feedstocks as renewable biomass from all other countries (*i.e.*, those with growing agricultural lands) by obtaining from the feedstock provider a certificate of origin from the country and a certificate that the feedstock being delivered qualifies as a renewable biomass. The renewable fuel producer will use commercially reasonable efforts to verify the nature of the feedstock. In this case, EPA should work with USDA, which already has an agricultural presence around the world to develop a system for measuring and monitoring agricultural production and expansion. This system will take a number of years (3 to 5 years) to develop, but feedstock from Category 2 countries should be allowed to qualify as renewable biomass, until a monitoring system is created. In the cases where EPA is specifically concerned about deforestation caused by agricultural production to be used for biofuels, then EPA should create a Category 2 fast track list or priority list where agricultural production of renewable biomass can be monitored and regulated on a faster time frame.

3. At a minimum, EPA should allow renewable fuel producers to rely on certifications by feedstock providers for all renewable biomass, including planted crops and crop residues and planted trees and tree residues.

For renewable biomass that is not planted crops or trees, EPA proposes to only require "written certification from their feedstock supplier that the feedstock qualifies as renewable biomass." 74 Fed. Reg. at 25,129 (proposed 40 C.F.R. § 80.1451(b)(6)(ii)). The RFS mandates and potential penalties for failure to comply or causing another's failure to comply, place sufficient incentives on renewable fuel producers, as well as feedstock providers who may lose business if its feedstock does not comply, to ensure that the feedstock used meets the definition of renewable biomass. However, the feedstock suppliers are the only ones in a position to confirm that their feedstock meets the Act's requirements, and renewable fuel producers should be able to rely on their representations.

Except for an incorrect reading of the statute, EPA provides no explanation as to why renewable fuel producers should not be allowed to rely on certifications by feedstock producers for the existing cropland and planted tree requirements, as with other feedstocks. A similar provision should be provided for these requirements.

EPA can provide standard certification language and impose liability on those that provided improper certification, as well as on producers that had reason to know such certification was improper. EPA, not renewable fuel producers, should take actions to ensure the renewable biomass definition is being met. Information is available to USDA and EPA to confirm certifications for U.S. lands. Moreover, feedstock providers are more likely to comply with federal requirements, and it would be difficult for renewable fuel producers to enforce these requirements.

The ability to rely on a feedstock provider's certification should also apply to feedstock obtained from overseas. Because of the substantial risk EPA is imposing on renewable fuel producers, they are likely to be unable to seek feedstock from outside the United States. EPA should implement a workable program to allow imports of feedstock, particularly in the case where there is a drop in U.S. production based on natural causes, such as droughts.

Although NBB believes that information may be available or can be obtained to determine baseline levels for other countries to assess whether imported feedstock meets the renewable biomass definition, NBB recognizes that EPA does not have the same authority or ability to conduct oversight over foreign renewable fuel producers. In these cases, as with other requirements, EPA should require foreign renewable fuel producers to provide additional evidence regarding land use.

EPA allows importers to rely on documentation from its producer that states whether or not the definition of renewable biomass was met by the fuel's feedstock, because "[i]mporters will likely have less knowledge than a foreign renewable fuel producer would about the point of origin of their fuel's feedstock and whether it meets the definition of renewable biomass." 74 Fed. Reg. at 24,941. Any such documentation should be certified by a third party. For example,

the National Organic Program includes a certification requirement, where the USDA approves foreign entities to provide the required certification. *See* 7 C.F.R. Part 205.

NBB similarly supports EPA's proposal to require foreign producers to provide the location of land from which they will or have acquired feedstocks, along with historical satellite or aerial imagery demonstrating that feedstocks from these lands meet the definition of renewable biomass. 74 Fed. Reg. at 24,941. Requiring such information can also assist EPA in gathering data to further developing its lifecycle emissions analysis.

V. ADDITIONAL COMMENTS ON THE IMPLEMENTATION OF THE RIN PROGRAM.

NBB generally supports EPA's proposal to largely rely on the RFS1 RIN program. Renewable fuel producers and obligated parties have come to understand the program, and it has proved workable. Nonetheless, additional changes may be necessary to better reflect Congressional intent, including protection of investment in biodiesel production.

A. Obligated parties

NBB would like additional clarification on application of the definition of producers and importers of diesel fuel. Under the Proposed Rule, parties that import or refine diesel fuel will become obligated parties. According to the definitions promulgated in 40 C.F.R. §80.2:

> (x) Diesel fuel means any fuel sold in any State or Territory of the United States and suitable for use in diesel engines, and that is—
>
> (1) A distillate fuel commonly or commercially known or sold as No. 1 diesel fuel or No. 2 diesel fuel;
>
> (2) A non-distillate fuel other than residual fuel with comparable physical and chemical properties (e.g., biodiesel fuel); or
>
> (3) A mixture of fuels meeting the criteria of paragraphs (1) and (2) of this definition.
>
> (y) Motor vehicle diesel fuel means any diesel fuel or other distillate fuel that is used, intended for use, or made available for use in motor vehicles or motor vehicle engines.

While NBB believes that the EPA does not intend for biodiesel producers to become obligated parties with RVOs, we nevertheless seek clarification.

B. Separation of RINs

1. NBB supports the proposal to allow renewable fuel producers to separate and sell RINs apart from gallons.

EPA proposes, as an alternative, to "entirely remove the restriction established under the RFS1 rule requiring that RINs be assigned to batches of renewable fuel and transferred with those batches. Instead, renewable fuel producers could sell RINs (with a K code of 2 rather than

1) separately from volumes of renewable fuel to any party." 74 Fed. Reg. at 24,965. NBB agrees with EPA that this approach would "significantly streamline the tracking and trading of RINs." *Id.* It reduces the risk of improper transfer of RINs through third parties, and gives renewable fuel producers more opportunity to obtain the full benefit of the RIN price. This also would track the authority of biodiesel producers to separate RINs for B100 (neat biodiesel). There are currently different rules depending on how the biodiesel is used, but it is all biodiesel. Allowing biodiesel producers to separate all RINs will also reduce some of the burdens involved in tracking the use of the biodiesel.

EPA had initially imposed this requirement to avoid RIN hoarding by renewable fuel producers. However, such has not been the case. Moreover, it is in the interest of biodiesel producers to ensure that the biodiesel is sold, but provides more flexibility in the sale of the RINs.

NBB opposes EPA's other proposals to ensure access to RINs. There is ample capacity for biodiesel production to meet the RFS2 requirements.

2. To the extent EPA does not generally allow separation of RINs by renewable fuel producers, NBB supports allowing upstream delegation of RINs by small blenders.

In the Proposed Rule, EPA indicated it believes it may be appropriate, under the current requirements limiting separation of RINs to obligated parties, to permit blenders who only blend a small amount of renewable fuel to allow the party directly upstream to separate RINs on their behalf. NBB agrees with this proposal as the cost of reporting and compliance is a tremendous financial hardship for many small blenders.

NBB would like to clarify the situation and suggest that a specific allotment be given for small blenders who blend biodiesel. Most small petroleum jobbers sell a minimum of 5 million gallons of diesel fuel. These jobbers are typically bound by a supply contract to blend a certain percentage of biodiesel; a B5 blend level for example would require 250,000 gallons of biodiesel. Thus, NBB believes that the 125,000 gallon allotment will be too small to have an impact on the majority of small blenders. NBB recommends that EPA increase this value to 250,000 gallons of biodiesel.

Additionally, NBB requests EPA to establish a specific carve out for biodiesel in the small blender provisions. As noted above, NBB requests a specific volume carve out of 250,000 gallons of Biomass-based Diesel for small blenders. NBB believes that this is necessary as the majority of the renewable fuel that will be blended by small blenders will be ethanol, as ethanol is easier to blend than biodiesel. Consequently if given a choice between blending biodiesel and blending ethanol, than a small blender will blend ethanol over biodiesel to meet the 125,000 gallon maximum without blending biodiesel. Ethanol is further advantaged under the RFS2 in the allotment of a larger market through larger renewable fuel categories. NBB also believes that requiring a specific carve out for biodiesel for small blenders will mitigate the hurdles associated with blending biodiesel and increase the fuel distribution.

Should the small blender exceed his exemption of 250,000 gallons of biodiesel, the upstream party will require protection against any penalty. NBB proposes that the small blender is responsible for reporting such exceedences and that any penalties incurred for those exceedences accrue to the small blender.

C. Life of Credits/Rollover

EPA retains the current provision that would allow an obligated party to use RINs generated in the prior year subject to a 20 percent cap. EPA should eliminate any potential for rollover. At a minimum, EPA should lower the cap, not increase it.

Congress established a requirement for a minimum number of volumes of renewable fuel be sold or introduced into commerce in the United States *each year*, which is implemented through a credit program -- *i.e.*, RINs. The statute limits the life of a RIN to "the 12 months *as of* the date of generation." 42 U.S.C. § 7545(o)(5)(C) (emphasis added). In the RFS1 proposal, EPA recognized that Congress clearly intended to give credits a limited life, and any RFS program should limit actions that have the practical effect of circumventing this limited credit life -- *e.g.,* rollover of credits into subsequent years. 71 Fed. Reg. 55,552, 55,582-83 (Sept. 22, 2006). The most straightforward way to avoid the rollover issue, which is supported by the Act's language and the legislative history, is to read the Act to allow the 12 month life to apply only to the compliance year in which the credit was generated.[16] This reading also fulfills Congress' clear purpose to ensure a minimum amount of renewable fuel be sold each year, while providing some flexibility, dictated by practical, environment and other market factors, as to where such renewable fuel be sold.

EPA's regulations for RFS1, nonetheless, provided for a limited rollover of credits, allowing a credit generated in one year to be used to establish compliance the next year subject to a 20 percent cap. EPA asserted the need to allow some rollover to "offset the negative effects of fluctuations in either supply of or demand for renewable fuel." 71 Fed. Reg. at 55,581. The experience of the RFS1 program to date shows, in fact, excess RINs going unused, despite Congress' intent for the mandated volumes to be a floor. Moreover, the statute provides for limited waivers in the case of inadequate supply with strict requirements that must be met. 42 U.S.C. § 7545(o)(7)(A). Congress revised this waiver to address potential issues of inadequate supply, including allowing obligated parties to file a petition and EPA to act on its own motion, making the rollover provision unnecessary.

In particular, EPA has proposed to allow 2008 RINs be used to meet the joint 2009/2010 Biomass-based Diesel volume. 74 Fed. Reg. at 24,958. This proposal would violate the 12 month limit on the life of a credit, as such RIN should have been applied in 2008 and could have been applied to meet the overall standard in 2009. Moreover, there is more than sufficient supply in 2009, and expected in 2010, to meet the Biomass-based Diesel requirement. Indeed, as noted

[16] By specifying "the 12 months," logically, Congress was referring to the calendar year in which it was generated. Otherwise, Congress might have said for "12 months *following* the date of generation." When referring to time prospectively, Congress did, in fact, use "12 months *after* date of enactment" in other parts of the EPAct.

above, obligated parties have refused to purchase biodiesel in 2009, making it unlikely that the 2009 volume mandate will be met in actual volumes, despite availability of biodiesel. Obligated parties should not be able to make up for their own inaction by using 2008 RINs. There is simply no justification for allowing 2008 RINs to be used to show compliance in 2010.

In addition, the 20 percent was based on an analysis of historical supply of ethanol, and one year in which supply was reduced by 20 percent due to a drought. Biodiesel capacity, however, exceeds the statutory mandates for Biomass-based Diesel, and alternative feedstocks are available to make up any potential loss of crops. As such, the rollover provision would only work to undermine the ability of biodiesel producers to sell actual volumes of biodiesel each year as intended by Congress. There is no support for needing a 20 percent carryover to address any potential shortfall for the biomass-based diesel requirement. Moreover, EPA should promote the use of other fuels that may be available to make up for potential losses. If some rollover is retained, a 10 percent cap should be more than sufficient, while limiting the potential reduction of actual volumes sold each year. For example, a 10 percent cap would give renewable fuel producers time to sell those RINs generated toward the end of the year.

D. Equivalence Values

EPA is seeking comment on a co-proposal of equivalence values. EPA proposes:

1. Equivalence Values would be based on the energy content and renewable content of each renewable fuel in comparison to denatured ethanol, consistent with the approach under RFS1.

2. All liquid renewable fuels would be counted strictly on the basis of their measured volumes, and the Equivalence Values for all renewable fuels would be 1.0 (essentially, Equivalence Values would no longer apply).

74 Fed. Reg. at 24,944. NBB agrees with EPA that Congress intended the required volumes related to Biomass-based Diesel to be treated as diesel volumes rather than ethanol-equivalent volumes. The 1 billion gallons of biomass-based diesel by 2012 is intended to be a strict volume calculation and not an ethanol-equivalent energy content calculation. Congress also intended to spur the development of advanced biofuels, through specific volume mandates. EPA should, therefore, apply option 2 to the Biomass-based Diesel, Advanced Biofuel, and Cellulosic Biofuel RVOs.

However, NBB also recognizes that the existence of four standards under RFS2 may not obviate the value of standardizing for energy content, which provides a level playing field under RFS1 for various types of renewable fuels based on energy content. Thus, NBB believes that equivalence values under RFS1 should remain in use for the renewable fuel category under RFS2. This category represents the RIN marketplace under RFS1 and fuels with higher ethanol-equivalent energy content should be able to demonstrate their favorable energy profile in this category.

If EPA retains the general prohibition on renewable fuel producers being able to separate RINs, NBB requests EPA to change the transfer rate of RINs with associated gallons of biodiesel. Under RFS1 RINs may be transferred accompanying gallons of renewable fuel in the range of 0-2.5 RINs per gallon of fuel. Since a gallon of biodiesel generates 1.5 RINs, the NBB requests that a gallon of biodiesel be transferred with between 0 and 3 RINs. This would greatly simplify the math and result in fewer calculation errors.

E. Grandfathering Provisions

EISA included a requirement that renewable fuel from all new facilities commencing construction after December 19, 2007 must show at least a 20 percent reduction in GHG emissions compared to the baseline petroleum.[17] "Facilities that commenced construction before December 19, 2007 are 'grandfathered' and thereby exempt from the 20% GHG reduction requirement." 74 Fed. Reg. at 24,924. EPA proposes one basic approach to the grandfathering provisions and seeks comment on five additional options. Under EPA's proposed approach, there would be an indefinite extension of grandfathering status but with a limitation of the exemption from the 20 percent GHG threshold to a baseline volume of renewable fuel. *Id.* at 24,925. The five additional options for which EPA seeks comment are: (1) Expiration of exemption for grandfathered status when facilities undergo sufficient changes to be considered "reconstructed"; (2) Expiration of exemption 15 years after EISA enactment, industry-wide; (3) Expiration of exemption 15 years after EISA enactment with limitation of exemption to baseline volume; (4) "Significant" production components are treated as facilities and grandfathered status ends when they are replaced; and (5) Indefinite exemption and no limitations placed on baseline volumes. *Id.* at 24,925-24,926. Although NBB believes the entire "facility" was grandfathered by Congress, NBB supports EPA's proposed option as a reasonable compromise.

1. NBB generally supports EPA's proposed grandfathering approach.

EISA grandfathered "facilities." Although it did not define "facilities," the term "facility" is used throughout the Clean Air Act in reference to entire plants. EPA properly proposes to define "facility" "to focus on the typical renewable fuel plant," including all of the activities and equipment associated with the manufacture of renewable fuel which are located on one property and under the control of the same person or persons.[18] 74 Fed. Reg. at 24,925. Under this definition, and as intended by Congress, a new facility means a new "greenfield" plant (either the construction of a new production facility where there was no industrial activity before or where there was no renewable fuel production before December 19, 2007), which is

[17] EISA Section 210 also provided that "for calendar years 2008 and 2009, any ethanol plant that is fired with natural gas, biomass, or any combination thereof is deemed to be in compliance with the 20% threshold." 74 Fed. Reg. at 24,925. EPA refers to these facilities as "deemed compliant." EPA has generally proposed that deemed compliant facilities be treated the same as grandfathered, but has limited such facilities to ethanol plants. As such, NBB's comments refer to grandfathered facilities generally.

[18] This is similar to the definition EPA has used in other air programs, of which Congress must have been aware. *See* 40 C.F.R. § 52.21(b)(6).

EPA's Alternative 5. This approach recognizes the investments made prior to enactment of the EISA, consistent with the purpose of a grandfather clause, and also the benefits that have been provided to date from these facilities.[19]

Nonetheless, EPA raises concerns regarding expansions of any amount at existing plants being able to retain grandfather status. As such, EPA proposes to grandfather a baseline volume for each existing facility, requiring any volumes above that baseline to meet the 20 percent reduction requirement: "Our guiding philosophy of protecting historical business investments that were made to comply with the provisions of RFS1 is realized by allowing production increases within a plant's inherent capacity." 74 Fed. Reg. at 24,926-24,930. Under this approach, changes may be made to the facility, such as changes in feedstock, so long as the total renewable fuel volume remains below the baseline amount. Similarly, if production equipment such as boilers, conveyors, hoppers, storage tanks and other equipment are replaced, this would not be considered construction of a "new facility" under EPA's proposed option. NBB agrees that EPA's proposal is a reasonable compromise to the greenfield approach (Alternative 5) to address the potential for unlimited expansions of a particular facility, while still giving facilities flexibility in their operations to include new feedstocks and to maintain and improve their equipment. This approach also is practical and provides a bright line definition that makes clear when the 20 percent requirement is triggered.

NBB generally supports EPA's proposed definition of the baseline volume, that is, the greater of the permitted capacity or annual peak capacity, but believes that EPA should include a tolerance value to address improved efficiencies in facility operations. As EPA recognizes, some debottlenecking type changes, for example, may cause increases in volume that are within a plant's inherent capacity. 74 Fed. Reg. at 24,926. A tolerance level also allows facilities to become more efficient, which would provide additional GHG benefits. Although EPA suggested 10 percent may be appropriate, 20 percent is a reasonable tolerance value for EPA to apply. Our experience is that facilities can often achieve 120 percent of the nameplate capacity through debottlenecking and other modifications to the original design of the facility. Twenty percent also gives facilities more incentives to increase their efficiencies, which will result in energy savings. On the other hand, the baseline value should not be based only on 2006 production, as this is not representative of a facility's potential capacity, but only reflective of the demand that particular year.

Further, EPA should make clear that the facility must be *a renewable fuel facility* that was producing renewable fuel prior to enactment. Congress sought to protect investments in renewable fuel production to spur advanced biofuels, such as biodiesel. EPA should be clear that another facility existing on the date of enactment (*e.g.*, a chemical plant) that is retrofitted to produce renewable fuel after enactment or a refinery that co-process renewable biomass with petroleum would not be eligible for grandfathering status.

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[19] This approach also recognizes that expansion of an existing plant would necessarily rely on existing equipment already at the facility (*e.g.*, boilers), whereas a wholly new plant could design its operations and sourcing to achieve the 20 percent reduction.

2. Congress did not intend to regulate modifications to existing facilities.

EPA seeks comment on restricting facilities from switching process fuels or feedstock which result in an increase in GHG emissions. 74 Fed. Reg. at 24,927-24,928. While EPA's regulation to ensure against unlimited expansions may be warranted, Congress intended to grandfather entire plants and did not intend to regulate modifications to the existing equipment. Moreover, the Act provides incentives to promote improvements and efficiency to reduce GHG emissions, and regulating modifications would create a disincentive for facilities to seek to become more efficient or to add equipment that would reduce GHG emissions (*e.g.,* carbon capture).

The only example EPA provides as potentially troublesome from a GHG emission perspective is a facility switching from natural gas to coal. This, however, would require substantial investment and is not likely to occur. Also, EPA indicated that the opposite would occur, noting plants will "transition from conventional boiler fuels to advanced biomass-based feedstocks" and pursue combined heat technology. 74 Fed. Reg. at 24,987. Thus, EPA should not limit a facility's flexibility to adjust its operations and maintain its grandfather status.

3. EPA's other alternatives are not supported by the statute.

EPA's Alternative 1 (Reconstruction) and Alternatives 2 and 3 (Time Limited Grandfathering) are contrary to the statute.

EPA's Alternative 1 would treat a facility as "new" based on costs incurred in maintaining the plant over time. Under this alternative, EPA would require, starting in 2010, facility owners to report annually the expenses for replacements, additions, and repairs undertaken at facilities since start up of the facility through the year prior to reporting. EPA would then determine whether the degree of such activities warrants considering the facility as effectively "new." This proposal is overly burdensome and ignores the intent of Congress to grandfather "facilities." Surely Congress was aware that facilities would have to undergo maintenance and repairs over time. While EPA references other programs that address reconstruction, Congress expressly required EPA to regulate modifications or reconstruction in those cases.[20] Here, Congress solely references construction, which is generally defined to mean construction of "greenfield" facilities. Moreover, requiring facilities to provide information to EPA regarding any action it takes to maintain their facility is overly burdensome, and creates disincentives for increasing a plant's efficiency and reducing its overall GHG emissions. EPA recognizes the substantial problems with this approach, including "potential disputes over how to calculate costs, as well as verifying records of expenditures," and "a potential unintended consequence, a disincentive for investment in projects that could improve

[20] *See* 42 U.S.C. §§ 7411 (regulating construction and modification), 7412(a)(4) (defining "new source" as a source commencing construction or reconstruction after regulations), 7412(g) (requiring permits for construction, modification and reconstruction of sources), 7479(2)(C) (defining construction to include modification for purposes of Prevention of Significant Deterioration of Air Quality program).

safety, efficiency and environmental performance." 74 Fed. Reg. at 24,929. This approach, therefore, should be rejected outright.

Similarly, Alternatives 2 and 3, which propose to end grandfathering after 15 years, should be rejected outright. The 15-year limit is based on an underlying assumption that facilities are reconstructed over a set period of time -- an estimated 15 years for ethanol plants. This may not be factually correct and is irrelevant based on the statutory language. This approach does not give meaning to Congress' use of the words "new facilities" in that it makes existing facilities "new" on a date certain, even if they have not been reconstructed, and undermines the purpose of a grandfathering statute to protect pre-enactment investment. EPA has no authority to place a time limit on the grandfathering provided by Congress.

F. Additional Renewable Fuel

1. EPA should clarify how home heating oil RINs are generated and reported

EISA specifically includes the word "home" to modify heating oil. Under 40 C.F.R. § 80.2, the definition of heating oil is much broader and is given as:

> (ccc) Heating Oil means any #1, #2, or non-petroleum diesel blend that is sold for use in furnaces, boilers, stationary diesel engines, and similar applications and which is commonly or commercially known or sold as heating oil, fuel oil, and similar trade names, and that is not jet fuel, kerosene, or MVNRLM diesel fuel.

NBB seeks clarification to ensure that biodiesel used in heating oil applications meeting the latter definition in EISA is applicable for the renewable fuel category under RFS2. NBB also seeks clarification on D code applicability for biodiesel used in jet fuel or home heating applications. For example, if a gallon of biodiesel produced from recycled grease shows an 80 percent GHG reduction, the RIN for that gallon should be assigned a D code of "2" for Biomass-based Diesel, regardless of the final use of the product.

2. EPA should limit and clarify ability to reinstate RINs generated and retired for nonroad uses.

The Proposed Rule states that RINs previously retired in nonroad applications may be reinstated under the RFS2. 74 Fed. Reg. at 24,959. NBB agrees with this language and asks the EPA to provide a workable time frame for such reinstatement. NBB also asks EPA to clarify that RIN ownership for reinstated RINs belong to the party that retired the RIN. Additionally, NBB desires EPA to clarify specific treatment of nonroad RINs in 2010 or later provided the RFS2 does not commence on January 1, 2010.

3. EPA should revise its definition of "ocean-going" vessels.

EISA specifies that "transportation fuels" do not include ocean going vessels. 42 U.S.C. § 7545(o)(1)(L) (2009). EPA is interpreting the term "ocean-going vessel" to "mean those vessels that are powered by Category 3 (C3) marine engines and that use residual fuel or

operate internationally." 74 Fed. Reg. at 24,960. Vessels, however, often utilize Category 1 and Category 2 engines with the Category 3 engines. Biodiesel is a viable alternative, and as discussed below, will likely be the only alternative for these vessels to meet new requirements. While NBB supports excluding Category 3 marine engines, as provided by the statute, it believes that EPA should clarify that the definition does not include any Category 1 and Category 2 marine engines. NBB notes that EPA has authority to provide "an appropriate amount of credits" for biodiesel. 42 U.S.C. § 7545(o)(5)(A). We do not believe that Congress intended to exclude fuel used in all marine engines in ocean-going vessels from being considered transportation fuel, but only the Category 3 engines that do not run on diesel or gasoline.

NBB believes biodiesel will become an important alternative fuel for marine engines. The United States is a signatory of the MARPOL VI Treaty, which imposes emissions reduction requirements in designated Environmental Control Areas (ECAs). EPA with Canada has submitted a proposal to the International Maritime Organization to designate ECAs that would require the lowering of emissions of Nitrogen Oxides (NOx), Sulfur Oxides (SOx) and particulate matter (PM). EPA Regulatory Announcement, *Proposal of Emission Control Area Designation for Geographic Control of Emissions from Ships*, EPA-420-F-09-015 (Apr. 2009), *available at* http://www.epa.gov/otaq/regs/nonroad/marine/ci/420f09015.pdf. The proposed ECAs will establish an area initiating 200 nautical miles off the coasts of the United States and Canada exclusive of sovereign territorial waters requiring the use of fuels that contain less than 1000 ppm of sulfur. Biodiesel is a fuel naturally low in sulfur and thus gives ocean going vessels in ECAs the ability to comply with the regulations at a low cost. Biodiesel also shows decreases in Nitrogen Oxides[21], Sulfur Oxides, and particulate matter and would ocean going vessels the ability to reduce pollutants at a minimal cost.

Additionally CARB Regulations have specified the types of fuels to be used in main engines, auxiliary engines, and boilers in Regulated California Waters.

> (1) Fuel Sulfur Content Limits.
> (A) Auxiliary Diesel Engines:
> 1. . . . upon the effective date of this regulation as approved by the Office of Administrative Law, a person subject to this section shall operate any auxiliary diesel engine, while the vessel is operating in Regulated California Waters, with either marine gas oil (MGO), with a maximum of 1.5 percent sulfur by weight, or marine diesel oil (MDO), with a maximum of 0.5 percent sulfur by weight, rounded as specified in subsection (i)(3);
> 2. . . . beginning January 1, 2012, a person subject to this section shall operate any auxiliary diesel engine, while the vessel is operating in Regulated California Waters, with marine gas oil (MGO) with a maximum of 0.1% sulfur by weight or marine diesel oil (MDO) with a maximum of 0.1% sulfur by weight, rounded as specified in subsection (i)(3).

[21] Biodiesel has been shown to decrease Oxides of Nitrogen in blend levels up to 20% biodiesel. Bob McCormick and Janet Yanowitz, *Biodiesel Emissions from Heavy-Duty Engines*, EcoEngineering, Inc. and National Renewable Energy Laboratories (Feb. 2009).

(B) Main Engines and Auxiliary Boilers:

1. . . . beginning July 1, 2009, a person subject to this section shall operate any main engine or auxiliary boiler, while the vessel is operating in Regulated California Waters, with either marine gas oil (MGO), with a maximum of 1.5 percent sulfur by weight, or marine diesel oil (MDO), with a maximum of 0.5 percent sulfur by weight, rounded as specified in subsection (i)(3);

2. . . . beginning January 1, 2012, a person subject to this section shall operate any main engine or auxiliary boiler, while the vessel is operating in Regulated California Waters, with marine gas oil (MGO) with a maximum of 0.1% sulfur by weight or marine diesel oil (MDO) with a maximum of 0.1% sulfur by weight, rounded as specified in subsection (i)(3).

Cal. Admin. Code tit. 13, § 2299.2 NBB has data which demonstrate the successful application of biodiesel in marine equipment.[22] Thus, we believe biodiesel is a viable alternative fuel for marine vessels, and EPA should include diesel fuel used in all Category 1 and Category 2 marine engines in the definition of transportation fuel.

4. EPA should clarify whether aviation fuel will be included in determining the renewable volume obligation if RINs are generated.

NBB believes that aviation fuel should be included in the definition of transportation fuel as defined in EISA, and counted in determining obligated parties RVOs. In EISA, Section 201(1)(A), jet fuel, or aviation fuel, is categorized under the definition of additional renewable fuels. NBB finds aviation to be a mode of transportation and more specifically a nonroad vehicle, and thus it would be appropriate to categorize aviation fuel as a type of transportation fuel, defined in EISA Section 201(1)(L) in calculating the RVOs.

The Proposed Rule states:

> The renewable volume obligation apply to refiners, blenders, and importers of motor vehicle or nonroad gasoline or diesel (with limited flexibilities for small refineries and small refiners), and that their percentage obligation would apply to the amount of gasoline or diesel they produce for such use. We propose to use the current definition of motor vehicle, nonroad, locomotive, and marine diesel fuel (MVNRLM)—as defined at §80.2(qqq)—to determine the obligated volumes of non-gasoline transportation fuel for this rule.

74 Fed. Reg. at 24,913. NBB is under the impression that, according to the excerpt above, aviation fuel will not be included in RVO calculations as aviation fuel is not, "motor vehicle or nonroad gasoline or diesel." While EPA is treating jet fuel as additional renewable fuel and allowing RINs to be generated, we believe the aviation industry is unlikely to purchase fuel with RINs unless they have a market for the RINs or an incentive to do so. Thus, NBB seeks

[22] *See, e.g.,* Washington State University, Washington State Ferry Biodiesel Research & Demonstration Project, Final Report (2009), *available at* http://www.wsdot.wa.gov/Ferries/Environment/biodiesel.htm.

clarification as to whether aviation fuel produced from conventional fossil fuel diesel will qualify for RVO calculations.

VI. NBB SUPPORTS STREAMLINED AND PRACTICAL REGISTRATION, RECORDKEEPING, AND REPORTING REQUIREMENTS.

NBB supports EPA's decision to build on the current RFS1 program, as well as to move toward an EPA-moderated trading system. However, the Proposed Rule includes a multitude of new registration, recordkeeping, and reporting requirements for biodiesel producers, including possible on-site engineering reviews by a certified Professional Engineer. Many of these new requirements (which also include renewable biomass verification records and submission of RIN pricing information to EPA) offer little or no regulatory benefit and are not thoroughly justified in the proposal, particularly with respect to biodiesel production. Accordingly, we believe these requirements are impractical and overly burdensome and should be eliminated. Nonetheless, NBB remains willing to work with EPA to ensure a workable RFS program.

A. NBB Supports a Streamlined Registration Process.

1. NBB generally supports EPA's proposed revisions to the registration process, but opposes the requirement for an on-site engineering review

EPA's Proposed Rule largely relies on the revised registration process for facilities to identify the feedstock and production processes they use (as well as information to support grandfathering). NBB generally supports an expanded registration process to provide EPA with additional information related to the revised requirements of the EISA. EPA, however, also requires an on-site engineering review as part of the registration process, which must be updated every three years and when the facility seeks to qualify for a new renewable fuel code. 74 Fed. Reg. at 24,942. NBB opposes EPA's proposal to require an on-site engineering review, as unnecessary and overly burdensome.

EPA does not sufficiently explain why an on-site engineering review is needed. EPA simply refers to the current requirements in the RFS1 rule for cellulosic-biomass and waste-derived ethanol facilities. These provisions, however, only required, for facilities in the United States, a third party to review and verification of documentation to support the producer's claims that their fuel meets the requirements. 40 C.F.R. § 80.1155. For *foreign* producers, on the other hand, EPA required an on-site inspection and report from the engineer. 40 C.F.R. § 80.1166.[23] In this context[24] it made sense to require on-site inspection of the facility for foreign producers where EPA does not have the same access to records or ability to inspect. Such is not the case for U.S. facilities. A facility's production process and sources of heat and

[23] This provisions outlining these requirements were not in the RFS1 proposed rule. 71 Fed. Reg. at 55,636-55,651.

[24] Cellulosic ethanol and waste-derived ethanol cannot be readily distinguished from other types of ethanol. Moreover, the definition of cellulosic-biomass ethanol included a provision allowing corn ethanol facilities to meet the definition so long as the facility displaced 90 percent of its fossil fuel use with biogas derived from waste materials. 42 U.S.C. § 7545(o)(1)(A) (2005).

power are already reviewed and outlined by the relevant governmental authorities in issuing permits. EPA also retains authority to inspect the facility and the records retained to support the facility's use of a D Code. The on-site engineering review for facilities in the United States is redundant, and unnecessary for enforcement. It is also overly burdensome, adding economic burdens particularly onto smaller facilities.[25] EPA already requires substantial recordkeeping and reporting, including attest engagement requirements that are sufficient to meet any enforcement needs. The on-site engineering review also seems counter to EPA's decision to use lookup tables to identify general pathways to ease administrative burdens, rather than allow those facilities to establish a source-specific pathway. If EPA believes there is a question regarding a particular facility, it retains authority to request and review additional records, and to inspect the facility. As such, EPA should remove this requirement for on-site engineering reviews of U.S. facilities.

2. EPA should clarify how to register facilities that use multiple/aggregated feedstocks.

Most biodiesel production facilities are able to produce biodiesel from multiple feedstocks. Market economics drive the feedstock volumes for biodiesel production. Thus, a biodiesel producer will commonly use a feedstock that generates the greatest margin at that time. In the Proposed Rule, EPA requires a renewable fuel producer to have an on-site engineering review when a renewable fuel producer updates its facility registration information to qualify for a new RIN category (*i.e.,* D code). This review must take place within 60 days of the registration update. Although NBB opposes an on-site review requirement, NBB seeks clarification to ensure that EPA's proposal to require an update of facility registration does not include a change in feedstock that was already identified and documented under the list of "capable" feedstocks for renewable fuel production. If EPA intends every feedstock change to require an on-site engineering review, this requirement would be costly and unnecessary.

The Proposed Rule also states:

> If there were changes to a domestic producer's facility or feedstock such that their fuel would require a D code that was different from any D code(s) which their existing registration information already allowed, the producer would be required to revise its registration information with EPA 30 days prior to changing the applicable D code it uses to generate RINs.

74 Fed. Reg. at 24,946. Any change in feedstock among those identified and documented in the registration information should not require a revision in the registration information for a renewable fuel producer.

[25] The on-site engineering review also seems counter to EPA's decision to use lookup tables to identify general pathways to ease administrative burdens, rather than allow those facilities to establish a source-specific pathway.

In Table III.D.3-1 of the Proposed Rule, EPA proposes three approaches to assigning multiple D codes:

Case	Description	Proposed Approach
1	The pathway applicable to a facility changes on a specific date, such that one single pathway applies before the date and another single pathway applies on and after the date.	The applicable D code used in generating RINs must change on the date that the fuel produced changes pathways.
2	One facility produces two or more different types of renewable fuel at the same time.	The volumes of the different types of renewable fuel should be measured separately, with different D codes applied to the separate volumes.
3	One facility uses two or more different feedstocks at the same time to produce a single type of renewable fuel.	For any given batch of renewable fuel, the producer should assign the applicable D codes using a ratio defined by the amount of each type of feedstock used.

Since biodiesel producers typically make biodiesel from more than one feedstock, most producers will fall under case 3 in Table III.D.3-1. As such, these producers will be required to divide a batch RIN into multiple gallon RINs or batch RINs by the feedstock's useable energy content. NBB believes this step to be unnecessary and onerous to renewable fuel producers.

Instead, NBB requests EPA to allow biodiesel producers to determine RINs on an energy basis over a given period. To clarify, NBB would like a biodiesel producer to be able to produce RINs with a single D code for multiple feedstocks. Following EPA's logic, this could be accomplished over a period of time such that the weighted average lifecycle calculations for the feedstocks used would result in a single D code for all RINs produced from a facility. A mathematical example is given below:

> A biodiesel producer produces 100 gallons of biodiesel from soybean oil in week 1. This soy-based biodiesel would, according to the Proposed Rule, have a lifecycle GHG reduction of 22 percent over petroleum diesel. The biodiesel producer then produces 100 gallons of biodiesel from waste grease in week 2. The resulting GHG profile for the 200 gallons of biodiesel produced would be:

$$\frac{100 \text{ gallons} \times 22\% + 100 \text{ gallons} \times 80\%}{200 \text{ gallons}} = 51\% \text{ GHG reduction}$$

The result of the 2 weeks of production would indicate that all 200 gallons would qualify for a D code of "2" for Biomass-based Diesel. This approach would obviate the need for a biodiesel producer to compute the proposed batch RINs for every batch of biodiesel produced. Instead the biodiesel producer would be required to show the weighted average of feedstock profiles

on a quarterly basis. The proposal under the Proposed Rule will add to the overall complexity of the program and increase the chances for an invalid RIN from mathematical error.

B. NBB Supports Streamlined Reporting Requirements.

1. The price of RINs is confidential business information and should not be required.

EPA largely retains the RIN transaction reports of the RFS1 rule, but would make a "minor" addition to also require that prices of RINs be included in the reports. 74 Fed. Reg. at 24,969. EPA asserts that "this information has great programmatic value to EPA because it may help us to anticipate and appropriately react to market disruptions and other compliance challenges, will be beneficial when setting future renewable standards, and will provide additional insight into the market when assessing potential waivers."[26] *Id.* EPA provides no evidence that the RIN market is not working, and requires EPA to "assess the general health and direction of the market and overall liquidity of RINs." *Id.* The RIN market is already transparent, and parties should not be required to submit pricing information to EPA, which may then be available to the public. Price information is considered confidential business information and the disclosure of this sensitive information should not be required.

None of EPA's asserted benefits justifies requiring this information. *See* 74 Fed. Reg. at 24,969, 24,975-24,976. EPA need not interfere in the RIN market. The purpose of a credit trading program is to allow the market to work without government interference, and give the regulated parties flexibility.[27] It is not an invitation for EPA to become a regulator of the market. In addition, the operation of the RIN market is not a factor for EPA to consider in setting future standards. 42 U.S.C. § 7545(o)(2)(B) (2009). Nor would RIN prices serve as a basis for any waiver under Section 211(o)(7), which is limited to cases of inadequate domestic supply *of renewable fuel* and severe environmental or economic harm to a State or States, not regulated entities. 42 U.S.C. § 7545(o)(7) (2009). For the waiver provisions to apply, however, the economy of a State, a region, or the United States must be harmed by the implementation of the RFS and such harm must be severe -- a high threshold -- as weighed against the benefits of the RFS. 73 Fed. Reg. 47,168, 47,171-47,172 (Aug. 13, 2008). While the new waiver provision for Biomass-based Diesel references prices, Congress was concerned with the price of the fuel and feedstock disruption. *Id.* § 7545(o)(7)(E). EPA is required to consult with the Secretary of Energy and Secretary of Agriculture in such cases, and information regarding prices of fuel would be readily available in the public domain.

EPA also asserts that the price information on RIN transaction reports would be beneficial to regulated entities, as buyers and sellers will have "additional and immediate reference when confirming transactions." 74 Fed. Reg. at 24,969. This is unnecessary, as buyers and sellers are readily aware of transaction costs. EPA further provides no support for its

[26] EPA references looking at RIN prices with production outlook reports, which NBB also opposes.

[27] The credit trading provisions were intended to ensure that ethanol is used "where it is most efficient and economical." 151 Cong. Rec. at S6613 (statement of Sen. Durbin).

assertion that RIN prices will allow regulated entities to avoid market disruptions. *Id.* at 24,976. There is ample information in the marketplace as to the supply of renewable fuels, the prices of those fuels, and obligated parties are well aware of RIN pricing in the marketplace. There is simply no support to claim that RIN prices will provide any additional information of which the regulated entities are not already aware. In sum, EPA should remove the requirement to report RIN prices.

2. While NBB generally supports EPA's proposal to move toward an EPA-moderated transaction system, it has concerns regarding the implementation.

NBB commends EPA on developing the EMTS. We believe this will greatly facilitate RIN transactions and eliminate the majority of counterparty risk from the marketplace. NBB would like to see the EMTS established in a timely manner. Our producing members would be willing to opt-in to the system to assist the EPA in the timely development of a working program.

NBB would also like the EPA to be aware of other programming requirements that will be requisite for members. Specifically the IRS will be requiring our members to become active participants in the ExStars system. The system, which is designed to report the sale of taxable biodiesel, will be a burden to implement. NBB wishes EPA to consider EMTS implementation alongside ExStars implementation. This coincided implementation will reduce the onus associated with system changes necessary to accommodate the federal programs.

EPA proposes that importers and producers of renewable fuel be required to submit batch reports RIN transaction reports on a monthly basis for 2010. NBB believes this reporting requirement to be extraneous and onerous. The stated reason for increasing reporting frequency is to assist parties in identifying errors before the errors result in violations. While the NBB agrees that no party wishes to be held accountable for violations, the increase in reporting frequency is not warranted. Instead, EPA should allow RINs generated prior to EMTS commencement to trade on the EMTS under a separate category and disclosure. Therefore, parties using the EMTS will be able to quickly determine if the RINs they are trading were created before EMTS commencement and thus contain a greater inherent risk.

Although not included specifically in the Proposed Rule but a concern to the NBB is the security of the EMTS system. Using node capability may place users at an increased risk of data misplacement. The information being exchanged is sensitive, and as such the NBB requests the EPA clarify the potential risks and take steps as necessary to ensure the security of sensitive data provided in the EMTS system.

3. NBB opposes requiring annual production reports.

EPA also proposes that annual production outlook reports be required of all domestic renewable fuel producers, foreign renewable fuel producers who register to generate RINs, and importers of covered renewable fuels starting in 2010. 74 Fed. Reg. at 24,970. This proposal

would be another burden for the renewable fuels industry. Moreover, the requirement is wholly unnecessary.

EPA has sufficient information available to track production and future plans for production from EIA and NBB for the industry as a whole. EPA provides no valid justification to require annual production reports from individual facilities. Indeed, requiring facilities to report information may create disincentives for plant improvements and raises business confidentiality issues. While EPA points to the highway diesel program's pre-compliance reports, these are not the same as the requested production outlook reports in the Proposed Rule, which are not necessary nor being used by EPA to ensure parties are coming into compliance. 66 Fed. Reg. 5001 (Jan. 18, 2001).[28]

VII. NBB REQUESTS THAT EPA REVISE ITS RENEWABLE IDENTIFICATION NUMBERS (RIN) TEMPERATURE CORRECTION FACTORS FOR BIODIESEL

NBB has been interacting with industry members and EPA representatives on the temperature correction factor for standardization of volumes for biodiesel since the RFS1 rule. All fuels exhibit expansion as its temperature rises and contraction as its temperature decreases. In order to standardize the generation of RINs and reduce variability in tracking and auditing of RIN generation for biodiesel, the RIN gallons for biodiesel are temperature compensated to those values at 60 degrees Fahrenheit. Temperature compensation is also common in commercial practice in the buying and selling of fuels in the marketplace. This is true of biodiesel, petrodiesel and blends of the two fuels which are commercially traded today in the United States. NBB concurs with the need for temperature compensation for RINs, and supports the EPA position that biodiesel RINs should be temperature compensated.

The American Petroleum Institute (API) has published a set of temperature correction factor tables[29] for petroleum products that are the standard generally used for the commercial trading of petrodiesel today. The tables are based on historical data with a range of hydrocarbon products and provide a factor for compensating volumes back to 60 F based on the density of the hydrocarbon mixture. These API tables are simple to use, widely available, and have been embedded into many meters, pumps and measurement systems to minimize the chance of user error or miscalculation. Biodiesel, strictly speaking, contains 11% oxygen and is therefore not a pure hydrocarbon. However, since each individual biodiesel molecule is made of 89% hydrocarbon that is of a very similar chemical structure to the pure hydrocarbon compound cetane, many of its physical and chemical properties are very similar to those of petroleum based diesel fuel. Indeed, this is the main reason why biodiesel blends easily with petrodiesel in any percentage and operates well in conventional diesel engines.

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[28] At a minimum, EPA must revise the regulation, which is not clear and appears inconsistent with the preamble.

[29] API Manual of Petroleum Measurement Standards Chapter 11.5 Density/Weight/Volume Intraconversion, First Edition, API Tables 3, 6A and 6B (Mar. 2009).

The original equation chosen by EPA for temperature compensation for RINs is below:

$$V_{60} = V_{Ta} \times (-.0008008 \times T + 1.0468)$$

Where:

V_{60} = Standardized Volume of Biodiesel at 60°F, in gallons

V_{Ta} = Actual Volume of Biodiesel in gallons

T = Actual Temperature of Biodiesel in °F

This original equation, according to EPA, was based on data from a published research paper by *Tate, et al.* 72 Fed. Reg. at 23,939 (citing The Densities of Three Biodiesel Fuels at Temperatures up to 300˚C. Tate, *et al*. Department of Biological Engineering, Dalhousie University. April 2005). The Tate paper, largely concerned with engine combustion effects of biodiesel and biodiesel blends, contained data on volume changes with fuels at the extremely high temperatures and pressures observed during the injection and combustion event in conventional diesel engines.

It was brought to the attention of both NBB and EPA by members of the petroleum industry that the equation chosen by EPA provided different results than that commonly used by both the petroleum and biodiesel industry for commercial trading of biodiesel. These commercial values are based on either the API tables for petroleum products or on empirical values from industry measurements at common temperatures and pressures (*i.e.*, atmospheric pressure and ambient temperatures) observed in bulk fuel transport and delivery. This difference between the RIN calculated gallons and commercial sales gallons has created confusion within the record keeping systems of both the petroleum and biodiesel industry, as the gallons generated for RIN calculation differed from those commonly being used to buy and sell fuel on the bill of lading and other product transfer documents. Upon further investigation, EPA indicated to NBB that the values for temperature compensation currently in the RFS1 regulations were likely not the correct values for temperature compensation at ambient temperatures and pressures observed in the fuel distribution and transport system. EPA requested that NBB develop consensus among the biodiesel industry and the API members, to the best of our ability, and recommend changes that could be implemented by EPA.

NBB has collected significant industry data and polled the commercial market place and is pleased to provide the following recommendations to EPA for temperature compensating biodiesel RINs:

- Allow the use of the API tables for temperature compensating of biodiesel RINs, or;

- Allow the use of the current EPA equation for calculating RINs with adjusted values contained below; and

- Require, under either scenario, that the method of temperature compensation (API tables, updated EPA formula*) be recorded and disclosed* by the biodiesel company for purposes of RIN generation on each RIN transaction.

NBB stands willing to work with EPA to fine tune the record keeping associated with this option. NBB believes that the option above represents a significant step forward in simplifying the generations of RINs and harmonizing the RIN and sales gallon accounting systems of both biodiesel and obligated parties. This simplification will reduce the overall cost of compliance and significantly reduce the possibility of invalid RINs and the costs and lost productivity in dealing with possible invalid RINs.

Further explanation of the rational and basis for this recommendation is provided below.

To develop industry consensus on temperature correction factors to recommend to EPA for RIN generation, NBB polled the NBB supplier base in late 2008 and again in the summer of 2009. This poll indicated that temperature compensation for commercial trading of biodiesel was split between three primary methods: (1) use of API tables; (2) use of an EPA like equation; or (3) no temperature compensated at all. In some cases commercial trading of biodiesel was conducted using the basic EPA equation but with different constants either developed in-house or published from other sources. Based on these surveys, the amount of gallons bought/sold on a commercial basis equaled the amount of RIN gallons calculated with the EPA equation less than 20 percent of the time. While a different accounting for RIN gallons and commercial sales gallons is not an insurmountable problem, this difference has created confusion between the RIN gallon and the commercial gallons for each transaction and greatly increases the possibility for errors as well as difficulty in auditing and reconciliation at year's end.

Several conference calls and detailed discussions have occurred with NBB members to develop a recommendation as part of these overall industry comments on RFS2. Additional interaction with API and others in the petroleum equipment business have also occurred. As part of this interaction, various possibilities for temperature correction factors were investigated and compared. There exist various empirical calculations specific to biodiesel for temperatures correction factors. These include a data set developed largely by Mr. Jim Hedman, meteorologist with the Minnesota Department of Commerce, and the Renewable Energy Group, an Iowa based biodiesel production and technology company, in 2004 and updated in 2008; information embedded in the European Biodiesel Specification, EN 14214; and information from Alberta Research Council in Canada. These empirical results, along with the corresponding values using the API tables for petroleum products and values from the current EPA equation, can be found in the table below. This table provides the values for temperature compensated gallons at 60 F if 1000 gallons of pure biodiesel, B100, is delivered into a truck at 100 degrees F.

Gallons of Pure Biodiesel at 60 F when 1000 gallons is delivered at 90 F

- Current EPA RIN formula: 975.928 gals
- MN 2008 Data (Hedman) 986.270 gals
- API Table 6 (density 7.359): 986.625 gals
- Alberta Research Council: 986.238 gals
- EN 14214 data: 986.401 gals
- MN 2004/REG data: 986.830 gals

As can be seen from these numbers, the values for all the empirical options and the API table are within 1 gallon in 1000, or less than 0.1 percent difference. The EPA equation resulted in a 13-14 gallon difference in 1000 gallons compared to all the other methods, which is substantial, and thus verifies EPA's thinking that the temperature correction factor should be changed. The difference in all the alternative methods is well within the natural variability in common metering systems, indicating that any of these options would provide values for temperature compensation that would differ insignificantly compared to other natural variation in pumping and metering fuel into the distribution system.

When presented with this data, NBB members agreed that any of these alternative equations and methods could be used and supported by the industry as more accurate than the existing values in the EPA equation. It was understood by the NBB membership that EPA may wish to reduce the options for RIN temperature compensation as much as possible to minimize errors and facilitate the ease of auditing and compliance verification. NBB members felt very strongly that this is best done by matching up the temperature compensation of commercial biodiesel gallons with that for RIN gallon generation.

From the earlier surveys, for those companies that did temperature compensate commercial gallons both the API specific gravity tables and some variation of the EPA equation were used, with almost a 50/50 split between the two methods. Some members indicated that the API tables were more commonly used by the petroleum industry and are embedded into the meters, pumps and accounting systems of the petroleum industry. This was corroborated by discussions with API.[30] For these companies, the use of the API tables would significantly decrease the paperwork required for RIN generation and tracking since already existing commercial documents could serve that purpose and they could eliminate or reduce their current dual tracking system. This would not only reduce the compliance burden, but also increase the likelihood of valid RIN generation.

Others have already embedded the EPA formula within their accounting and sales systems and would like to keep using that particular equation rather than the API tables. For

[30] Conversation Between Jordan Thaeler (NBB) and Patrick Kelly (API) on September 15, 2009.

these companies, the least cost option is to adjust the EPA equation to different parameters for both commercial and RIN gallon generation which would maintain their current use of one system for temperature compensating, thus reducing costs for those companies if only the API tables can be utilized. Upon researching and discussing the data, use of the most recent Hedman/REG data set from 2008 to replace the current values in EPA's temperature correction equation gained consensus among the NBB members who wish to utilize the EPA equation. Those values are:

$$V_{s,b} = V_{a,b} \times (-.00045767 \times T + 1.0274.6025)$$

Where:

$V_{s,b}$ = Standardized Volume of Biodiesel at 60°F, in gallons

$V_{a,b}$ = Actual Volume of Biodiesel in gallons

T = Actual Temperature of Biodiesel in °F

Some NBB members made the analogy that the choice of method for temperature compensation for biodiesel is not unlike many of the quality specification parameters within ASTM for both biodiesel and petrodiesel. For some parameters several analytical techniques or methods are allowed for the measurement of one single property and it is left to the individual company which method to choose based on commercial agreements with their customers and the analytical technology they prefer or already have available.

NBB members felt strongly that allowing this either/or option would provide the best compromise between overall compliance costs and maximizing valid RIN generation. Both methods provide values that are well within the variability of meter and pumping accuracy and therefore can be considered equivalent from a practical standpoint. From previous interaction with EPA, NBB understands that choice of only one specific method may be desirable from an EPA standpoint. However, maximizing the ability of the industry to harmonize commercial sales gallons with RIN gallons will significantly decrease the cost and hassle for implementing this portion of the RFS, and decrease the likelihood for invalid RINs while providing values that are equivalent. A compromise to the use of two options -- API tables or updated EPA formula -- seems to be a good fit for both EPA and the industry.

VIII. WAIVERS

EISA added two waiver provisions to the RFS specific to the Cellulosic Biofuel requirement and the Biomass-based Diesel requirement. 42 U.S.C. § 7545(o)(7)(D), (E). For Cellulosic Biofuel, a waiver is required if the projected volume of cellulosic biofuel production for the next year is less than the minimum applicable volume required by the statute for that year. For Biomass-based Diesel, Congress provided a limited waiver to address significant increases in the price of Biomass-based Diesel. In certain cases, EPA "may also reduce the

applicable volume of renewable fuel and advanced biofuels requirement" by the same or a lesser volume of the waived amount. *Id.*

EPA does not address the Biomass-based Diesel waiver provision anywhere in the Proposed Rule. However, EPA should make clear that the waiver under Section 211(o)(7)(E) is limited to 60 days at a time (and in amount), and does not reduce the overall annual mandated volume. The provision does not indicate that the overall annual requirement would also be reduced, and any waiver of the overall annual requirement should comply with the general criteria in Section 211(o)(7)(A). In such cases, there may have been excess production prior to the waiver, or biodiesel production will adjust to feedstock disruptions later in the year. Temporary price fluctuations should not lower the annual requirement unless it raises supply issues or results in severe economic harm as required under Section 211(o)(7)(A).

For the Cellulosic Biofuel waiver, EPA indicated that it believed it would be appropriate to allow other excess advanced biofuels to make up some or the entire shortfall in cellulosic biofuel. 74 Fed. Reg. at 24,914. For example, EPA indicated that "if we determined that sufficient Biomass-based Diesel was available, we could decide that the required volume of advanced biofuel need not be lowered, or that it should be lowered to a smaller degree than the required cellulosic biofuel volume." *Id.* NBB supports this interpretation, and agrees that if other advanced biofuels are available they should be allowed to make up the waived amount of cellulosic biofuel. This would ensure that the GHG emission reductions sought by Congress are still met, and the mandated volumes are sold, while giving the cellulosic biofuel industry time to continue to develop.

EPA further noted that, if the advanced biofuel requirement were also lowered, the total renewable fuel volume would be lowered to the same degree. 74 Fed. Reg. at 24,914. NBB believes that, as long as other renewable fuels are available, the renewable fuel standard should not be reduced. While it may not present the same GHG reductions as cellulosic biofuel, other renewable fuels would still provide GHG emission reduction benefits over petroleum, and allowing other fuels to make up the difference fulfills Congress' intent to require that a specific volume of renewable fuels be sold each year. Moreover, there is no indication that these provisions override the criteria for a waiver of the overall standard in Section 211(o)(7), which should be met before EPA lowers either the Advanced Biofuel or Renewable Fuel Standards.

NBB also has concerns that EPA's cellulosic biofuel allowance provisions may work to reduce the actual volumes of advanced biofuels or renewable fuels sold each year. In the event of a waiver of the cellulosic biofuel requirement, EPA is required to issue credits, which EPA refers to as allowances. EPA is allowed to place limits on the use of these allowances to, among other things, "limit any potential misuse of cellulosic biofuel credits to reduce the use of other renewable fuels." 42 U.S.C. § 7545(o)(7)(D)(iii) (2009). While NBB supports EPA's limitations on purchasing and trading such allowances as provided in the proposal,[31] EPA also proposes to

[31] These limits include: (a) allowances would only be available for the current compliance year for which EPA waived some portion of the cellulosic biofuel standard; (b) they would only be available to obligated parties; (c) they would be nontransferable and nonrefundable; and (d) obligated parties would only be able to purchase

permit these allowances to be used to show compliance with the Cellulosic Biofuel, Advanced Biofuel and Renewable Fuel obligations. As EPA recognizes, its proposal still runs the risk of affecting the overall volumes sold. 74 Fed. Reg. at 24,967. As such, NBB supports EPA's alternative approach to limit the application of allowances to the Cellulosic Biofuel volume only to limit the potential adverse impacts on the purchase of other renewable fuels.

allowances up to the level of their cellulosic biofuel RVO less the number of cellulosic biofuel RINs that they own. 74 Fed. Reg. at 24,967.

PART 3.

IX. ANALYSIS OF INDIRECT EMISSIONS FROM INTERNATIONAL LAND USE CHANGES IS NOT APPROPRIATE AND SHOULD NOT BE INCLUDED IN THE FINAL RULE.

A. An Analysis of International Indirect Land Use Change Should Not be Used to Regulate the U.S. Biofuels Industry.

Methodology for assessing indirect emissions from international indirect land use change is, put simply, not ready to be used for purposes of regulating biofuels. The method used by EPA to estimate indirect land use is new and untested. There are currently no generally accepted economic or scientific methods for estimating indirect land use change. Utilizing various models and incorporating indirect emissions from land use changes, is not widely accepted for inclusion in a lifecycle analysis, and is not consistent with standards for such analysis. As such, and until a reasonable level of economic or scientific consensus is achieved, the methodology should not be used to regulate biodiesel.

NBB recognizes the statute requires the EPA to consider *significant* indirect emissions when calculating a renewable fuel's emission profile. However, it is important to note, that the statute does not require EPA to rely on faulty data and to create unrealistic scenarios that, when implemented as EPA has proposed, may decimate the U.S. biodiesel industry. If implemented as proposed by EPA, biodiesel produced from domestically produced vegetable oils are disqualified from the Biomass-based Diesel program, based on wholly unrelated land use decisions in South America, which will make it difficult to meet the volume goals established by statute, despite the abundance of biodiesel available. To realize the potential benefits of the RFS2, it is imperative that the regulation is guided by sound economics and science; together with, a transparent analysis so that it contains modeling that can stand up to scrutiny and the test of time that will lead to the consistent regulation of both fossil fuels and renewable fuels.

Recently, officials from numerous universities from all over the country wrote:

> . . . The possible consequences of not exploring the full potential of biofuels could be a failure to reduce dependence on foreign oil supplies and a failure to substantially reduce greenhouse gas emissions.
>
> We believe scientific data aren't currently available on a global basis to be able to accurately determine the extent to which biofuel production causes land use changes in remote locations or the greenhouse gas emissions that might exist.

Letter from Association of Public Land-Grant Universities to the Honorable Colin Peterson and the Honorable Frank D. Lucas, at 1-2 (Sept. 8, 2009) (Attachment 4). Recognizing the numerous issues that are left to be resolved, these officials supported delaying consideration of indirect land use changes, noting that "[i]ndirect land use change is a complex

issue, but U.S. policy on the future of the nation's energy sources deserves the best science." *Id.* at 2. The concerns raised by these officials echoed those of numerous scientists and experts that the "science" to address indirect land use change is simply not ready to be used for regulatory purposes. *See* Letter from Blake A. Simmons, *et al.*, to the Honorable Arnold Schwarzenegger, Office of the Governor (Mar. 2. 2009); Letter from Bruce Dale, *et al.*, to Stephen L. Johnson, Administrator, EPA (Oct. 2008); Letter from Blake A. Simmons, *et al.*, to Mary D. Nichols, Chairman, California Air Resources Board (June 24, 2008); Letter from Bruce Dale to Colleagues (Mar. 3, 2008) (included as Attachment 5).

Even EPA's peer review process[32] showed no consensus and high uncertainty with respect to its inclusion of indirect emissions from international land use changes for biofuels. EPA's model for international land use was the model developed by the Food and Agricultural Policy Research Institute (FAPRI) run by the Center for Agricultural and Rural Development (CARD) at Iowa State University.[33] *See* EPA, Draft Regulatory Impact Analysis: Changes to Renewable Fuel Standard Program, EPA-420-D-09-001, at 292 (May 2009) (hereinafter referred to as "DRIA"). Because FAPRI does not estimate the types of land that are converted, EPA used satellite data from Winrock to make this estimation to determine the GHG emissions associated with international indirect land use changes. However, Winrock does not provide any analysis of the reasons for land conversion, which involve multiple social, political, and economic factors. EPA's peer review summary notes that "[t]he reviewers all agreed that there is no single model that can capture all of the multi-sector interactions under consideration." ICF International, *Lifecycle Greenhouse Gas Emissions due to Increased Biofuel Production: Model Linkage, Peer Review Report* at 5 (July 31, 2009) (EPA-HQ-OAR-2005-0161-1046) ("Model Linkage Report").[34] Dr. Michael Wang -- who developed one of the best known and most widely used lifecycle models -- stated:

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[32] Separately, NBB reviewed the peer review process undertaken by the EPA, the review of the process is discussed in the report by Dr. Richard Nelson, Co-Director, Center for Sustainable Energy, Kansas State University, *Review of US Environmental Protection Agency RFS-2 Rule* (Sept. 17, 2009) ("Nelson Report") (Attachment 6), and further in Section IX.B.3.

[33] For domestic land use changes EPA used the Forest and Agricultural Sector Optimization Model (FASOM), a dynamic, nonlinear programming model of the forest and agricultural sectors of the United States. DRIA at 292. FASOM is a partial equilibrium agricultural sector model that focuses on domestic land competition and models major crop commodity prices. Although the data for estimating domestic land use change is better, FASOM suffers from some of the same problems as FAPRI.

[34] The report notes that the reviewers agreed that EPA's choice to use a partial equilibrium model "was reasonable." Model Linkage Report at 1. The peer reviewers, in fact, disputed the usefulness of using these models, and, at best, noted that the partial equilibrium models used were the "best available tools." Model Linkage Report at D-1 (Comments of Mr. Sheehan). *See also Id.* at E-3 to E-6 (Comments of Dr. Wang), B-1 (Comments of Dr. Banse). Even though noting they may be the "best available," the peer reviewers qualified this as noting: "[T]he tools that have been applied were never meant to address in a systematic or comprehensive way the kinds of regulatory questions imposed on EPA by EISA 2007. The analyses done by EPA's researchers must be viewed at best as a preliminary and limited look at the question of indirect land-use change." *Id.* at D-1 (Comments of Mr. Sheehan). While NBB questions his objectivity and expertise on lifecycle analysis, even Mr. Searchinger noted: "Because of these uncertainties, EPA is wrong to place so much emphasis on any one estimate." *Id.* at C-3 (Comments of Mr. Searchinger).

> It is obvious that regulatory needs of addressing indirect effects, especially LUCs, are ahead of scientific understanding of interactions among different sectors and among different activities. In my opinion, while LCA emission results of direct effects such as farming and biofuel production technologies are with some degree of certainty, results from CGE models and partial equilibrium models are subject to great uncertainty.

Model Linkage Report at E-3 (Comments of Dr. Wang). He further noted that "one may question the rationale of using economic modeling for developing regulation that is intended to promote technology innovations such as advanced biofuels." *Id.* at E-8. Dr. Wang specifically noted: "One could argue that biodiesel is a by-product of soybean production (soy meals may be the main product), it is not clear how FASOM and FAPRI are designed to simulate biodiesel as a by-product and soy meal as a main product. This problem is especially compounded by the fact that there are many edible oil substitutes for soy oil." *Id.* at E-5.

EPA addresses none of these uncertainties, and surely Congress did not intend to undermine the biofuel industry based on an inadequate, unscientific, speculative and highly problematic analysis. "[C]onclusions regarding GHG emissions effects of biofuels based on speculative, limited land use change modeling may misguide biofuel policy development." Michael Wang and Zia Haq, *Letter to Science*, at 3 (Mar. 14, 2008), *available at* http://www.transportation.anl.gov/pdfs/letter_to_science_anldoe_03_14_08.pdf ("Wang and Haq Letter").

B. The "Best Available" Modeling is Not Sufficient, A Proper Lifecycle Analysis Must Utilize Good Science and Must Conform to Well-Established Standards And Economics For Lifecycle Analyses.

1. While FASOM and FAPRI are well-known, they were not intended to be used in the manner EPA has proposed.

FASOM and FAPRI are economic models that attempt to assess the impacts of *changes* in policy and economic parameters on prices and agricultural commodities. These economic models were not intended to forecast absolute levels of exports, and the inherent assumptions of the models trend the findings toward overestimating exports compared to actual data. *See* C. Phillip Baumel, The Institute for Agriculture and Trade Policy, *How U.S. Grain Export Projections from Large Scale Agricultural Sector Models Compare with Reality*, at 2 (May 15, 2001), *available at* http://www.healthobservatory.org/library.cfm?RefID=36098.[35] The peer reviewers

[35] The head of CARD, Bruce Babcock, testified before Congress that: "The precision with which models can estimate emissions associated with market-induced land use changes is low." Bruce A. Babcock, CARD, Iowa State University, Statement Before The Subcommittee On Conservation, Credit, Energy, And Research, U.S. House Committee On Agriculture, Hearing on indirect land use and renewable biomass provisions of the renewable fuels standard, at 3 (May 6, 2009), *available at* http://www.card.iastate.edu/presentations/babcock.landusechange.housesubcomm.final.5.092.pdf. *See also* FAPRI, *About FAPRI*, *available at* http://www.fapri.iastate.edu/about.aspx ("The multi-year projections are published as FAPRI Outlooks, which provide *a starting point* for evaluating and comparing scenarios involving macroeconomic, policy, weather, and technology variables.") (emphasis added).

recognized that the FASOM and FAPRI models used by EPA were not meant to be used to calculate land use decisions for regulatory purposes. *See* Model Linkage Report at D-1 (Comments of Mr. Sheehan). Economic forecasting using models as tools to identify policy is fundamentally different than assessing emissions for regulatory purposes.

EPA and others claim that the FAPRI model is appropriate because it has been used by numerous government entities to inform *agricultural* policy decisions, largely economic policies that may influence agricultural prices. There are no examples of FAPRI being used to identify a specific score to be used for regulatory purposes. Indeed, EPA was required to make adjustments to both models, which are highly dependent on inputs and assumptions used. For example, the FAPRI/CARD model was designed to produce a 10-year projection, but EPA "forced" it to produce a projection for 2022.

There are also numerous flaws in the models that make their application to the lifecycle analysis here questionable. (A more detailed analysis of the weaknesses of these models and EPA's methodology is included as Attachment 7 (John M. Urbanchuk, *Review of Models Used By EPA to Estimate Indirect Land Use Changes to Renewable Fuel Standard* (Sept. 7, 2009) and Attachment 6 (Nelson Report).) Significantly, the models are limited in analyzing other market factors. Other market factors, such as urbanization, world population growth and dietary changes, timber and hardwood prices, *etc.*, also impact and drive land use change decisions. EPA provides no analysis of the appropriate weight that should be given to the results using these models, which do not address these other factors. EPA also fails to provide sufficient information as to the coordination between the two models. Each of these models, and the other models EPA uses as part of its analysis, was developed independently of one another without the anticipation of being used collaboratively.

2. Congress did not specify the level of "science" required, but EPA guidance and international standards require that any lifecycle analysis be based on sound scientific principles and at this point, it is undisputed that an analysis of indirect land use changes cannot meet these principles.

Congress did not impose a "best available science" requirement in the Clean Air Act, but EPA guidance and international standards do require an analysis that comports with basic scientific principles.

The Information Quality Act (IQA) (Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001) required the Office of Management and Budget (OMB) to issue guidelines that provides "policy and procedural guidance to Federal agencies for ensuring and maximizing the quality, objectivity, utility, and integrity of information (including statistical information) disseminated by Federal agencies." 67 Fed. Reg. 8452, 8452 (Feb. 22,

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USDA also has a note to users of its agricultural projections: "The scenario presented in this report is not a USDA forecast about the future. Instead, it is a conditional, longrun scenario about what would be expected to happen under a continuation of current farm legislation and specific assumptions about external conditions." USDA, *USDA Agricultural Projections to 2018, Long-term Projections Report*, OCE-2009-1, at iii (Feb. 2009), *available at* http://www.ers.usda.gov/Publications/OCE091/OCE091.pdf.

2002).[36] Quality is an encompassing term defined to include utility, objectivity and integrity. *Id.* at 8459. "'Utility' refers to the usefulness of the information to its intended users, including the public." *Id.* Objectivity includes two elements -- presentation and substance. *Id.* Key principles in the IQA guidance include:

- Substantive objectivity which involves ensuring accurate, reliable and unbiased information.

- Presentational objectivity which ensures that the information is being presented in an accurate, clear, complete, and unbiased manner. OMB recognized the importance of transparency to meet this goal of objectivity, "so that the public can assess for itself whether there may be some reason to question the objectivity of the sources." 67 Fed. Reg. at 8459.

- Error sources affecting data quality should be identified and disclosed to users.

- Influential information should be capable of being reproduced. Reproducibility means "that independent analysis of the original or supporting data using identical methods would generate similar analytic results, subject to an acceptable degree of imprecision or error." 67 Fed. Reg. at 8460. A "high degree of transparency" is necessary to facilitate the reproducibility of the information. *Id.*

The IQA guidelines also provide, for analysis of risks to the environment, that the standards set forth in the Safe Drinking Water Act at 42 U.S.C. § 300g-1(b)(3) should be followed. EPA IQA Guidelines at 50. This Section of the Safe Drinking Water Act provides that the Administrator shall use (1) "the best available, peer-reviewed *science* and supporting studies conducted in accordance with *sound and objective scientific practices*" and (2) "data collected by accepted methods or best available methods (*if the reliability of the method and the nature of the decision justifies use of the data*)." 42 U.S.C. § 300g-1(b)(3)(A) (emphasis added). The provision also requires that EPA "ensure that the presentation of information on public health effects is comprehensive, informative, and understandable," including providing "methodology used to reconcile inconsistencies in the scientific data." *Id.* § 300g-1(b)(3)(B).

In addition, the International Organization for Standardization (ISO) has issued a standard for lifecycle assessments (ISO 14040, Environmental management — Life cycle assessment — Principals and framework (2d ed. 2006) (hereinafter "ISO 14040")). The ISO standards are widely used and well-recognized, and EPA claims to have relied on the ISO

[36] EPA adopted guidance consistent with these guidelines. EPA, *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by EPA*, EPA/260R-02-008 (Oct. 2002) (hereinafter referred to as "EPA IQA Guidelines"). EPA is also responsible for the quality of information generated by external parties when it endorses or adopts it, as is the case here. *Id.* at 8. *See also* EPA, *Guidance on the Development, Evaluation, and Application of Environmental Models*, EPA/100/K-09/003, at 31 (Mar. 2009), *available at* http://www.epa.gov/crem/library/cred_guidance_0309.pdf.

standards for its review in the Proposed Rule. 74 Fed. Reg. at 25,024. Key aspects of the ISO standards include:

- Preference for scientific approach over models from the social and economic sciences.
- Appropriate system boundaries to make valid comparisons.
- Use the most recent/most accurate data possible and validate the data.
- Allocate environmental costs among all products.
- Perform sensitivity analysis to qualify, check, evaluate and present the conclusions based on the findings.
- Transparency "to ensure a proper interpretation of the results." ISO 14040 at 7.

See also (S&T)2 Consultants Inc., *Comments on EPA RFS2 Preamble and Draft Regulatory Impact Analysis: Direct Emissions,* Prepared for the National Biodiesel Board, at 2-4 (Sept. 21, 2009) (referred to as the "O'Connor Direct Emission Report") (Attachment 8). As outlined below, based on these principles, the method applied by EPA does not meet ISO 14040 or any other standards for lifecycle assessment. This largely stems from EPA's use of economic models.

Inconsistent system boundaries: A fundamental breach of the ISO principles is the fact that EPA uses different time periods and system boundaries for petroleum fuels and renewable fuels. EPA uses 2005 for petroleum baseline, but then looks at a future scenario for renewable fuels. While EPA's ability to use a later time frame for petroleum may be restricted by the statute, which defines the baseline as petroleum in 2005, EPA can adjust its modeling approach to take this into account. Moreover, EPA uses very different system boundaries. As discussed further below, EPA's analysis does not include any land use changes associated with petroleum exploration and production, a significant omission given that much of the land use changes involve *direct* emissions from these activities. As such, EPA has used a traditional attributional lifecycle analysis for petroleum, but a consequential approach for renewable fuels.[37] "It is not scientifically justified to consider indirect effects in one analysis and to ignore them in another."

[37] As Dr. Wang explained: "Traditionally, LCAs for transportation fuels have been conducted with the attributional LCA approach, through which individual processes/activities (direct effects) of a fuel cycle are identified (especially with detailed technology characterization), and the energy use and emission burdens of individual processes/activities are assessed." Model Linkage Report at E-2 (Comments of Dr. Wang). The "attributional" approach was developed from conventional engineering/technical analysis of system designs and performance. *Id.* "On the other hand, the consequential LCA approach takes into account the direct effects and the indirect effects together by using economic models. . . . EPA applied the consequential LCA approach in its RFS2 NPRM by using the FASOM model (for emissions of domestic direct and indirect effects of biofuel production) and the FAPRI model (for international indirect effects, which were then combined with emission coefficients to generate emissions). . . . Use of consequential LCAs in place of attributional LCAs in emissions regulation development is a new endeavor." *Id.*

Bruce E. Dale, *Life Cycle Analysis Deficiencies in EPA Draft Report*, at 4 (May 26, 2009) ("Dale Report") (Attachment 9).

Lack of reliable data: Good international agricultural data is hard to find. EPA recognized the lack of reliable data for international crop production and projected future trends compared to the United States. 74 Fed. Reg. at 25,028. This leads to high uncertainty regarding inputs and inconsistency between domestic and international emission estimates.

Failure to adequately address allocation issues: Land is used for many purposes and most human use of land is actually to provide feed for our livestock. Dale Report at 3. Another key principle of the ISO standards is the proper allocation of environmental burdens between different products in a multiproduct system, as is the case for soy biodiesel. EPA is not clear how it handles the allocation between biofuels and co-products in these systems. In particular, soybean is largely used for meal, and soybean oil is a co-product. Glycerin from biodiesel production is also an important co-product to consider. As noted above, it is unclear how the models used by EPA take this into account. Model Linkage Report at E-5 (comments of Dr. Wang).

Lack of transparency and reproducibility: The FAPRI model lacks transparency. Although EPA did provide access to its inputs and to the outputs of the model runs, EPA did not provide many of the important details needed to understand its methodology and findings. For example, there is no explanation of the adjustments to the FAPRI model that EPA requested, and no explanation of EPA's calculations or how the model works to provide the results. The model is highly complex, and requires a lot more "manual" calculations than documented by EPA. O'Connor Direct Emissions Report at 21. Due to the lack of transparency, no one outside the CARD can run the model. NBB hired numerous experts who are well known in the field of lifecycle analysis, and whose expertise spans decades, including Don O'Connor, Bruce Dale and John Urbanchuk. None of these experts could reproduce the results of EPA's analysis of land use changes. There is simply no way for the public to reproduce the model.

Inadequate analysis and explanation of uncertainty: EPA admits much uncertainty in its analysis throughout the Proposed Rule. *See* 74 Fed. Reg. at 24,916, 25,024, 25,032. In particular, EPA states "the indirect, international emissions are the component of our analysis with the highest level of uncertainty." *Id.* at 25,027. While EPA admits there is uncertainty, it declined to do an analysis of this uncertainty for the Propose Rule. *Id.* at 25,026-25,027. *See also* DRIA at 303-304. It is not scientifically credible to ignore the uncertainties in input variables. *See* Dale Report at 2. As noted below, EPA should have done a formal uncertainty analysis, such as a Monte Carlo statistical analysis.

Insufficient sensitivity analyses: In the RFS1 Rule, EPA recognized "the results of lifecycle analysis are highly dependent on the input data assumptions used." 72 Fed. Reg. 23,900, 23,982 (May 1, 2007). EPA conducted limited sensitivity analyses, providing the public with no opportunity to determine how its choice of assumptions and inputs affected the analysis. OMB recognized that transparency was needed to allow the public to run sensitivity analyses in order to "assess how much an agency's analytic result hinges on the specific analytic

choices made by the agency." 67 Fed. Reg. at 8456. Because of the lack of transparency, EPA was obligated to provide more sensitivity analyses and present them to the public. (See additional discussion below, and John Kruse, IHS Global Insight, *Indirect Land Use Analysis and Review of EPA's Proposed RFS2 Rules for Biodiesel*, (Sept. 18, 2009) ("Kruse RFS2 Report") (Attachment 10), noting where small modifications in the assumptions dramatically change the results of the analysis).

Attachment 9 (Dale Report) and Attachment 11 ((S&T)2 Consultants Inc., *Comments on EPA RFS2 Indirect Land Use Change Calculations,* Prepared for the National Biodiesel Board, at 12 (Sept. 21, 2009) ("O'Connor ILUC Report")) outline the important variables that should have been explored through sensitivity analysis. In particular, EPA did not test the sensitivity of their results with respect to the following key parameters:

1) Productive use of the standing biomass prior to the hypothetical land conversion event. If, for example, the trees supposedly cleared to make way for new agricultural production were used to produce furniture, pulp and paper, or building materials, then according to lifecycle analysis principles the overall system must be "credited" with the GHG emissions that would have been generated to produce these products elsewhere in the marketplace. Consistent economic modeling would show that valuable timber would not be wasted. If economic forces alone are responsible for land conversion, then timber harvest would be the logical driver for forest conversion.

2) How the land was managed after the hypothetical land conversion event. If conservation tillage practices were used, precision fertilization was employed or cover crops were planted, the GHG emissions would be very different than if conventional moldboard plow practices were assumed.

3) EPA did not assume a statistical distribution of uncertainty in their input data to perform the standard Monte Carlo analysis. EPA instead used point values. This is contrary to lifecycle analysis principles. EPA justifies the use of a point value by claiming that they do not know how these data are statistically distributed (normal vs. Poisson, vs. log normal, etc). This is not an acceptable response. It would be more appropriate for EPA to determine the effect of assuming various distribution functions through such analyses.

4) EPA assumes the biofuel industry will grow by 15 billion gallons of capacity in one year, which is physically impossible. Instead, they should test the sensitivity of their results to a more physically realistic increase in capacity, such as 3 billion gallons per year over 5 years.

5) EPA assumes that all incremental use of land with respect to a price increase in grains should be assigned to biofuel production. This is an unreasonable and unrealistic assumption. Agricultural lands are cultivated to provide various products, including animal feed, human food, fiber, and biofuels. EPA should test

the sensitivity of their results to the allocation assumption, whereby land use change is allocated among all the current human uses of agricultural land. In short, it is incongruent to insist that biofuel production would have an effect on indirect land use, but exempt other land uses from the analysis. (See Table 1).

6) EPA should test the sensitivity of their results with respect to the allocation procedures employed in (5). Typically allocation is done by mass or economic value.

7) Elasticity of demand for commodities is a key assumption in EPA's modeling. No data exists to predict the true elasticity in the United States or abroad. Modelers must guess what this elasticity should be. Modelers have a responsibility to test and communicate the effect on overall outcomes due to an assumed and unknowable factor for elasticity.

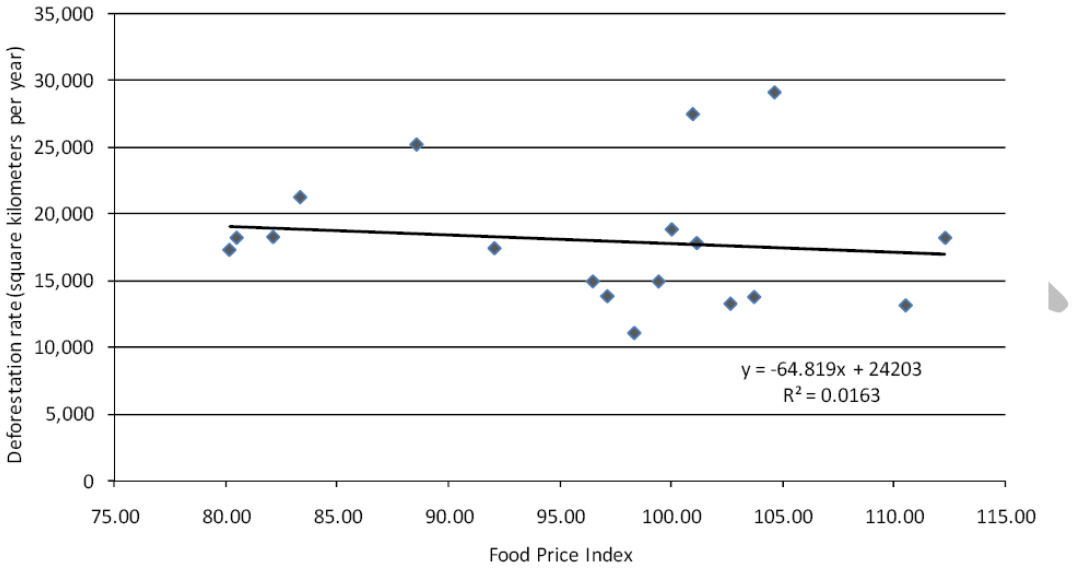
8) Accurate land cover data has a significant effect on EPA's assumed results. The sensitivity of using global average land cover data for countries like Paraguay, in lieu of country specific data, overestimates the emissions from land use change. Paraguay can be assumed to be more similar in land cover to neighboring Argentina than the rest of the world. Using this more accurate assumption for one country alone reduces indirect land use emissions by 11.2 percent. (O'Connor ILUC Report at 28)

9) EPA's assumption that agricultural land is operating at capacity falsely predicts land cover change, when only a land use change is likely. FAPRI predicts an additional 45,000 hectares of soybeans in India. EPA neglects that India has over 25 million hectares of fallow land. The assumption that additional soy acres will come from land cover change rather that come from this large sink of fallow land overestimates indirect land use emissions by approximately 17 percent. (O'Connor ILUC Report at 29)

Table 1.

No Correlation Between Commodity Food Price Index And Deforestation Rate in Brazil

ILUC Fails This Test



There is no correlation between the commodity food price index and the deforestation rate in the Amazonian rainforest of Brazil. The solid line is a "best fit" of the data, which shows a small negative linear correlation. However, the regression coefficient (R^2) of 0.0163 indicates virtually no statistically significant correlation (a value of 1.00 is a perfect correlation). Source: United Nations Food and Agriculture Organization (deforestation data) and Index Mundi (food price index).

Bruce E. Dale, Michigan State University, *Life Cycle Analysis Of Biofuels & Indirect Land Use Change*, Presentation at National Biodiesel Board, June 17, 2009, at slide 6 (citing Dr. Robert Brown, *Why We are Producing Biofuels*, July 2009) (Attachment 12).

Lack of validation: Validation of large-scale models must be done against real-world data whenever possible. A backcast uses the model and actual data for assumptions to solve backwards to evaluate how well the model performs against history. Dale Report at 4. The Proposed Rule does not include a discussion of whether the models can be validated against real world identifiable back-casting. Analyses that have been done of the FAPRI model and EPA's results illustrate that the models are not reliable when compared to actual data:[38]

- Attempts at backcasting results have shown that the FAPRI model is unable to backcast, rendering the whole scientific basis for regulation questionable. Dale Report at 4-5.

38 *See also infra* Section X, Kruse RFS2 Report, and Nelson Report at 2.

- There are substantial inconsistencies between the results of change in exports from FASOM and FAPRI. DRIA at 340-41. These inconsistencies are particularly pronounced for biodiesel. EPA claims that the projected total changes in projected export impacts from the two models are "relatively consistent across both models *with the possible exception of impacts related to increased biodiesel production*." *Id.* at 340 (emphasis added). While NBB believes these inconsistencies are significant, even EPA recognizes the inconsistencies between the two models.

- Part of the inconsistencies may relate to the fact that the FASOM model was artificially constrained to limit land use change in the United States. This application has not been validated and the effect of the artificial assumptions forced a result predicting more land use change outside the United States, where emissions due to land use changes assigned to agriculture for biofuels production are much higher than if assigning those same values to U.S. production.

In California, the California Air Resources Board (CARB) has also attempted to model emissions from indirect land use change using the GTAP model with preliminary results much lower (42 g CO_2eq/MJ) than EPA achieved with FASOM and FAPRI (59 g CO_2eg/MJ). This inability of modelers to arrive at statistically similar results calls into question the validity of either attempt for the purpose of regulating real world activities. NBB has submitted comments on the California GTAP model, which NBB similarly does not believe is ready to be used for regulation. These comments are incorporated by reference and included as Attachment 13.

It is simply insufficient to claim that indirect land use changes should be included in the lifecycle methodology simply because there are some models available. EPA must also provide sufficient support to indicate the models are reasonable to be used in this case. The lack of scientific and economic validity of the models used for purposes on which to base a regulatory rule is undisputed, which renders the entire methodology as wholly unreasonable and unreliable.

3. Peer review alone is insufficient to turn something into "science."

a. The mere fact that models were peer reviewed is not sufficient to ensure the validity of an approach.

OMB guidance notes that "the need for rigorous peer review is greater when the information contains precedent-setting methods or models, presents conclusions that are likely to change prevailing practices, *or is likely to affect policy decisions that have a significant impact*." 70 Fed. Reg. 2664, 2668 (Jan. 14, 2005) (emphasis added). EPA merely asserts that the models EPA used have been "peer reviewed," and EPA also conducted a separate, though

limited, peer review process of certain aspects of its analysis. EPA, however, did not conduct its own peer review of these models[39] or its entire lifecycle analysis.

The peer review process merely attempts to identify obvious flaws, it does not involve verification of the actual results, and peer reviewers do not repeat the study, nor do they conduct research. The more theoretical the analysis is, as in this case, the less effective the peer review process. Indeed, EPA indicates that its limited peer review was "to ensure that the Agency makes decisions based on the best science available." 74 Fed. Reg. 41,359, 41,359 (Aug. 17, 2009). But EPA has not made a determination whether the analysis is scientifically *valid*. While peer review is an important step, it is not sufficient to determine the scientific validity of EPA's analysis.

Indeed, as Dr. Nelson from Kansas State University found, the reviewers "kept away from the numbers," and, thus, did not focus on errors in data and assumptions, overlap between the models, double-counting or misalignment where models intercept. Nelson Report at 2. Dr. Nelson further noted that, while more questions should have been asked of the peer reviewers, EPA did not provide sufficient information to the reviewers anyway to be able to "delve into the details." *Id.* Dr. Nelson's conclusion is that "much more scientific analysis in the areas of agriculture/agronomy, economics, environment, sociological, and trade" needs to be performed before the lifecycle analysis should proceed. *Id.* at 5.

b. NBB has numerous concerns with EPA's peer review process and the lack of public participation in that process.

OMB guidance on peer review states: "Regardless of the peer review mechanism chosen, agencies should strive to ensure that their peer review practices are characterized by both scientific integrity and process integrity." OMB, *Final Information Quality Bulletin for Peer Review*, at 13 (Dec. 16, 2004) (referred to as "OMB Bulletin"), *available at* http://www.whitehouse.gov/omb/memoranda/fy2005/m05-03.pdf. The peer review should be conducted in "an open and rigorous manner." 67 Fed. Reg. at 8460 (citation omitted). Contrary to this guidance, EPA's peer review process here was closed to the public, and has the appearance of bias.

OMB's guidance clearly contemplates a role for the public in the peer review process. Throughout the guidance OMB identifies areas for public participation, including allowing the public to review the charge questions and allowing the public (as a whole) to recommend peer reviewers. It further notes that, if feasible and appropriate, EPA should sponsor a public meeting where oral presentations on scientific issues can be made to the peer reviewers by interested members of the public. EPA, *EPA Peer Review Handbook*, EPA/100/B-06/002, at 59

[39] EPA provides no explanation as to the extent of the peer review that was previously done on these models. For example, OMB, in its IQA guidance, expressly rejected the notion that peer review done by journals is sufficient "as a quality-control mechanism," noting "flawed science has been published in respected journals." 67 Fed. Reg. at 8455. OMB further recognized that the rigor of the peer review should be tailored "to the importance of the information involved." *Id.*

(3d ed. 2006). OMB guidance also indicates that when employing a public comment process as part of the peer review, EPA should provide the reviewers access to the public's comments that address scientific or technical issues. *Id*. The public, however, was excluded from the peer review process, and EPA has not indicated whether it provided public comments it had received to date to the peer reviewers (such as the presentations provided during stakeholder meetings) or whether the panels will have a chance to review the public comments after the close of the comment period.

In fact, EPA guidance lists numerous documents that should be available with respect to the peer review. These include: the draft work product submitted for peer review; materials and information given to the peer reviewers; and a memorandum, or other record, responding to the peer review comments. As of September 24, 2009, EPA has not made any of this information available to the public. Indeed, EPA's notice, dated August 17, 2009, states that the docket includes materials provided to the peer reviewers and claims that "[t]he expert peer review records completed in this process are now available in the public docket." 74 Fed. Reg. at 41,361. The only documents made available in the docket, however, are the summaries of the peer review by third parties retained by EPA. These summaries do not indicate which of the now over 2300 entries in the administrative docket were provided to the peer reviewers.

In addition, the OMB guidance was concerned with the potential for bias in the peer review. In determining conflicts of interest, EPA's guidance provides that it also looks at appearance of lack of impartiality, which concerns issues that are financial or not financial in nature. OMB guidance also provides that reviewers should be selected to represent a diversity of scientific perspectives relevant to the subject. OMB Bulletin at 17. Several of the peer reviewers selected, however, had a clear and biased perspective, and there was little balance on some of the panels. EPA noted that it provided "names of reviewers recommended by stakeholders." EPA, *Questions and Answers, Peer Review of Renewable Fuels Lifecycle Analysis under EISA*, EPA-420-F-09-032, at 1 (Aug. 2009). But EPA does not indicate who provided the recommendations, and there was no broad request for recommendations. Many of the peer reviewers, however, are from environmental organizations, including Timothy Searchinger -- the author of the highly criticized study EPA relies on to "assume" international indirect land use changes -- who indicated he was only providing a summary of his comments for the peer review and the remainder of his comments would be submitted to the docket. Surely his objectivity is questionable.[40] While conflicts and lack of impartiality may not prohibit persons from serving as a peer reviewer, such is the case only if such issues are disclosed. The reports merely include the resumes of the peer reviewers and general statements by the third party conducting the peer review that no conflict was indicated. Indeed, only one of the Peer Review reports even provided the considerations for determining the impartiality of the reviewers. Ross & Associates Environmental Consulting, Ltd., *Peer Review Report: Peer Review of*

[40] Mr. Searchinger is an attorney by training, and lists no relevant scientific or economic experience in the resume attached to the Peer Review Report. Model Linkage Report, App. F. This can be compared to the other members of the panel on which he served, who have a PhD in Agricultural Economics (Dr. Banse), a Masters in Chemical Engineering (Mr. Sheehan), and a PhD in Environmental Science (Dr. Wang). *Id.* Indeed, both Mr. Sheehan and Dr. Wang worked for the DOE on biofuel issues, and lifecycle analyses specifically.

International Agricultural Greenhouse Gas Emissions and Factors as provided to EPA to support its RFS2 rulemaking, at 2 (July 30, 2009).

For these reasons, in addition to those noting the lack of consensus among the peer reviewers, the mere fact that EPA conducted *a* peer review does not support its claim that it relied on a scientifically valid methodology.

C. Congress Placed Limits On What Emissions Should Be Included In The Lifecycle Analysis.

EPA recognizes that the definition includes "'significant indirect' emissions related to the full fuel lifecycle," and that "significant indirect" emissions can include "significant emission from land use changes." 74 Fed. Reg. at 25,023. EPA, however, does not give any meaning to the terms "significant" and "fuel lifecycle," focusing on other terms in the definition, such as "full," that it claims are "expansive." *Id.* Nothing in the definition indicates, however, that it must consider indirect land use changes that occur outside the United States, particularly when such emissions are so speculative.

There is a general presumption against extraterritorial application of U.S. laws unless Congress clearly indicates its intent to apply a statute internationally. "The canon of construction which teaches that legislation of Congress, unless a contrary intent appears, is meant to apply only within the territorial jurisdiction of the United States . . . is based on the assumption that Congress is primarily concerned with domestic conditions." *Foley Bros. v. Filardo*, 336 U.S. 281, 285 (1949). One of the main reasons behind this presumption is to ensure that there is no conflict with the laws of other states. *United States v. Delgado-Garcia*, 374 F.3d 1337, 1344 (D.C. Cir. 2004). Other governments clearly have substantial interest in land use policies within their borders, particularly with respect to addressing climate change impacts of those policies. *See NRDC, Inc. v. Nuclear Regulatory Comm'n*, 647 F.2d 1345 (D.C. Cir. 1981) (upholding permit for export of nuclear materials without evaluating the health, safety, and environmental impacts within the recipient nation). An international response to the climate change issue has long been debated, and DOE and the U.S. Department of State have indicated that they are working with the international community to address the impacts of land use changes. *See DOE Actively Engaged in Investigating the Role of Biofuels in Greenhouse Gas Emissions from Indirect Land Use Change* (Mar. 2008), *available* at http://www1.eere.energy.gov/biomass/pdfs/obp_science_response_web.pdf ("DOE Response to Searchinger"). While climate change is a global issue, the role of global land use changes, when considering the weighty issues of food supply, poverty, agriculture, forestry, economic development, and many other issues addressed by regions of the world and global nations is not the responsibility of EPA under this rule, nor did Congress intend to give EPA the authority to make judgment calls regarding another country's supply of food and agricultural sector. Surely the development of its agricultural community and food supply is of great interest to the government and the people of that country.

There is no evidence that Congress intended to address international indirect land use changes through the RFS program. The Clean Air Act addresses emissions and air quality in the

United States. 42 U.S.C. § 7401(b). When Congress wanted to provide for consideration of air pollution impacts in other countries it expressly provided. *See, e.g.,* 42 U.S.C. §§ 7415 (international air pollution), 7472(a) (referring to international and national parks for designation as Class I areas), 7671b(d) (requiring projections of international and domestic controls on ozone depleting substances), 7671p (international cooperation). *See also* Clean Air Act Amendments, Pub. L. No. 101-549, § 603 (1990) (study on international methane emissions). Congress provided no indication that EPA should include indirect emissions occurring outside the United States in the definition of lifecycle GHG emissions.[41]

Moreover, the limits Congress did place on EPA's authority to assess such emissions evidences an intent not to include such attenuated and speculative emissions.

The first limitation imposed on EPA's authority was that emission be related to the *fuel* lifecycle. This limitation to the fuel lifecycle can be read to indicate that the definition was not intended to include more attenuated effects, which are not within the fuel lifecycle, but are part of the food/livestock lifecycle. Congress explained the fuel lifecycle includes: "all stages of fuel and feedstock production and distribution, from feedstock generation or extraction through the distribution and delivery and use of the finished fuel to the ultimate consumer." 42 U.S.C. § 7545(o)(1)(H) (2009). There is no mention of other effects. Congress was clearly aware of potential "secondary" impacts of the RFS, requiring a study of the impacts of the RFS on production of feed grains, livestock, food, forest products, and energy and of recommendations to address impacts on *domestic agriculture.* EISA, Pub. L. No. 110-140, § 203 (2007). This evidences Congress' concern with potential significant effects on agriculture *in the United States*, not an assumed potential loss of exports allegedly resulting in land use changes outside of the United States.

Moreover, the requirement that the emissions be "related to" imposes an element of causation. Indirect emissions should be limited to those caused by the biofuel production, but may be later in time or farther removed in distance.[42] Indirect emissions could include, for

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[41] While there are exceptions to this general presumption, such as when a substantial portion of the regulated activity or harms are incurred in the United States. *See Envt'l Def. Fund, Inc. v. Massey*, 986 F.2d 528, 532 (D.C. Cir. 1993). These exceptions do not apply here because the actions resulting in the land use change in other countries occur outside of the United States. And, although GHG emissions have global impacts, the adverse effects from the international land use changes would not occur *within the United States*. *Id.* at 531. This is contrary to direct emissions associated with fuel production where the fuel is sold and used within the United States.

[42] The use of the term "indirect" also indicates the need to show a causal connection. For example, the National Environmental Policy Act (NEPA) and the Endangered Species Act (ESA) both require consideration of "indirect" effects. NEPA regulations define "indirect effects" as those "*caused by* the action and are later in time or farther removed in distance, but are still reasonably foreseeable." 40 C.F.R. § 1508.8 (emphasis added). ESA regulations define "indirect effects" as "those that are *caused by* the proposed action and are later in time, but still are reasonably certain to occur." 50 C.F.R. § 402.2 (2007) (emphasis added). The Supreme Court has recognized that these provisions require more than a "but for" causal relationship. *Dep't of Transp. v. Public Citizen*, 541 U.S. 752, 767 (2004); *Babbitt v. Sweet Home Chapter of Communities for a Great Oregon*, 515 U.S. 687, 696 n.9 (1995). EPA has failed to show any causal connection between the indirect emissions from international indirect land use changes and U.S. biofuel production.

example, other emissions impacts that result from fuel production or use, such as removal of GHG sinks in order to grow crops for fuel production. EPA has failed to show any causal connection between the indirect emissions from international indirect land use changes and U.S. biofuel production. Numerous factors influence exports and land use decisions. One cannot simply assume a connection, especially where real world evidence belies any connection between U.S. biofuel production and land use changes outside the United States.

In fact, EPA asserts that it must consider international indirect land use changes because the "full fuel lifecycle" requires consideration of emissions that occur outside the United States. EPA, however, recognizes that "the emissions discussed above would more typically be considered *direct emissions* related to the full fuel lifecycle," claiming "there would also be no basis to cover just foreign direct emissions while excluding foreign indirect emissions." 74 Fed. Reg. at 25,024 (emphasis added). There is, however, a substantial difference to make this distinction. EPA admits that international indirect land use changes are highly uncertain and had not previously been incorporated into a lifecycle analysis. The direct emissions, on the other hand, are part of the traditional lifecycle analysis of which Congress was aware, are more easily identified, and can be traced to a particular stage of the *fuel's* lifecycle. Moreover, the goal of the RFS was to assist this country's efforts to move away from its dependence on foreign oil, so it would be nonsensical for Congress not to have anticipated direct emissions from foreign production and transportation of oil would be included in the analysis. There is no indication, however, that Congress intended EPA to attempt to address land use decisions in other countries that have an attenuated link, at best, to domestic sources of renewable fuels.

These lead to the second limitation Congress placed on EPA's authority to assess lifecycle emissions. Congress required that there be "significant" indirect emissions from "significant" land use changes. The inclusion of the term "significant" twice in this phrase indicates that Congress intended to limit EPA's authority, not expand it. It evidences that Congress sought to focus on tangible and significant GHG reductions, rather than results that are minor or difficult to ascertain. EPA made no findings that the international indirect land use changes caused by U.S. biofuel production were significant, resulting in significant emissions. As further described below, EPA, instead, assumes there will be significant emissions, ignoring the boundaries placed by Congress on the elements of a lifecycle analysis. The uncertainty and lack of evidence make it speculative that any such changes occur as a result of U.S. biofuel production much less that such changes would rise to the level of significance as to be required to be included in the lifecycle analysis.

X. EPA'S INCLUSION OF INTERNATIONAL INDIRECT LAND USE CHANGES IN ITS LIFECYCLE ANALYSIS FOR BIODIESEL IS ARBITRARY AND CAPRICIOUS.

While an agency is normally allowed deference in making scientific judgments, an agency's action is arbitrary and capricious when it:

> has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so

> implausible that it could not be ascribed to a difference in view or the product of agency expertise.

Am. Wildlands v. Kempthorne, 530 F.3d 991, 997-98 (D.C. Cir. 2008) (quoting *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983)). EPA's analysis of international indirect land use changes is arbitrary and capricious on all of these counts. As described above, it is clear that Congress did not intend for EPA to include such speculative emissions in its lifecycle analysis to disadvantage biofuels. The Searchinger analysis, upon which much of EPA's assumptions are based, has been highly criticized, is based on flawed assumptions, and is not *science.* In addition, EPA's explanation runs counter to the evidence and is "so implausible" that it is not entitled to deference. Further, EPA wholly failed to consider an important aspect of the issue.

A. EPA's Assumptions That Biofuel Production In The United States Will Lead To "Significant" Land Use Changes Do Not Accurately Reflect The Real World And, Thus, Are Arbitrary.

1. EPA assumes that indirect emissions related to international land use changes are "significant," relying on highly criticized and questionable studies.

Although EPA recognizes the "significant uncertainty" in assessing the extent of the changes, it asserts "overall certainty" in the "existence" of such changes. 74 Fed. Reg. at 25,024. This assertion is largely based on an article by Timothy Searchinger, *et al*., entitled *Use of U.S. croplands for biofuels increases GHGs through emissions from land-use change*, 319 Science 1238 (hereinafter referred to as "Searchinger Article"). *Id.* at 25,021.

The theory of international indirect land use changes is based on the following: use of crops in the United States for biofuels, causes reduced exports, leading other countries to expand their crop production, and resulting in the clearing of land that is currently unused for agricultural production. This theory is largely based on the Searchinger article, which attempts to estimate emissions from land use changes due to increased U.S. biofuel production, focusing on corn-based ethanol. The Searchinger article, however, is not a lifecycle analysis and is based on flawed assumptions and inadequate data, including: (a) high estimates of ethanol production by 2015 (double that required by the EISA); (b) fails to incorporate technological advances in the industry; (c) questionable assumptions regarding types of land converted; (d) reliance on satellite data that has misclassification problems (described further below); and (e) flawed assumptions regarding crop yields and distiller grain displacement.[43] More

[43] *See* John Kruse, *et al.*, *Life Cycle Analysis of Greenhouse Gas Emissions Associated with Starch-Based Ethanol*, at 48 (Dec. 1, 2008), *available at* http://www.ethanol.org/pdf/contentmgmt/LCFS_Study_Final_Report.pdf ("Kruse Study"); Wang and Haq Letter; Biotechnology Industry Organization, *Fact Sheet - Sustainable Production of Biofuels*, (Feb. 2008), http://bio.org/ind/biofuel/200802fact.asp?p=yes; Brooke Coleman, *More Misleading Biofuels Analysis: Searchinger and Tillman Reports Raise Serious Methodological Questions*, (Feb. 12, 2008), *available at* http://newfuelsalliance.blogspot.com/2008/02/more-misleading-biofuels-analysis.html; Dale Letter to the Science Editor, Feb. 16, 2008; DOE Response to Searchinger; John A. Mathews and Hao Tan, *Biofuels*

important, the Searchinger article is not consistent with the real world, as corn exports, the focus of the Searchinger article, have been maintained at about 2 billion bushels a year and because U.S. distiller grain exports have steadily increased. Wang and Haq Letter at 3. In fact, in 2007-2008, U.S. soybean exports increased at the same time as record soybean oil for biodiesel use. Kruse Study at 59. Further, the models relied on, including the FAPRI model used by EPA, were based on world commodity prices that were much lower than today, which may not provide reliable estimates. *Id.* The flaws of the Searchinger article have led others to conclude: "the Searchinger approach involves a high level of uncertainty, to the extent that its specific conclusion should not be regarded as safe. In attempting to quantify indirect GHG emissions from EU biofuels initiatives, the Searchinger approach does not provide a good model." Adas UK, Ltd., *Critique of Searchinger (2008) & related papers assessing indirect effects of biofuels on land-use change*, at 6 (June 12, 2008), *available at* http://www.dft.gov.uk/rfa/_db/_documents/ADAS_Seachinger_critique.pdf.

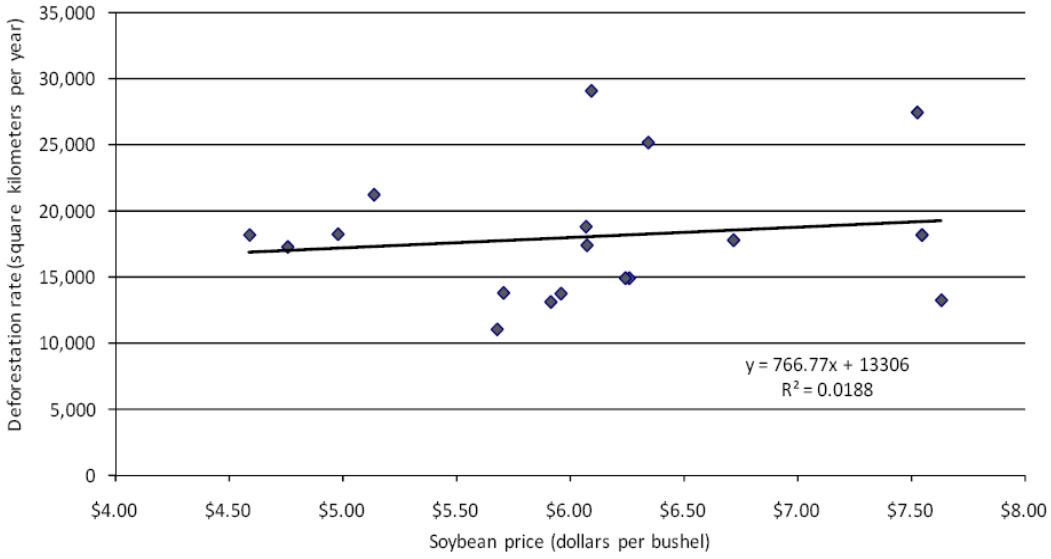
It is clear that EPA has not attempted to test whether Searchinger's claims of land use change with growth in biofuel demand are consistent with actual real land use change and rates of forest clearing over the past several years during which biofuel production has grown rapidly. EPA should determine if there is any correlation between soybean prices over a period of several years and the rate of land clearing in major tropical forests. Historically this has not been the case, and Searchinger provides no evidence to support a belief that this will change the future due to the RFS biodiesel mandate. (See Table 2.)

and indirect land use change effects: the debate continues, 3 Biofuels, Bioprod. Bioref. 305 (2009), ("Mathews & Tan Analysis").

Table 2.

No Correlation Between Soybean Price and Deforestation in Brazil

ILUC Fails This Test



There is no correlation between the price of soybeans and the deforestation rate in the Amazonian rainforest of Brazil. The solid line is a "best fit" of the data, which shows a small positive linear correlation. However, the regression coefficient (R^2) of 0.0188 indicates virtually no statistically significant correlation (a value of 1.00 is a perfect correlation). Source: United Nations Food and Agriculture Organization (deforestation data) and Index Mundi (soybean price data).

Bruce E. Dale, Michigan State University, *Life Cycle Analysis Of Biofuels & Indirect Land Use Change*, Presentation at National Biodiesel Board, June 17, 2009, at slide 5 (citing Dr. Robert Brown, *Why We are Producing Biofuels*, July 2009) (Attachment 12).

In addition, Searchinger's analysis fails to consider the mitigating effects on land use change associated with agriculture production on the approximately 1 billion acres of land that was previously used in agriculture production. Consequently, the EPA's analysis also fails to contemplate this potential impact.

There are additional flaws in relying on the Searchinger article. The Searchinger article refers to and relies on a 2006 article by Douglas Morton, *et. al.*, entitled *Cropland expansion changes deforestation dynamics in the southern Brazilian Amazon*, 103 PNAS 14637, (Sept. 26, 2006), *available at* http://www.pnas.org/content/103/39/14637.full.pdf+html ("Morton, *et al.* (2006)") (Attachment 14), as proof of deforestation in Brazil for cropland production. The methods discussed by Morton and others utilize satellite images to identify changes in forest area in Brazil. *Id.* at 14641. While utilization of satellite images may be a significant

breakthrough in technology, Morton is careful to point out the “misclassification” problems of satellite imagery from inaccurately attributing deforestation to lands that should be attributed to pasture land, or fallow agricultural cycles or single crop rotations.

Morton validates his study by comparing field observations with the land categorizations derived from a decision tree classifier that utilizes the satellite imagery data. Morton, *et al.* (2006) at 14641. His results indicate that the number of observations used to validate “forest” data and “not in production” data were 5 and 11, respectively, a very low level of observations for any statistical tests. Morton, *et al*. (2006), *Supporting Information*, Table 1, *available at* http://www.pnas.org/content/103/39/14637.full.pdf+html. Of particular concern is the amount of error associated with identifying the areas not in production as cropland areas. Of the 11 observations, 6 were identified as cropland, when in fact, they were not in production for a 54.55% error. *Id.* This level of error suggests that the model will likely overstate the amount of deforestation associated with cropland.

In referring to the Morton article, Searchinger states, “Studies have confirmed that higher soybean prices accelerate clearing of Brazilian rainforest.” Searchinger Article at 1238. However, Searchinger does not note that only one third of the cropland area expansion in Mato Grosso was attributable to deforestation by the study. He also fails to mention that Morton study estimated the relationship between land deforested for cropland and soybean prices based on only 4 years of data over the 2001 to 2004 period. Morton, *et al*. (2006), at 14641.

Finally, using the maximum estimate in the range of forest converted to cropland in the Morton study, only 14.3 percent of the estimated total area deforested in Mato Grosso, Brazil was converted to cropland over the 2001 to 2004 period. Morton attributed less than 1/3 of the total cropland expansion in Mato Grosso over the 2001-2004 period to deforestation, after adjusting for double-cropping, with the remaining 2/3 of the cropland expansion roughly split evenly between Cerrado and pastureland.

John A. Mathews and Hao Tan of Macquarie University in Australia analyzed the Searchinger paper to ask whether indirect land use change calculations are “sufficiently robust and scientifically grounded at this stage to undergird regulatory action.” Mathews & Tan Analysis at 306. The Searchinger paper utilized a similar approach as EPA, looking at a "spike" at in U.S. ethanol consumption, attempting to posit the indirect land use effects in terms of extra acres that will have to be planted in other countries in light of this "spike." Mathews and Tan first critiqued the lack of scientific methods utilized by the Searchinger paper. As Mathews and Tan noted, no margins of error were reported by Searchinger, there was no discussion of the assumptions utilized and the degree of their validity, and the analysis could not be replicated due to a lack of transparency. *Id.* at 307-308, 315. The limits of the Searchinger approach were, in part, attributed to the use of the FAPRI model. *Id.* at 309.

Mathews and Tan also questioned the focus on U.S. biofuel production as the cause of the land use changes. As with EPA's analysis, the Searchinger paper ignores the factors that influence land use decisions in other countries, as well as other government policies that influence fuel and food production including biofuel production in other countries, attributing it

to corn production in the United States for ethanol production. *Id.* at 308, 310. The Searchinger paper also fails to account for additional sources of biofuels in the United States. *Id.* at 310-11. The Searchinger paper looked at land conversion data from the 1990s, when land use changes were driven by rapid industrial growth and were subject to little or no regulatory control. *Id.* at 311-12. This is no longer the case. Significantly, Mathews and Tan found that the Searchinger paper, as with EPA's analysis, fails to properly account for increased corn yields, which *reduce the need for land use changes. Id.* at 312. As Mathews and Tan noted, "if you wished to put U.S. ethanol production in the worst possible light, assuming the worst possible set of production conditions guaranteed to give the worst possible ILUC effects, then the assumptions chosen would not be far from those actually presented (without argument or discussion of alternatives) in the Searchinger *et al.* paper." *Id.* at 316. Of the Searchinger paper, Mathews and Tan stated: "A paper that seeks to place a procedure in the worst possible light, and refrains from allowing others to check its results, is perhaps better described as ideology than as science." *Id.* Mathews and Tan concluded that basing a rulemaking on the Searchinger approach, *i.e.*, attributing land use changes based on biofuels consumed in a certain country, "is ultimately indefensible." *Id.* at 315.

EPA appears to have developed its methodology for identifying land use impacts based on the Searchinger approach. Looking at the results of this highly uncertain and speculative analysis, EPA then claims the inclusion of indirect emissions from international land use changes will significantly affect the analysis and, therefore, would be "significant indirect emissions" from "significant land use changes." But, EPA cannot rely on its impact analysis, which addresses a different question than the lifecycle analysis. Moreover, EPA's analysis is likely to have a significant margin of error, calling into question EPA's reliance on its impact analysis to quantify these indirect emissions. One cannot assume away the statutory requirement to determine whether the indirect emissions and land use changes are significant by using its regulatory impact analysis. Because inclusion of its speculative analysis significantly changes the estimated reductions, EPA asserts that the indirect emissions are "significant." 74 Fed. Reg. at 25,042.

2. GHG calculations from land use must appropriately account for improved agriculture yields and efficiencies.

U.S. agriculture has historically realized increased productivity and yields. As technology improves, it is reasonable to assume that these gains in efficiencies will continue. Increased efficiencies both domestically and around the globe will further diminish any potential land use impacts associated with biofuels production, and this must be recognized in the EPA's GHG emission calculations.

In the United States in 2008, we produced 39.6 bushels/acre on approximately 75 million acres which created 3 billion bushels of soybeans, 39.2 tons of soy protein meal, and 18.7 billion pounds of soy oil. WASDE at 474-15. In the past 25 years yields have increased from 28 to 40 bushels per acre and seed technology companies have projected yields to double from current levels by 2030.

Again, USDA is expecting record soybean production in 2009 of 3.25 billion bushels. New records for production per acre are also predicted. Farmers are expected to produce 42.3 bushels per acre, up 0.6 bushel from last month and up 2.7 bushels from 2008. *See* WASDE at 475-15. The projected increase in the soybean harvest this year over last year is 345 million bushels, which will provide additional vegetable oil feedstock to produce an additional 517 million gallons of oil. To underscore how modest the RFS2 targets are, and especially in 2009 and 2010, the biodiesel industry produced a record 690 million gallons of biodiesel in 2008, and ending stocks of soybean oil actually increased. The marketplace supports the fact there will be no land use changes. In addition, because production in 2008 was greater than that required for 2009 or 2010 under the RFS, even under EPA's proposed incremental analysis and as described above, there would be no land use changes for biodiesel and, therefore, no impacts on international land use decisions in 2009 and 2010 and, therefore no indirect emissions.

U.S. farmers will produce significantly higher volumes of feedstock in the future. In 2008, the average U.S. soybean yield was 39.6 bushels/acre. Given historic yield trends (1981 to 2008 and estimating a conservative soybean yields increase by only ½ of 1 percent per year, or 6 bushels per acre by 2022), yields can be expected to increase to approximately 49 bushels/acre by 2022. U.S. producers planted 77.5 million acres of soybeans in 2009. More than 725 million additional bushels of soybeans (an estimated 1 billion gallons of additional feedstock) would be produced in 2022 on the same 77.5 million acres compared to 2008.

New technology will add significantly to the U.S. raw material supply beyond the historic trends cited above. *See generally* Weber Report at 4. Though the feedstock used to produce U.S. biodiesel has grown more diversified over time, soybean oil has been the most utilized biodiesel feedstock to date in the United States. Based upon historical yield trends, domestic production of soybeans will continue to increase. Furthermore, a major research focus of companies such as Pioneer and Monsanto has been to create "virtual acres" through stepwise enhancements in yield technology and/or oil content. Monsanto plans to introduce new technology that can increase soybean yields 9 to 11 percent. Pioneer, a DuPont Company, is commercializing soybean varieties that increase yields by as much as 12 percent. After years of research investments by the life science companies, these technologies have reached commercialization and are set to have a meaningful impact on soybean yields in 2010. More than 90 percent of U.S. farmers currently utilize herbicide-resistant soybean varieties, demonstrating farmers' willingness and desire to adopt technology that can enable improved profits through increased yields or decreased costs. If this same 90 percent of U.S. soybean acres adopted the new yield technology, almost 70 million acres could see a 10 percent increase in yield. This equates to 275 million additional bushels of soybeans (the equivalent of more than 400 million gallons of biodiesel) without increasing acreage in the United States. Although technology will enable increased production per acre, realization of additional vegetable oil supplies will be dependent upon an expansion of oilseed processing capacity. Stated a different way, protein demand drives the soybean market and will need to increase to create an economic incentive to expand processing capacity to process additional bushels.

The same benefit can be achieved by increasing soybean oil content. Current industry genetic programs suggest 10 percent oil increases (19 percent oil content to 21 percent) are achievable within the next few years, and increasing soybean oil content by that percentage would generate approximately 120 million gallons of additional oil if adopted on 50 percent of soybean acreage. New approaches for achieving even higher oil levels in plants are being actively researched. NBB has partnered with The Donald Danforth Plant Science Center to identify novel approaches to enhance oil production in soybeans and other oilseeds. This work centers on the hypothesis that the ability to utilize available carbon limits oil production. Therefore, the Danforth Center's work will focus on engineering carbon sinks that will pull metabolites through the oil production process in plants. This is a 3-year program that was initiated in 2008.

The soybean industry will continue to play a key role in providing feedstock for the biodiesel industry for years to come. Based upon current technology available to soybean producers, if processing capacity expands it is reasonable to project the production of at least 780 million gallons of biodiesel with existing soybean oil supplies in 2012. This estimate does not take into consideration soybean oil exports, amounting to more than 300 million gallons of soybean oil in 2008.

Biodiesel production will continue to improve in efficiency. The FASOM and FAPRI models assume that biodiesel production is a mature technology and has essentially reached technical limits on feedstock conversion. Both models hold biodiesel yields constant over time.

Thus, when looking at the history of the agricultural industry in the United States and the increased efficiencies in biofuel production in the United States, the only conclusion that can be drawn is that international land use decisions are simply not impacted by the RFS2 mandates.

EPA incorrectly assumes that the use of domestic feedstocks for biodiesel production will reduce U.S. agriculture exports, and thus will require production to increase elsewhere. EPA's assumption is based on the FAPRI/CARD model, which assumes that a decrease in U.S. exports results in increased crop production internationally. But, export losses are not always made up with production. Shifts in crops and decreases in demand also play key roles. Even if FAPRI attempts to consider this possibility, 74 Fed. Reg. at 25,030, it is based on historical trends and responses to prices. Moreover, the level of exports depends on issues of demand and supply in other countries, not solely on production in the United States. For example, USDA indicated that soybean exports for the remainder of the 2009 fiscal year are expected to remain strong, reflecting crop shortfalls in Argentina and record imports by China. *See* USDA, *Outlook for U.S. Agricultural Trade, FY 2009 Exports Raised $500 Million to $96 Billion; Imports Lowered $1.5 Billion*, at 4 (May 26, 2009), *available at* http://www.fas.usda.gov/cmp/outlook/2009/May-09/AES-05-28-2009.pdf. Further, EPA recognizes the changing government policies in these other countries influence land use changes, 74 Fed. Reg. at 25,044, which are not taken into account in the FAPRI model.

Further, any increase in the price at which food commodities are traded in the world market that might be attributable to U.S. biofuels production will likely strengthen the agricultural sectors in key countries like China, India Brazil, Argentina, and other South American countries. A strengthened agricultural sector, in turn, would enable foreign governments to enforce commitments to protect forests and other valuable lands, and to work with farmers to substantially increase the productivity of existing crop lands, and to convert range lands.

EPA's incorporation of yields into the two models fails to account for these interactions, and NBB believes effectively renders increasing yields irrelevant, despite the fact that they have been key in meeting growing demand. EPA must reassess its consideration of yields in its analysis.

3. Real world evidence shows that biodiesel production has little, if any, impacts on land use changes.

EPA's assumptions regarding international land use changes associated with U.S. biodiesel production are inconsistent with historic realities. EPA assumes increased U.S. biodiesel production will lead to land conversion in South America. If this assumption were correct, Brazilian soybean acreage would have increased from 2004 through 2008, a time in which U.S. biodiesel production increased from 25 million to 690 million gallons. During this time, however, Brazilian soybean acres actually decreased by 1.5 million hectares. Clearly, this shows the inaccuracy of EPA's hypothesis and modeling. Indeed, land use changes in other countries have numerous drivers wholly unrelated to U.S. biodiesel production. EPA's analysis also does not consider global market drivers for biodiesel feedstock, such as soybeans, that have substantial influence on U.S. exports and land use changes in other countries.

Changes in land use have always occurred, and there is no evidence that biofuels are the primary driver of these changes. Even using conservative estimates, there is no empirical evidence that this will change even considering the increased use of biodiesel based on the RFS, because (a) there is existing agriculture acreage to support the production of the additional 300 million gallons of biodiesel that will be required to meet the Biomass-based Diesel volume when fully implemented in 2012 and (b) the need for soybean oil as a feedstock in the United States would have little impact on the global market.

Even Greenpeace International recognizes that biodiesel demand for soy oil is not a significant driver of Amazon deforestation. In 2006 a voluntary moratorium on trading soy harvested from newly deforested areas in the Amazon rainforest was put into place,[44] and Brazil is very careful on how its feedstocks are grown and sourced. According to Paul Adario, Director of Greenpeace's Amazon deforestation campaign, "[s]ugarcane cultivation for ethanol production is the primary risk to the Amazon. . . ."and "most of the soya grown in Brazil, including what is grown on illegal plantations, is for animal and human consumption. . . ."

[44] For a description of the moratorium, see LMC International, *Indirect Land Use: Further Comments*, at 7-8 (2009) (Attachment 15).

Nicholas Zeman, *Greenpeace: biodiesel not seen as significant driver in Amazon deforestation,* Biodiesel Magazine, posted online, May 4, 2009, *available at* http://www.biodieselmagazine .com/article.jsp?article_id=3437. (Attachment 16).[45] Brazil's environmental minister has stated that "Soy is no longer a significant factor in the Amazon's deforestation." CNBC, *Brazil extends Amazon soy moratorium*, by the Associated Press (July 28, 2009), *available at* http://www.cnbc.com/id/32190588.

[45] The article follows:

In July 2006, after Greenpeace International authored a report claiming that soya farming was the leading driver of Amazon deforestation, ADM, Cargill and other members of Brazil's vegetable oil and grain exporting industries "agreed to a voluntary moratorium on trading soy harvested from newly deforested areas in the Amazon biome for a period of two years," said Bunge Ltd. in a company statement. "The intent was to relieve pressure on the Amazon biome, so work could be undertaken by government, industry, farmers and environmental groups to ensure its long-term protection." The moratorium is scheduled to end in July after the original agreement was extended last year.

"We hope this moratorium is extended through 2010," said Paulo Adario, director of Greenpeace's Amazon deforestation campaign. "But we haven't begun any serious negotiations as of yet." The sustainable production of biodiesel has been a major focus of the global industry in recent months, as consumer opinion has indicated, especially in Europe – so much so that EU nations do not want to buy biofuels that put pressure on food crops or are made in ways that damage indigenous ecosystems.

"Biodiesel demand for soy oil is not seen as a significant driver of Amazon deforestation" Adario said. "Most of the soya grown in Brazil, including what is grown on illegal plantations, is for animal and human consumption; and right now, the Brazilian government is investing in other feedstocks for the development of its biofuels program."

The South American country, which is looking to grow its export power in the biofuels market, is being very careful about how its feedstocks are grown and sourced. "Sugarcane cultivation for ethanol production is the primary risk to the Amazon right now," Adario told Biodiesel Magazine. "But the Brazilian government is taking steps to fight this because they know that that if the ethanol or biodiesel produced here is found to be supported by land that is responsible for rain forest destruction, the world market is going to say 'no, no, no.'"

While Greenpeace says the moratorium has had a significant impact and soy cultivation is no longer the leading driver of Amazon deforestation, there is still much work to be done. "There is no certification for soy in Brazil and very little traceability," Adario said. "So the question is, 'Are the traders ready to totally exclude the farmers who grow soy illegally from the market?'"

Although the domestic feedstock situation is thin at times, U.S. biodiesel producers are reportedly not looking to South America to source needed raw materials. "We rarely import anything, in terms of agricultural commodities, from South America," said Darrel Good, University of Illinois extension marketing specialist. "We do import some palm oil at times, but that is mostly as a food ingredient."

While soybean prices have been strong in early 2009, partly related to uncertainty over South American soybean production prospects, Bill George of the U.S. Department of Agriculture's Foreign Agriculture Service said limiting expansion of soya on illegal acres is insignificant compared to other factors. "Drought, lack of access to financing, and a decline in yields are the major factors for the Brazilian soybean industry," he told Biodiesel Magazine. "So I would see a decline of illegal soy acres as a drop in the bucket in regard to the overall scenario."

Greenpeace released a report on May 31, 2009 detailing a three-year investigation on the rain forest, which concludes the biggest threat to the 80 percent of the original forest that still stands is cattle ranching. "Where loggers have made inroads to the edge of the forest in states of Para and the Mato Grosso, [cattle] farmers have followed." According to Greenpeace, around 80 percent of the area deforested in Brazil is now cattle pasture. David Adam, *Amazon rainforests pay the price as demand for beef soars,* guardian.co.uk, May 31, 2009, *available at* http://www.guardian.co.uk/environment/2009/may/31/cattle-trade-brazil-greenpeace-amazon-deforestation (Attachment 17). The report identified logging, cattle ranching and the increased construction of dams and roads and shifting patterns of farming for local people, including soy farming that is used to feed people and cattle and mining (for diamonds, bauxite, manganese, iron, copper, lead and gold). The factors are interlinked and 80 percent of the cleared land is now cattle ranching, where the biggest exports markets for the beef are Europe, the Middle East and Russia. Friends of the Earth Brazil estimates the cattle farming in Brazil has been responsible for 9bn-12bn tonnes of CO_2 emissions over the last 10 years. Secondly, infrastructure projects like hydroelectric dams threaten the forests due to large areas being flooded. These points are important to establish the cause of deforestation in Brazil, which is the direct opposite to the conclusions established by the new EPA modeling. Deforestation may be happening, and it may happen in the future, but it is unrelated to the U.S. biodiesel program, which has yet to begin. After the RFS2 begins, the soy production in Brazil will be used for the protein content to feed people and animals, just as it is today. Greenpeace has stated that any soy production where the oil is used for biodiesel is carefully managed by the Brazilian government because they know the global market for biofuels coming from the rainforest will not be accepted. *See* Nicholas Zeman, *Greenpeace: biodiesel not seen as significant driver in Amazon deforestation,* Biodiesel Magazine, posted online, May 4, 2009, *available at* http://www.biodieselmagazine.com/article.jsp?article_id=3437 (Attachment 16). Secondly, the EPA modeling allocates all land use changes in Brazil and other countries to the U.S. biofuels program, which even Greenpeace and Friends of the Earth would not accept as accurate.

We note that EPA has modeled an increase in livestock acres in forested regions of South America and attributed emission associated with that land use decision to biofuel production in the United States. EPA has underestimated the intensification of animal agriculture and overestimated the acreage required in the future. We also protest that the U.S. biodiesel industry should be held accountable for livestock agriculture in South America. The tenuous link EPA has made represents third and fourth order indirect effects that violate the boundaries of the fuel lifecycle.

a. The market for soybeans and decisions regarding production of soybeans is not driven by U.S. biodiesel production.

Inclusion of an analysis of U.S. biodiesel impacts on international indirect land use changes lacks understanding of the production of soybean. Crop rotations in which soybeans are a part is of particular importance. Soybeans provide necessary chemical and physical inputs to the soil base, primarily following a feed grain such as corn or grain sorghum. EPA does not explain how it addresses crop rotation in its analysis of international indirect land use changes.

In addition, soybean oil does not drive production of soybeans. Soybeans are grown primarily for their meal as protein. Soybeans are crushed for their valuable protein meal, which constitutes 80 percent of every bean. The demand for protein meal drives planting decisions and results in an oversupply of the vegetable oil. The oil is essentially a by-product. Further, while vegetable oil use *increased by* 18.3 million tons from 2003 to 2006, the use of vegetable oils for biodiesel was estimated at only 5 million tons. *See* European Association for Bioindustry, *EuropaBio Fact Sheet: Biofuels and land use*, at 3 (Mar. 2008), *available at* http://www.europabio.org/Biofuels/PressBrief/land_use_March08.pdf. Indeed, EPA's 2022 business as usual case produces 19 percent more soybeans than were produced in 2005, but there is no information regarding what the increased production is used for; "The domestic demand for soybean oil (and meal) has not been increasing at the same rate as production in the recent past … [s]ince 1989 production is up about 50% but domestic oil demand is up only about 30%." O'Connor ILUC Report at 12. EPA should analyze and accurately reflect the market for soybean or soybean oils.

b. Assumptions regarding U.S. biodiesel impacts on Brazilian land use are not supported by real world experience.

As a general principle, the EPA assumes that increased U.S. biodiesel production will lead to land conversion in South America. If this basic assumption is correct, Brazilian soybean acreage would have increased from 2004 through 2008 -- a time period that saw U.S. biodiesel production increase from 25 million gallons to 690 million gallons. LMC International, *Indirect Land Use Analysis: The Impacts of a Rise in U.S. Biodiesel Demand*, at 4 (2009) (Attachment 18) ("James Fry, LMC Int'l ILUC Analysis").

In fact, acreage in Brazil dedicated to soybean cultivation actually *decreased* from 2004 through 2008. In 2004, soybean production in Brazil covered 22.917 million hectares. In 2008, soybean production accounted for 21.400 million hectares -- a *decrease* of 1.5 million hectares. As U.S. biodiesel production increased by 665 million gallons, land dedicated to soybean cultivation in Brazil decreased by 1.5 million hectares -- a real world outcome that casts significant doubt on EPA's preliminary assumptions. *Id.*

The Proposed Rule's inability to accurately backcast recent, concrete experience also clearly highlights that there are factors unrelated to U.S. biodiesel production, such as logging, cattle ranching, and subsistence farming that are actually driving land use decisions in South America.

Evidence indicates that soybean production is not a driver for deforestation in Brazil. While U.S. biodiesel production has increased over the previous five years, deforestation in Brazil has declined. Figures from Brazil's National Institute of Space Research (INPE), show that deforestation fell from almost 10,600 square miles in 2004 to just over 4,600 square miles in 2008. In addition, a study carried out by the Soybean Work Group (GTS) in early 2009 found that since July 2006, only 2 percent of deforested area had been devoted to soybean cultivation. The principle uses were for cattle ranching and timber production. *Id.* at 4

It is not surprising that very little deforested area is used for soybean cultivation since the hot and humid climate of the Amazonas is less than ideal for soybean cultivation. While in recent years new soybean cultivars have been developed that are better adapted to the soil and climate of this region and the optimal soybean growing areas of Brazil such as in Mato Grosso. Any pressure to increase soybean production is likely to result in pressure to expand soybeans in higher yielding areas like the Mato Grosso. rather than in the Amazonas. Moreover, there still exists considerable scope for expanding soybean cultivation into pasture land. *Id.* at 4.

Further, other means exist to allow expansion of soybean cultivation into pastureland that would not have the GHG impacts identified by EPA. While we disagree with EPA's attribution of land clearing for livestock areas to U.S. biofuels, we note that the land area needed for livestock is significantly less if EPA accurately accounts for livestock intensification. *Id.* at 3. As described in the report by LMC International, while cattle densities in Brazil have increased steadily, they are still very low by international standards. *Id.* at 4-5. Increasing Brazilian cattle stocking densities could free up additional land for soybean production. There are also synergies between cattle production and soybean production. Soybeans are grown in rotation with second-crop corn (the *safrinha*) in Brazil, and this may be used as feed on feedlots. In addition, the meal from soybean oil production can also be fed to animals. *Id.*

Assuming biodiesel yields of 65 gallons per acre, the production of 1.1 million metric tons of soy oil would require less than five million acres of land. *Id.* at 1. To put this into perspective, total U.S. farmland was estimated at 922 million acres in 2007. ABIOVE, the vegetable oil producers' association, estimates that by 2020, cattle per hectare will rise from 1.0 to 1.4. Even allowing for 1.1 percent annual growth in cattle numbers, this implies that area needed for cattle will drop from 172 to 139 million hectares, freeing up 33 million hectares (82 million acres) of pasture land for agricultural use. This is considerably more than the five million acres (2 million hectares) we estimate would be needed if the RFS2 were met solely with soy based biodiesel. Thus there is considerable scope to increase cattle stocking densities further and release land for soybean farming. *Id.* at 5.

c. The demand for oils for biodiesel production in the United States will not result in significant indirect land use changes internationally.

With biodiesel production in 2008 at 690 million gallons, output would need to rise by just 310 million gallons to meet the 1.0 billion gallon target under the RFS. To put this into context, global vegetable oil production from the major oils in 2008 was 107.2 million metric tons. Under the worst case scenario, **if this additional volume were met solely using soybean oil, it would require just 1.1 million metric tons of oil, which is a negligible volume globally**. James Fry, LMC Int'l ILUC Analysis at 1. LMC International conducted an analysis of the impact of U.S. biodiesel demand on global soybean prices and output, finding little to no impact on global prices or output. To be conservative, LMC analyzed demand growth 5 times that which could be caused by the RFS and still found very little impact. *Id.* at 12.

Again, USDA is expecting record soybean production in 2009 of 3.25 billion bushels. New records for production per acre are also predicted. Farmers are expected to produce 42.3 bushels per acre, up 0.6 bushel from last month and up 2.7 bushels from 2008. *See* WASDE at 474-15. The projected increase in the soybean harvest this year over last year is 345 million bushels, which will provide additional vegetable oil feedstock to produce an additional 517 million gallons of oil. The domestic feedstock available to be used for biodiesel in 2009 (517 million gallons) added the volume produced in 2008 (690 million gallons) already exceeds the entire 1.0 billion gallon requirement in 2022 by more than 200 million gallons. The reality of the marketplace supports the fact there will be no increased land use changes between now and 2022 due to Biomass-based Diesel component of the RFS2. In addition, because production in 2008 was greater than that required for 2009 or 2010 under the RFS, even under EPA's proposed incremental analysis and as described above, there would be no land use changes for biodiesel and, therefore, no impacts on international land use decisions in 2009 and 2010 and, therefore no indirect emissions.

Indeed, the estimates by LMC International also highlight the fact that the U.S. biodiesel industry has continuously expanded and diversified the feedstocks used to produce biodiesel and will not solely rely on soybean oil in the future. In mid-2008, as well as in early-2009, soybean biodiesel became very expensive in relation to fossil diesel, and yet the processing margin on soy methyl ester production was negative in much of early 2008 and came under pressure again in early 2009. As a result, on simple financial grounds, biodiesel producers and users switched on a large scale to non-soy-based biodiesel, notably from animal fats and yellow grease. The evidence of the behavior of the U.S. biodiesel market is very clearly that upward pressure on soybean oil prices in response to higher biodiesel demand leads rapidly to a shift towards the use of cheaper oils and fats, typically made from animal fats or recycled cooking oil. As a result, in several recent months, less than half of U.S. biodiesel output has been produced from soybean oil. *See generally* James Fry, LMC Int'l ILUC Analysis at 17. EPA's failure to account for additional feedstocks results in a skewed overestimation of international indirect land use changes. Flexibility to use the available feedstocks is important. By excluding any particular feedstock, EPA causes market reaction to remaining feedstocks. This could have numerous unintended consequences beyond the very negative impact it has to the biodiesel industry.

B. EPA's Approach to Addressing Indirect Emissions from International Land Use Changes is Arbitrary.

1. EPA's focus on two scenarios is inappropriate and substantially overestimates the potential impacts of biofuel production in the United States on land use changes outside the United States.

EPA's analysis of international indirect land use changes is based on an analysis of two future scenarios to estimate the incremental increase of biodiesel in 2022 due to RFS2 and attributes those land use impacts for that increase to all biodiesel gallons. This approach substantially overestimates the GHG emissions from existing production and devalues the

importance of crop yields and other factors that have significant influence over international indirect land use changes.

Scenarios modeled by EPA may substantially overestimate the indirect effects on international land use by treating the comparison between the base case and the EISA mandate case as though there were a sudden increase of renewable fuels in 2022, shocking the system and disrupting the equilibrium that would exist under the base case. EPA decided to determine the overall aggregate impacts across sections of the economy in response to a given volume change in the amount of volume produced, and then normalize those impacts for each gallon of fuel (or Btu) by dividing total impacts over the given volume change. DRIA at 296. In other words, EPA decided to look at the emissions from the incremental volumes attributable to the EISA, and then to develop an incremental rate of emissions. This approach reflects only the marginal impacts with respect to the additional renewable fuel, essentially ignoring the fact that existing production will have no land use change. This approach ignores the fact that no new land is needed to provide the existing biodiesel production. Treating the indirect land use effects for all biodiesel production as if all of the biodiesel came from a new facility occurring in 2022 is unfair and irrational.

Further, such a sudden disruption could well have effects that would simply not exist where there is a gradual movement, and where there is time for adjustment. In looking at an incremental change, EPA's approach does not properly incorporate increasing crop yields, which have allowed the agricultural industry to keep up with demand, and improved efficiencies in biodiesel production. As described above, crop yields and improved efficiencies minimizes the need for new lands. Agricultural production is constantly changing with new developments in seeds, yields, management practices, and market demands can also change based on population changes and eating habits. O'Connor Direct Emissions Report at 4. Under EPA's approach, however, the only role for agricultural productivity is the quantity of land required to meet the extra demand in 2022; "Improvements in agricultural productivity between 2005 and 2022 are essentially ignored (or credited to exports)." O'Connor ILUC Report at 13.

This focus on a "sudden" change in 2022 for soybean also penalizes the biodiesel industry by not fully considering new fats and oils technology that can increase the contribution biodiesel will make to the Biomass-based Diesel category in RFS2. The Proposed Rule only considers soybean oil, vegetable oil from ethanol plants, and rendered fats and waste greases in its analysis. Lipid sources such as camelina, winter canola, and algae are not factored into the feedstock supply. In addition, higher yielding oilseed technology has not been fully incorporated. It has been argued by some that yield enhancements will be made regardless of whether or not vegetable oils are allowed under RFS2. However, common sense business considerations dictate that technology companies prefer to invest in growth markets. Implementation of a workable RFS2 Program will continue to support investment in new technology. Regardless, whether or not additional vegetable oil supplies are factored into the EPA reference case or the EPA control case, the result should be the same. (See Weber Report at 10 and Table 3 below).

Table 3. Estimated Feedstock Supplies for the Production of Biodiesel in 2012

Feedstock Source	***million gallons***
Soybean Oil	780
Animal Fats and Yellow Grease	410
Expansion of Camelina Acreage	116
Expansion of Canola Acreage	100
Corn Oil from Ethanol Plants	400
Total near-term sources (2012)	**1,806**

The Proposed Rule states that "the impact of any land-use change tends to be magnified with soybean biodiesel." 74 Fed. Reg. at 25,046. The statement is justified by asserting that soybeans have a low gallon-per-acre yield compared to corn ethanol. This statement is simply false. For this to be true, soybean oil used for biodiesel must require additional soybeans to be grown somewhere else in the world to replace the oil used for biodiesel. Everywhere in the world, soybeans are grown primarily for the demand for their 80 percent protein meal. By-products do not drive supply responses and soybean oil for biodiesel does not drive planting decisions for farmers. If it did, then farmers would plant crops, other than soybeans, that produce more oil per acre. This economic reality invalidates any link between use of soybean oil for biodiesel and magnified land use change impact. We strongly urge EPA to correct this statement in its final rule.

EPA's reliance on the incremental change in 2022 does not take into account other factors that influence land use changes, attributing the entire change to the RFS volumes. Other market factors (such as urbanization, world population growth and dietary changes, timber and hardwood prices, *etc.*) also impact and drive land use change decisions. Yet, the models it utilizes do not adequately consider these other drivers. Instead, EPA claims by focusing on the two scenarios, it is able to isolate the effects of the RFS. However, even EPA's peer reviewers indicated, that these models do not adequately address these interactions. Model Linkage Report at 5, B-2 to B-3 (Comments of Dr. Banse), E-3 (Comments of Dr. Wang).

2. EPA's use of satellite data from 2001-2004 is inappropriate.

EPA's reliance on Winrock satellite data from the 2001-2004 timeframe is arbitrary. The EPA analysis uses land converted to cropland from 2001-2004 and extrapolates that into the future. It does not, and cannot, provide a causal link. *See generally* O'Connor ILUC Report at 16-20, 25-26. Indeed, since there was very little U.S. soy biodiesel produced in this period, it is unclear how it can be justified to attribute future land conversion to soy biodiesel based on a pattern of changes in 2001-2004.

The MODIS land cover classifications used by Winrock to determine land use types to be converted to cropland for bio-fuels contain errors which are documented by the MODIS land cover team (http://modis-land.gsfc.nasa.gov/landcover.htm). These errors, associated with the coarse resolution of the dataset among other variables, are estimated on a global basis to be greater than 20 percent for cropland and almost 40 percent for the cropland/natural vegetation mix class. Using Brazil as an example, the combined errors for forest and cropland in the MODIS datasets is over four times greater than the total estimated cropland. These errors, when looking at total global hectares, may be greater than 1.8 billion for cropland when combining errors for the two change years assessed by EPA of 2001 and 2004. The errors are greater than census data for total hectares in cropland from the United Nations Food and Agriculture Organization (FAO) and USDA Foreign Agricultural Service (FAS) Census data for 2005, which have total cropland acres at 1.7 billion and 1.36 billion respectively. The 2005 MODIS land cover dataset estimates total cropland at over 4 billion hectare, over twice that of FAO and FAS.

Trends in the MODIS land cover datasets actually show global hectares in cropland and forest both increasing from 2001 to 2004, and total hectares converted from cropland to natural vegetation are often commensurate with or greater than hectares being converted from these classes to cropland when comparing different years. If forested hectares are actually increasing from 2001 to 2004 according to the MODIS land cover data and as many hectare are being converted to and from cropland, how can this dataset actually determine what land is going to be used for conversion to agriculture for bio-fuels? Considering the large emissions penalty associated with the conversion of forest to cropland and the large errors associated with determining forest to cropland conversion, the use of this dataset to predict conversion of forest to cropland is highly questionable.

Another caution with the use of the MODIS land cover dataset is the lack of a class for pastureland. Conversion from pasture to agricultural land requires a much lower emission penalty than forest conversion. Because this greatly affects the outcome, EPA should more carefully quantify pasture that is available for livestock intensification or conversion to cropland. Also, EPA underestimates fallow agricultural land which will go back in to production. Some land, especially in developing countries, is left fallow as part of a rotation pattern, based on many factors. With only two years of change data in EPA's analysis, this cannot be calculated. In an assessment of Brazil for instance, it was found that 4.5 percent of the land being converted to cropland in 2004 from natural vegetation classes in 2002 was actually in cropland in 2001. Ken Copenhaver, University of Illinois-Chicago, EPA Satellite Data (Sept. 2009). This does not even include the cropland/natural vegetation mosaic class or 2003 data which would each raise the percentage. Land use change emission should not be applied to land which has been in agriculture in recent years.

The calculation of the type of land being converted is based on the loss of land to crops in the recent past. This loss of forestland may not have been caused by increased demand for crops but rather after land had been deforested the lowest cost option was to plant crops rather than reforest. This lack of causation is a major concern and the calculations may not

reflect land use change patterns resulting from an increase in demand. Since loss of forestland drives the emission calculation, small changes here can create large differences in the results.

In addition, the statement that harvested wood products would not significantly impact the results is a concern. The numbers presented for the quantity of harvested wood products that could be recovered compared to the biomass present are shockingly low compared to recovery rates in North America.

EPA has ignored actual data that shows land use change, such as soy acres planted in Brazil run contrary to the economic model predictions. Consistent economic modeling should show that land owners who have a valuable stand of timber would harvest and sell that commodity rather than waste a product. One must questions any economic model that predicts land owners or business men would act counter to their economic best interests by burning timber that could be used for lumber or wood pulp. When forest products are harvested, the carbon they contain gets permanently sequestered into products such as furniture and housing rather than being burned and emitted to the atmosphere.

Based on various reports, we estimate tropical hardwoods can bring in excess of $1,500 per cubic meter on the international wholesale market. Using a conservative estimate of 40 cubic meters of timber harvested per acre, it is difficult to rationalize how a land owner would destroy a standing timber harvest worth $60,000 per hectare in order to plant a soybean crop. It is rational to believe that after a land owner decides to sell his timber, the operator may choose to put the land in crop or livestock agriculture to generate continued revenue. That sequence of events is not characterized properly in EPA's modeling. The predicted expansion of soy is an effect, not a cause of forest conversion as EPA has assumed.

3. EPA's lifecycle analysis relating to the global consequences of indirect emissions are inaccurate and must incorporate a number of factors omitted from the original analysis.

NBB questions EPA's assumptions and factors used to determine emissions associated with land use changes. The following summarizes the findings of the O'Connor ILUC Report.

EPA has relied upon questionable data and assumptions relating to international indirect land use change. The Winrock satellite data only has a 70 percent accuracy rate, this is a high error rate of 30 percent. EPA calculations attribute all forest harvesting emissions to indirect land use emissions to agriculture. Further, emissions resulting from natural deforestation, forest fires, disease and climate damage were also charged to agriculture. Yet events or land use changes that resulted in the land having more carbon was excluded from the calculations. These incorrect assumptions disproportionally penalize U.S. biodiesel producers for unrelated land use changes outside the United States.

1. EPA's assumption that trees live forever is incorrect and contrary to established IPCC guidelines. Carbon losses associated with natural disturbances and mortality should be included in the calculation. These factors have a far greater impact on GHG emissions than lost sequestration and can have a huge impact on emission calculations. Accurately accounting for natural disturbances in soy-based biodiesel's GHG emission profile would increase lifecycle emission reductions by approximately 25 percent compared to baseline petroleum. The inclusion of accurate assumptions regarding both natural disturbances and mortality could increase the reduction by approximately 55 percent compared to baseline petroleum. (O'Connor ILUC Report at 22-23, 26-28)

2. EPA's methodology assumes that 20 percent of the new land dedicated to soybean cultivation comes from Paraguay. In the absence of credible land use data for Paraguay, EPA relied upon a "world average" based on 10 countries. This is highly unreliable. For example, if land use data for Argentina was utilized, the indirect GHG emission score for soy-based biodiesel would decrease by approximately 10 percent compared to petroleum. In addition, Paraguay has nearly 2.47 million acres of summer fallow land and effective measures in place to curb deforestation. Properly accounting for this would reduce the GHG score for soy-based biodiesel by 20 percent in relation to petroleum. (O'Connor ILUC Report at 28-29)

3. EPA's international indirect land use calculations assume that 10 percent of new land comes from India. India currently has over 61 million acres of fallow land, of which approximately 60 percent is current fallow. Emissions associated with international indirect land use changes in India will be zero under any reasonable assumptions relating to increased production demand. (O'Connor ILUC Report at 29)

4. EPA inaccurately assumes that pastureland converted to cropland would be replaced by forestland converted to pastureland and 25 percent of indirect emissions are from this source. Furthermore, EPA's assumptions regarding the rate of wood harvesting is inconsistent with actual harvesting practices and other assumptions with respect to biomass inventory. Correcting these assumptions could reduce GHG emissions associated with indirect land use emissions by as much as 10 percent.

In the following table the potential impact on EPA's analysis of all of the changes that are recommended for the direct and indirect emissions for soybean biodiesel are shown (Direct Emissions are discussed in Section XIII.

Table 4. Summary of the Impact of the Impact of the Largest Issues

Scenarios (Cumulative)	Emissions[46], g CO_2/mm BTU	% Reduction from Diesel	Percentage Change
Petroleum Baseline	4,173,768		-
Soy Biodiesel EPA	3,255,109	22.0	-
Less nitrogen fixing crops	2,383,009	42.9	20.9
Glycerine co-product	1,652,196	60.4	17.5
Biodiesel Energy	1,587,696	62.0	1.6
No Pasture Replacement	1,001,019	76.0	14.0
HWP rate	850,027	79.6	3.6
Natural Disturbances	32,740	99.2	19.6

Generally, the concept of lifecycle assessment emerged in the late 1980's from competition among manufacturers attempting to persuade users about the superiority of one product choice over another. As more comparative studies were released with conflicting claims, it became evident that different approaches were being taken related to the key elements in the LCA analysis:

- boundary conditions (the "reach" or "extent" of the product system);
- data sources (actual vs. modeled); and
- definition of the functional unit.

In order to address these issues and to standardize lifecycle analysis methodologies and streamline the international marketplace, as described above, ISO has developed a series of international LCA standards and technical reports under its ISO 14000 Environmental Management series. O'Connor ILUC Report, at 2.

We describe in more detail below, based on the O'Connor ILUC Report, how EPA inexplicably deviates from these standards. Such deviations are highly questionable and inconsistent with ISO standards and therefore rendering the analysis arbitrary and capricious.

The EPA analysis in not consistent with ISO principles in a number of ways which creates a number of concerns, the first is that many of the models employed by the EPA are complex economic models which compromises the scientific approach to undertaking lifecycle analysis work. Since ISO established their standards, there has been a growing body of work that has incorporated economic approaches to help understand some of the more complex issues such as valuing co-products and trying to predict what future systems may look like. There are advantages and disadvantages to this type of analysis. These economic models tend to have

[46] 100 Year-Time Frame, 2 percent discount rate.

less transparency (another fundamental ISO principle), the economic models usually cannot be validated since they are estimates of future scenarios, and there is a far greater likelihood that two models will produce vastly different outputs. All of these points are true with the EPA body of work. O'Connor ILUC Report at 4.

Additionally, the reporting of the EPA on their methodology and findings also lacks full transparency. Many of the models used by the EPA cannot be run independently. As noted above, NBB employed a number of highly trained individuals to attempt to rerun the EPA modeling, with no success.[47]

NBB is concerned about the relative approach employed by the EPA. EPA compares the GHG emissions of petroleum fuels, nominally in the year 2005, to the difference between two future scenarios in 2022. Not only are the time periods of comparison different, but also the system boundaries are very different. This is a fundamental breach of the ISO principles O'Connor ILUC Report at 4.

All models have some basic underlying assumptions that allow them to undertake their calculations. Looking at the US EPA estimates for indirect land use emissions it is important to understand the modeling framework and the assumptions that have been made to arrive at the estimates. The EPA basically use a two step process, first estimate the quantity of new land required to meet an increase in feedstock demand (FASOM and FAPRI models), and then determine the changes in carbon resulting from this land use change (Winrock estimates). However, EPA used at least three fundamental assumptions prior to the actual modeling exercise. Unfortunately the assumptions are not explicitly stated nor are they valid. O'Connor ILUC Report at 6.

These are:

1. All agricultural systems throughout the world are operating at maximum capacity.
2. The supply and demand for all agricultural products is in balance.
3. Any future increases in supply will equal the increase in demand from existing product users.

The first assumption means that all essentially new production must require new land. The second assumption is required because the models that are being used are econometric models that require systems to be in equilibrium in order to function. The third assumption is required because the models do not have a time dimension to them, they are incapable of considering how the systems change in one year or ten years (*Id.* at 7).

[47] *See* O'Connor Direct Emissions Report, O'Connor ILUC Report, Urbanchuk Report, Dale Report. (The reports and analysis are attached.)

Furthermore, while the modeling framework employed by the EPA may be conceptually correct but the individual models that have been employed to generate the indirect emissions have serious deficiencies (See O'Connor ILUC Report at 29-32).

1. The implied assumption that new demand can only be met with increased land is not a credible assumption given divergence in agricultural productivity that is seen throughout the world.
2. The FAPRI model results indicate that a 0.052% increase in land is required to meet the biodiesel scenario. This is over a period of about 15 years and one needs to question whether the model capabilities, algorithms, and input data are capable of making such long term projections this accurately.
3. The land cover data that is used to estimate the types of land that would be converted to agricultural land has too low an accuracy to be used for the purpose that EPA has used it for. The implied assumption that there is no "supply curve" for new agricultural land is not credible. No other complex system behaves in the simplistic way that EPA suggests international land use change occurs. The assumption that the EPA has made regarding the need to replace grassland converted to crops is not based on any information that suggests that pasture systems throughout the world are operating at capacity.
4. The assumption on the wood products harvest intensity rate used by the EPA is far too low. The available data suggests that the rate should be at least 4 to 5 times higher when sustainable forest management practices are used and even higher when the land is clear cut, as it would be to prepare for crop production. The impact of the HWP becomes much more significant when reasonable harvest rate are use.
5. The EPA has not considered the fact that living forest sometimes die prematurely from natural disturbances and natural mortality within a stand. The carbon losses that have been charged to land use conversion statistically would have happened eventually. The only impact of the carbon losses is therefore when it happens. The IPCC recommends including carbon losses from disturbances in their guidance documents and there is some information on global disturbances available from the FAO. Including an allowance for this future carbon loss offsets the lost sequestration and a significant portion of the original carbon loss, depending on the time horizon considered.
6. There are enough issues identified with the calculations of the indirect emissions from land use change that significantly more effort is required by the EPA to produce a sound, science based estimate of any indirect impacts from an increase in demand for soybeans.

In the following table the impact of some of the assumptions that EPA have made in their analysis is evaluated using alternative reasonable assumptions. The lack of consideration of the

permanence of the living forests in the EPA calculations is a significant factor in determining the indirect emissions of biofuels.

Table 5. Impact of Assumptions on Biodiesel Lifecycle Emissions

Lifecycle Stage	Petroleum Diesel	Soy Biodiesel without domestic N_2O emissions and glycerine co-product credit and biodiesel processing energy	Soy Biodiesel without savanna and grassland replacement	Soy Biodiesel without savanna and grassland replacement with HWP	Soy Biodiesel without savanna and grassland replacement and including natural disturbances
	g CO_2eq/mm BTU				
Net Domestic Agriculture (without land use change)		-1,295,306	-1,295,306	-1,295,306	-1,295,306
Net International Agriculture (without land use change)		195,304	195,304	195,304	195,304
Domestic Land Use Change		-8,980	-8,980	-8,980	-8,980
International Land Use Change		2,474,074	1,887,397	1,736,405	919,118
Fuel Production	749,132	43,177	43,177	43,177	43,177
Fuel and Feedstock Transport		149,258	149,258	149,258	149,258
Tailpipe Emissions	3,424,635	30,169	30,169	30,169	30,169
Net Total Emissions:	4,173,768	1,587,696	1,001,019	850,027	32,740
% Change		-62.0	-76.0	-79.6	-99.2

NBB is extremely concerned about the indirect analysis because of the disproportionate impact it has on reducing the overall GHG emissions of biodiesel from virgin vegetable oils. We encourage EPA to decrease the GHG emissions for biodiesel based on each of the individual items we have identified.

C. A Lifecycle Analysis Must Not Include Disproportionate Treatment Of Crop-Based Biofuels.

Proponents of including international land use changes in a lifecycle analysis focus on estimated, future direct and indirect GHG emissions for biodiesel compared to direct (only) emissions for petroleum. This dramatically reduces biodiesel's GHG benefits compared to petroleum and is an obvious violation of a basic scientific principle -- that comparative analysis contains the same comparative criteria. GHG analyses should be "apples-to-apples" comparisons. It was surely the intent of Congress to compare alternative fuels on an equal basis with the fossil fuels they replace. Such comparison is a basic requirement of lifecycle analysis as applied by competent science and, as noted above, is a specific requirement of the ISO 14040 standard for lifecycle analysis.

1. EPA must consider direct land use changes associated with petroleum.

EPA provides no analysis of direct land use changes associated with petroleum exploration and production. The Proposed Rule states:

> For this proposal, our preliminary analysis suggests land use impacts of petroleum production for the fuels used in the U.S. in 2005 would not have an appreciable impact on the 2005 baseline GHG emissions assessment. However, we expect to more carefully consider potential land use impacts of petroleum-based fuel production for the final rule and invite comment and information that would support such an analysis.

74 Fed. Reg. at 25,041 n.310. The lifecycle definition applies to all fuels, including baseline diesel, and EPA should include this in the analysis.[48] "There is significant land that is disrupted during exploration, drilling, production and transport." O'Connor Direct Emissions Report at 15. *See also id.* at 28.

Direct land use changes from petroleum use include land being cleared for exploration activities and new oil production. *See* D. Elcock, Argonne National Laboratory, *Life-Cycle Thinking for the Oil and Gas Exploration and Production Industry*, at 8 (Sept. 2007), *available at* http://www.ead.anl.gov/pub/doc/LCA_final_report.pdf. For example, surface mining operations for oil sands are similar to those for coal: "[t]rees are cleared; surface overburden is removed, and oil sands are mined and transported to crushers, where they are reduced to small sizes." *Id.* at 70-71 (Sept. 2007). "In over 40 years of oil sands mining operations not a single hectare of land has been certified as reclaimed by the Government of Alberta. Nonetheless, 3,000 km2 of boreal forest has been leased for oil sands mining." The Pembina Institute/WWF-Canada, *Undermining The Environment: The Oil Sands Report Card*, at 3 (Jan. 2008), *available at* http://pubs.pembina.org/reports/OS-Undermining-Final.pdf. Lands surrounding current oil sands operations are also at risk from acidifying emissions. *Id.* "To mine the bitumen in the oil sands, rivers must be diverted, wetlands drained and all vegetation and

[48] Such analysis should be provided to the public for review and comment prior to issuing the final rule.

non-oil-bearing overburden removed." *Id.* at 7. "[T]he exploitation of oil shale deposits in the United States may be poised to follow tar sand development in Canada." Environmental Integrity Project, *Tar Sands: Feeding U.S. Refinery Expansions with Dirty Fuel*, at 2 (June 2008), *available at* http://www.environmentalintegrity.org/pub513.cfm ("Environmental Integrity Project Report"). *See also* National Geographic, *The Canadian Oil Boom* (Oct. 2009 Issue), *available at* http://ngm.nationalgeographic.com/2009/03/canadian-oil-sands/kunzig-text/8.

As a further example, a pipeline into the United States from the Alberta tar sands is estimated to have substantial land use impacts, including permanent impacts to forested lands. Final Environmental Impact Statement, Alberta Clipper Project, at ES-12 (June 2009) *available at* http://www.albertaclipper.state.gov/clientsite/clipper.nsf?Open. "Construction of the proposed Project would affect the following land use categories: forested lands (1,254.5 acres), agricultural lands (2,528.8 acres), developed lands (617.2 acres), open lands (655.4 acres), and wetland/open water (1,346.2 acres). Total acres that would be affected by the proposed Project are 6,402.1 acres." *Id.*

Other oil and gas operations also can have substantial direct land use impacts, depending on their location, which increasingly is in sensitive and forested areas. Oil and gas operations often contribute to local processes of deforestation through the construction of roads, pipelines, and oil platforms. Typically, the oil company cuts roads through the forest in order to carry out operations, which are then "followed by transient settlers who colonize and damage the surrounding forest through slash-and-burn agriculture, the introduction of domestic animals, hunting, the collection of fuelwood, and often the introduction of foreign disease to local forest dwellers." Mongabay.com, *Oil Extraction: The Impact Oil Production in the Rainforest*, *available at* http://rainforests.mongabay.com/ 0806.htm ("Mongabay.com Article"). *See also* Matt Finer, *et al.*, *Oil and Gas Projects in the Western Amazon: Threats to Wilderness, Biodiversity, and Indigenous Peoples*, 3 PLos One 1, 6 (Aug. 2008) ("Finer, *et al.* (2008)"), *available at* http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0002932 ("Roads are one of the strongest correlates of Amazonian deforestation").

Preliminary work on land use impacts of crude oil production has been carried out for California crude oil and some Alberta oil sands projects. *See* O'Connor Direct Emissions Report at 15-16. These initial estimates are low, but total direct land use change emissions could approach 20,000 g CO_2eq/mm BTU for some oil production systems -- 20 percent of other direct GHG emissions that are calculated for petroleum fuels. *Id.* at 16. Land emissions from oil production are not trivial and should have been analyzed by EPA.[49]

[49] *See also* Life Cycle Associates, LLC, *Assessment of Direct and Indirect GHG Emissions Associated with Petroleum Fuels*, at 56-61 (Feb. 2009), *available at* http://www.newfuelsalliance.org/NFA_PImpacts_v35.pdf ("Life Cycle Associates Report"). Although this report would appear to imply that land use changes are "indirect" effects, NBB believes these would be considered direct emissions under EPA's limited definition in the Proposed Rule.

2. EPA must consider indirect emissions of baseline gasoline, and adequately explain why it deems them not to be "significant."

Although EPA assumed significant indirect effects for renewable fuels, it apparently found no such indirect effects for petroleum:[50]

> We did not include indirect land use impacts in assessing the lifecycle GHG performance of the 2005 baseline fuel pool as we believe these would insignificantly impact the average performance assessment of the baseline. Additionally, consistent with our assessment of energy security impacts, we did not include as an indirect GHG impact the potential impact of maintaining a military presence.

74 Fed. Reg. at 25,040. EPA has not provided guidelines for determining what is "significant" or "insignificant." EPA's failure to consider these impacts or to provide any support for these claims renders its baseline analysis arbitrary. *Am. Wildlands v. Kempthorne*, 530 F.3d 991, 997-98 (D.C. Cir. 2008).

Further, EPA's determination with respect to indirect effects associated with petroleum is inconsistent with its decision to rely on speculative and uncertain analysis for international indirect land use changes for biodiesel. EPA states: "Maintaining a U.S. military presence to help secure stable oil supply from potentially vulnerable regions of the world was excluded from this analysis because its attribution to particular missions or activities is difficult." 74 Fed. Reg. at 25,092. EPA's decision not to include such emissions in its analysis of petroleum, but to include an even more difficult analysis for renewable fuels, further indicates an unfair and arbitrary treatment of crop-based fuels in its lifecycle analysis.

In addition, EPA should include indirect emission from petroleum, including emissions from residual oil and petroleum coke. These omissions skew the overall results by as much as 5 percent. Lifecycle Associates Report at 45. These byproducts of petroleum refining have significant GHG emissions. Because the availability and low cost of these products results for petroleum production, offsetting petroleum volumes with biofuels will reduce the availability and increase the cost of residual oils and petroleum coke. This is in indirect lifecycle benefit that should be included in EPA's analysis of biofuels. EPA has expanded the boundaries of their life cycle analysis beyond the definition in the statute and beyond a reasonable approach to measuring costs and benefits of biofuel use. EPA can be certain that Congress intended biofuels and petroleum to be measured in a consistent way, as would be the primary tenant of lifecycle analysis.

[50] EPA provides no explanation of what it deems to be "significant."

XI. WHILE NBB SUPPORTS EPA'S PROPOSAL TO USE A 100-YEAR TIME FRAME, EPA SHOULD NOT USE A DISCOUNT RATE.

A. EPA should use a 100-year time frame for its lifecycle analysis.

The GHG emissions from biodiesel derived from virgin vegetable oils should be depreciated over 100 years, as EPA has proposed (or an even longer timeframe commensurate with the timeframe it takes to sequester the carbon in fossil fuels that biodiesel displaces). The 100-year time frame is consistent with other EPA and international analysis of climate change impacts. *See* EPA, *Inventory of U.S. Greenhouse Gas Emissions Sinks: 1990-2007*, at ES-3, EPA 430-R-09-004, (Apr. 15, 2009), *available at* http://www.epa.gov/climatechange/emissions/downloads09/InventoryUSGhG1990-2007.pdf. In the Proposed Rule, EPA is also proposing to utilize the 100-year global warming potentials for the GHG emissions. 74 Fed. Reg. at 25,038. As noted by one of EPA's peer reviewers, "climate scientist and thinkers have generally settled on a 100-year impact time frame, which is consistent with IPCC's GWP 100-year impact time frame." ICF International, *Methods and Approaches to Account for Lifecycle Greenhouse Gas Emissions from Biofuels Production Over Time, Peer Review Report*, at 8 (July 31, 2009). Indeed, 100 years is a modest scope of time when you consider that the GHGs that are being released by the burning of fossil fuels took the Earth millions of years to capture and sequester.[51]

The 30-year time frame (or a time frame shorter than 100 years) is based on a notion that it is uncertain whether biofuel production will still be here in 30 years. 74 Fed. Reg. at 25,035. But, the time frame really only impacts the land use component of EPA's analysis, and the production time frame for a particular facility or a particular renewable fuel is irrelevant to that analysis. EPA is looking at land shifts to agricultural production, not just to biofuel feedstock production. Looking solely at the land use component, 100 years is an appropriate time frame, as historical data indicate that land converted to agricultural production tends to continue in that purpose for at least a century.[52]

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[51] The impacts of GHG emissions will be felt for longer than 100 years. The majority of the peer reviewers of EPA's proposed time frame agree that "a scientifically justifiable impact time frame should be selected *based on estimated climate impacts.*" ICF International, Methods and Approaches to Account for Lifecycle Greenhouse Gas Emissions from Biofuels Production Over Time, Peer Review Report, at 8 (July 31, 2009) (emphasis added). These include Dr. Richards from Indiana University, Dr. Marshall from the World Resources Institute, and Mr. Heimlich from Agricultural Conservation Economics. (It should be noted Mr. Heimlich's primary contact for one of his identified clients is Timothy Searchinger.)

[52] A survey of farms in York County, Pennsylvania found the average length of time for a farm to have been kept in the family was 61 years. *See* Penn State Cooperative Extension and the York County Agribusiness Council, *The Future of Agriculture in York County*, at 2 (Sept. 2004), *available at* http://york.extension.psu.edu/agriculture/FOAExecutiveSummary.pdf. Twenty-six percent were in the same family for 100 years or more, including two farms that had been in the family for over 200 years. *Id.* States also have recognized 100-year old and even 150-year old family farms, including, for example, Georgia, Illinois and Michigan. In Georgia, since starting in 1993, the Georgia Centennial Farms program has recognized 350 farms around the state. Georgia Department of Natural Resources, Historic Preservation Division, *Program Information & Application Form*, *available at* http://hpd.dnr.state.ga.us/content/displaycontent.asp?txtDocument=119&txtPage=1. "More than 8,300 Illinois farms have been named Centennial Farms since the program was created in 1972." Illinois

Moreover, there is no support for a 30-year production time frame based on the expected life of a renewable fuel facility. Congress sought to promote renewable fuel to address energy needs well beyond 2022, and continued advances in biofuels suggest facilities will continue to produce renewable fuel well into the future. As EPA recognized, the expectation is "that renewable fuel production will continue for a long time." 74 Fed. Reg. at 25,035. Additionally, dramatic innovation is not occurring in the vehicle and engine manufacturing industries in a way that suggests that heavy duty liquid transportation fuels will no longer be needed in as little as 30 years, or any remotely similar timeframe.

Indeed, EPA does not assert that demand for petroleum will decrease, only that it is possible that technological advances may eliminate the need for certain biofuels. The transition to new infrastructure, vehicles and the ability to produce large volumes of alternatives will be much longer than the 30 years some have proposed for a lifecycle analysis. In fact, 1979 is marked as the beginning of the renewable fuels industry in the United States. Today, 30 years later, we are still building an ethanol industry, a small advanced biofuel industry in biodiesel, and we anticipate growing dramatically the cellulosic and other advanced biofuels production platforms. A 30-year production time frame for all fuels applied across the board is too short a time-frame to compare accurately petroleum fuels that have already been in the marketplace for 100 years with advanced biofuels that have yet to reach commercialization. The price of oil remains key in supporting increased use of biofuels, and it is only through existing biofuels that additional advanced biofuels will even hope to be cost-competitive in the near future (*e.g.,* through use of existing infrastructure built to support existing biofuel production). Thus investment in existing biofuels is key, and cannot be ignored in the development of advanced biofuels.

Moreover, Congress sought to make renewable fuels competitive with oil by requiring the RFS to phase out petroleum use, not existing biofuels. There is no support to apply a shorter time frame for one type of biofuel over another. In particular, Congress expressly contemplated that biodiesel will become a long-standing and key part of the renewable fuel program. It is the only commercially viable renewable fuel available to replace diesel. Biodiesel facilities already use various feedstocks, and the potential shift to other feedstocks for biodiesel production does not require a shorter-time frame for soy-based diesel when it is likely the same infrastructure will utilize these newer feedstocks. The limits on the lands available from which to draw feedstock under the EISA renewable biomass definition would support the assertion that, an ongoing renewable fuel industry, would result in long-term sustainable agriculture on those lands. The 100-year time frame will provide a more consistent application of the lifecycle analysis for all fuels, and is a reasonable approach taking all of these factors into consideration.

When considering the time horizon for accounting GHG emissions for land use change compared to the GHG benefit of biofuel use, EPA should consider that the carbon emissions from land use change are relatively impermanent compared to the carbon emissions from

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Department of Agriculture, *Centennial & Sesquicentennial Farms*, http://www.agr.state.il.us/marketing/centfarms/. More than 6,000 farms in Michigan have been certified as centennial and sesquicentennial farms. *See* Michigan Centennial Farm Association, *available at* http://www.michigancentennialfarm.org/.

petroleum. The carbon stored in vegetation and soils moves in a natural cycle back and forth from the atmosphere due to decomposition, burning from natural forest fires, and natural ecosystem progression that can change landscapes over time. Increases in this carbon shift due to human activity (all activity, not just agriculture, and definitely not just biofuels) is dramatically overshadowed by the carbon emission that result from burning fossil fuels. Burning of fossil fuels is responsible for 80 percent of human-induced carbon emission. Unlike the natural cycle of carbon from the atmosphere to temporary storage on the surface of the earth, fossil fuels that have been sequestered deep in the earth's crust for millions of years would never be emitted without petroleum activity and other fossil fuel mining. The earth was once uninhabitable to life as we know it, due to much higher atmospheric carbon. Through a process taking millions of years, that carbon was sequestered in fossil fuels. Burning of fossil fuels threatens to entirely reverse that sequestration in a matter of a few centuries. Every day we burn fossil fuels, we release irreversible quantities of carbon into the atmosphere. The sooner we can displace the extraction and burning of carbon from deep within the Earth's crust with biofuels that provide human benefit from the natural cycle of carbon on the earth's surface, the more responsible we are being in terms of climate change mitigation.

When considering that it takes millions of year to sequester carbon in fossil fuel, one could argue just as well that it is inconsistent to measure biofuels on a time horizon of a mere 100 years, as "even the 100-year time horizon undervalues the benefits of renewable fuel." Nelson Report at 3. However, of the time frames EPA has suggested in their proposed rulemaking, the 100 year timeframe is most appropriate. Biodiesel will remain an important fuel in excess of 100 years from now. The diesel engine has been in use for over 100 years, and remained relatively unchanged until very recently. The durable, reliable, and efficient diesel engine has provided the only means of motivation for heavy equipment such as railroads, barges, and ships. These large vehicles provide the most economic (in terms of cost and energy use) transport of goods and people. Diesel engines are also necessary in truck freight, ambulances, fire trucks, school buses, and other forms of public transport, such as buses and ferries. Diesel engines are vital for emergency electrical generation for hospitals, public utilities, vital infrastructure, military operations and disaster recovery situations. Diesel engines power most of the agricultural equipment used to grow our food, fiber, and feed. This stalwart technology that has remained relatively unchanged for a century has only recently begun significant technological advancements making it cleaner and more energy efficient. These recent improvements make diesel engines cutting-edge technology based on a proven foundation of performance. That foundation of acceptance includes developing countries that are often slow to adopt expensive new technology.

Diesel engines are a perfect compliment to electric hybrids, as well as future hybrid technologies that employ new methods to store energy. While methods of storing energy, such as electric batteries are being perfected, liquid fuel will long remain the densest and most adaptable form of storing energy. Biodiesel, in particular is the densest and safest way to store energy. Its attributes of low flash point, non toxicity and biodegradability will make it a desirable fuel long into the future. Biodiesel is compatible with emerging diesel emission technology including diesel particulate filters and NOx reducing technology. In fact, biodiesel

offers combustion characteristics that can work synergistically with new, cleaner engines producing more efficient, and cleaner combustion and emissions than conventional petroleum diesel fuel. In addition to diesel engines, biodiesel can also be expected to be used long into the future in turbine engines, heating oil, and other uses. Methyl esters have many industrial uses including surfactants and biodegradable solvents.

When attempting to relate the time horizon for amortizing the emission from land use conversion to the time horizon for the use of biofuels, a paradox is reached. It is clear that biofuel produced from existing crop acres begin generating GHG benefits immediately with no negative emission from land clearing. Soybeans are planted and grown primarily for their 80 percent protein-rich meal. Because of the renewable biomass definition in EISA, new crops will be planted **only** for food and other uses. New crop acres cannot be used for biofuels, and cannot receive a GHG benefit by displacing petroleum. Therefore it is difficult to determine over what time period this emission benefit should be measured. This is yet another reason for EPA to not include indirect land use change as part of the fuel lifecycle.

B. Because Congress asked EPA to assess physical amounts not to render a valuation estimate, EPA should not use a discount rate.

EPA should eliminate the arbitrary 2 percent discount rate applied to the carbon payback of biofuel use. As EPA's analysis shows, the choice of a discount rate can have significant effects on the results of a lifecycle analysis. A discount rate, however, is a policy assessment of costs and benefits, which is inapplicable here. EPA is not being asked to "value" emissions reductions over time, but to assess what those reductions actually will be. Discounting is an economic consideration and should not be applied when attempting to assess physical emissions. A use of a discount rate in this case is unwarranted.

Failing to follow Congressional direction to assess actual emissions rather than attempting to value emissions reductions over time, EPA should follow their own published guidelines for preparing economic analyses. EPA, *Guidelines for Preparing Economic Analyses*, EPA 240-R-00-003, at 54 (Sept. 2000), *available at* http://yosemite.epa.gov/ee/epa/eed.nsf/webpages/Guidelines.html#download (EPA-HQ-OAR-2005-0161-0474). In that document, EPA states "discounting greenhouse gas emission would be a premature and problematic step in determining the cost-effectiveness of two alternative emission reduction strategies." *Id.* NBB concurs with the line of reasoning noted in EPA's Guidelines for Preparing Economic Analyses that discounting benefits is "ethically unacceptable", because it "cheapens the future effect's value or reduces its importance and is unfair to future individuals or generations whose lives or natural resources are at stake." *Id.*

A discount rate itself brings in uncertainty into the analysis. A discount rate attempts to reflect market choices today, but here we are looking at benefits that accrue well into the future, and it is not clear whether a market-based rate of time preference is appropriate. As EPA has indicated, using a discounted value may not be warranted with respect to estimating GHG emissions, because looking at emissions only is not a good proxy for damages where "the ultimate impact of a ton of greenhouse gas emitted in a given year depends on the subsequent

change in the time paths of temperature, sea level, and other variables, and on the physical effects and economic impacts accompanying these changes." *Id.* In the Proposed Rule, EPA recognizes that translating emissions into monetized values "presents significant challenges for lifecycle GHG analysis because it is difficult to translate dynamic GHG emissions into a single estimate of physical impacts, much less a single estimate of monetized impacts." 74 Fed. Reg. at 25,037. The appropriate discount rate is yet another assumption, creating uncertainty in EPA's lifecycle analysis to the detriment of biofuels. While it may be appropriate to use a discount rate to provide estimates of costs and benefits of the program, it is wholly inappropriate to use discount rates to assess physical emissions attributable to biofuels.

While the choice of a discount rate affects the outcome of a cost-benefit comparison, the RFS seeks to achieve a percentage reduction in GHG emissions compared to a petroleum baseline. The use of a discount rate arbitrarily closes the gap between biofuels and petroleum, understating both the costs of petroleum and the benefits of biofuels. Unlike petroleum, biofuel production has shown a steady trend of decreasing carbon emission and increasing carbon sequestration and payback for land conversion. Using a discount rate based on economic considerations skews the results, and is inappropriate in the context of the RFS, where Congress has sought reductions of GHG emissions through increased use of biofuels *compared to petroleum*.[53]

Simply because EPA estimates more emissions in the early years due to land use changes does not support adding this additional uncertainty and disadvantaging biofuels. "The effects of changes in GHG emissions are felt for decades to centuries given the atmospheric lifetimes of GHGs." 74 Fed. Reg. at 25,093. It goes without saying the reductions similarly then have benefits that last as long. A discount rate is based on the notion that costs and benefits are worth more to society today than in the future. Reducing GHG emissions, on the other hand, is being sought precisely to avoid the potential impacts of climate change *in the future.* EPA recognizes the concerns of intergenerational equity; that is, "benefits or damages affecting future generations merit just as much weight as impacts felt by current generations." *Id.* at 25,037. Given these long term impacts, present costs and benefits should not be given any greater or lesser weight than future ones. Further, emissions will cost more in the future and not less, so discounting them to say they are worth less in the future is incorrect.

Discounting is typically applied to costs and monetized benefits, to reflect either the alternative uses of capital or to reflect the general societal preference for benefits sooner rather than later. EPA uses a discount rate of 2 percent, asserting that it is placing a "'value'

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[53] Proponents of a discount rate will assert that failure to include a discount rate may postpone protective programs and may reduce investments, economic and otherwise, that will lead to long-term prosperity. Cass R. Sunstein and Arden Rowell, *On Discounting Regulatory Benefits: Risk, Money, and Intergenerational Equity*, 74 U. Chi. L. Rev. 171, 198-199 (2007), *available at* http://lawreview.uchicago.edu/issues/archive/v74/74_1/Sunstein.pdf. Again, the opposite would occur here. Discounting in the RFS program would result in benefiting continued use of marginal sources of petroleum, which have increased GHG emissions, and would slow down economic investment in advanced biofuels, which will have reduced GHG emissions. In both cases, discounting would have the opposite effect and, moreover, would ignore the additional benefits Congress sought to promote through the RFS, undermining Congressional intent.

[on] the reduction in GHG emissions." 74 Fed. Reg. at 25,037. Thus, instead of being applied to costs and monetized benefits, a discount rate is being applied in the RFS analysis to GHG emissions, as a surrogate for costs and benefits. But, this masks very important facts about both the costs and benefits of reducing GHG emissions.

On the cost side, discounting obscures the fact that achieving GHG reductions now is not very high, because there are a great many measures that could be adopted now that would have a negative cost -- that is, the reductions in GHG emissions would come through measures that reduce the emitter's total costs because of the fuel savings that would be achieved. Proponents of a discount rate argue that not using a discount rate would "require truly extraordinary sacrifices from the present for the sake of the (infinite) future." Sunstein and Rowell, *supra* note 53, at 176. In supporting a 100-year time frame, EPA recognizes "that climate change is a long-term environmental problem that may require GHG emissions reductions for many decades." 74 Fed. Reg. at 25,035. The steepness of the reduction that will be required by law in future years will make reductions later be more expensive than today. *See* Nelson Report at 3. Indeed, this provides support for a negative discount rate, as opposed to a positive discount rate.

On the benefit side, the use of discounting directly obscures the fact that the benefit of emission reductions has a very long tail, and that a substantial portion of the benefit is due to out-year effects. Every GHG reduction proposal calls for weighting reductions well into the future, due to the recognition that the deep cuts that will ultimately be required are not currently feasible, and due to the recognition that it is the aggregate emissions over a substantial period that matter, and not the immediate emissions in the early years. The discount rate by which to assess the benefits of emissions reductions must reflect this physical reality. This is quite different from the typical case where cost-benefit analyses have been performed in the past, where the pollutant at issue would have a relatively short life in the atmosphere and where the impacts of emission levels is immediate. In the case of CO_2, the lifetime of CO_2 in the atmosphere is much longer than 100 years, and the build-up that would affect climate occurs only slowly over time.[54]

Moreover, a higher discount rate would not accurately reflect the benefits over time of reducing GHG emissions. Only a zero discount rate gives future reductions, which reverse the impacts of emissions associated with the initial change, a value equal to that of the initial change.[55] A high discount rate gives future reductions less value, and gives greater weight to

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[54] While EPA cites one study that purports to state that some factors are "more likely to be effected by near-term GHG emissions" to support the use of a discount rate, 74 Fed. Reg. at 25,037, that study addresses short-term GHGs, such as methane, versus long-term GHGs, such as CO2. V. Ramanathan and Y. Feng, *On avoiding dangerous anthropogenic interference with the climate system: Formidable challenges ahead,* Proceedings of the National Academy of Sciences, Vol. 105, 14245-14250, cited in 74 Fed. Reg. at 25,037 n.296. However, CO2 emissions drive the analysis for fuels.

[55] EPA's same analysis can be applied to other forms of renewable energy. As with biofuels, wind, solar and energy-efficiency projects may involve larger emissions related to building the capital equipment in their first years with no emissions during operation. A higher discount rates will tend to reduce the benefits attributed to these projects as compared with fossil fuel power plants.

near term effects. 74 Fed. Reg. at 25,095. The following table illustrates the discounts given to future benefits as a result of a discount rate:

Estimated Number of Future Benefits Equal to One Present Benefit Based On Different Discount Rates

Years in the future	Discount rate			
	1%	3%	5%	10%
30	1.3	2.4	4.3	17.4
50	1.6	4.3	11.4	117.3
100	2.7	19.2	131.5	13,780.6
500	144.7	2,621,877.2	39,323,261,827	4.96×10^{20}

Source: Tyler Cowan, *Caring about the Distant Future: Why It Matters and What It Means*, 74 U. Chi. L. Rev. 5, 8 (2007), *available at* http://lawreview.uchicago.edu/issues/archive/v74/74_1/Cowen.pdf.

As this table shows, "[i]f we discount the future by 5 percent, a given outcome 500 years from now is worth more than 39 billion times less than that same outcome would be worth today." Tyler Cowan, *Caring about the Distant Future: Why It Matters and What It Means*, , 74 U. Chi. L. Rev. 5, 8 (2007). While EPA cites to "climate change literature" and "environmental and resource economics literature" as using a non-zero discount rate, these studies were not conducting a regulatory analysis at the request of Congress to assess *emissions* not costs, as is the case here. 74 Fed. Reg. at 25,037-25,038.

While NBB believes no discount rate is appropriate, there is no justification to use a discount rate greater than 2 percent. With a 7 percent discount rate, a ton not emitted 10 years from now is worth about half of what that same ton not emitted today is worth -- but the effect on the ambient level of CO_2 30 years from now will be identical and indistinguishable. By contrast, with a 1 percent discount rate, a ton not emitted 10 years from now would be worth about 90 percent of what a ton not emitted today would be worth. Discounting then improperly reduces the importance of future reductions, and a zero or much lower discount rate far better reflects the physical reality of global climate change. Already, the 2 percent discount rate combined with the 100 year lifecycle analysis provides a measurable time frame equal to a 43 year lifecycle analysis. NBB encourages the EPA to use a 100 year lifecycle analysis with no discount rate.

The time horizon and the discount factor have large impacts on the outcome of EPA's analysis if the time period is too short or the discount rate is too high. *See* 74 Fed. Reg. at 25,048 (Table VI.C.2-2 of the Proposed Rule). EPA's own analysis showed, for soybean biodiesel, the numbers ranged from a 48 percent reduction in GHG emissions compared to petroleum to a 68 percent increase in emissions, depending on the time horizon used and the discount rate. *Id.* Due to uncertainty in these assumptions, EPA should choose a longer time horizon and a discount rate of zero in order to not skew the outcome based on uncertain assumptions.

XII. EPA SHOULD ADJUST ITS ESTIMATES OF THE BASELINE LEVEL FOR BIODIESEL WITHOUT THE RFS, WHICH NBB BELIEVES ARE TOO LOW LEADING TO AN OVERESTIMATE OF POTENTIAL LAND USE IMPACTS

As noted, to estimate international land use changes, EPA's analysis looks at the incremental change in biodiesel production based on two scenarios. However, the EPA reference case, which was used to calculate the increased levels of biofuels needed to meet RFS2, underestimates biodiesel production without the RFS. In addition, the amount of vegetable oil produced domestically is greater than assumed in the Proposed Rule. In addition, multiple state policies and fleet requirements will be implemented between 2008 and 2022. These use requirements will increase the baseline volume of biodiesel that will be used regardless of the RFS2 program. Thus, these factors in the baseline have resulted in an overestimate of the potential indirect land use change associated with vegetable oil based biodiesel.

Adjusting the baseline, even under EPA's approach, there is not likely to be significant international land use changes associated with biodiesel production in the United States. EPA utilizes a 2007 Energy Information Administration (EIA) analysis ("AEO 2007"), 74 Fed. Reg. at 24,977, that underestimates U.S. biodiesel production, which reached levels of 690 million gallons in 2008 -- well above the 400 million gallons estimated for EPA's reference case. AEO 2007 uses the National Energy Modeling System (NEMS) model which was developed by the Energy Information Administration, a division of the Department of Energy.[56] *Id.* The EIA version of the NEMS model "is also extremely large and not parsimonious either in documentation or structure." Kruse RFS2 Report at 5. Although the NEMS model is not transparent, it is apparent that this analysis does not treat the ethanol and biodiesel reference case consistently -- where the biodiesel tax credit is assumed to expire while the ethanol tax credit is assumed to remain indefinitely. This undercounts biodiesel production without RFS2.

This is further detailed in the attached Kruse RFS2 Report (Attachment 10). The Kruse RFS2 Report provides an overview of the EPA analysis and provides a thorough review of the models where documentation was available.

The Kruse RFS2 Report highlights a number of issues with the baseline used by EPA, which are heavily dependent on the assumptions made regarding the extension of the blenders' credit, the crude oil price, and technology. EPA appears to have selected assumptions that result in a very low demand scenario for biodiesel. The most significant of these assumptions is the level of crude oil prices and whether the blenders' credit is extended. By using more relevant crude oil price assumptions, the improved baseline shows that U.S. biodiesel demand will exceed mandated levels in all years with the exception of 2009/10. *Based on EPA's own methodology, with U.S. biodiesel demand exceeding levels of the RFS, there is no indirect land use change as a direct result of the mandate.* Kruse RFS2 Report at 25-26.

[56] EPA modified this model and developed what they refer to as the NEMS-EPA model although no documentation is provided of the changes that they made, and it is not clear what the difference is between NEMS and NEMS-EPA. Kruse RFS2 Report at 5. Thus, we refer to the NEMS model in these comments.

As described in the Kruse RFS2 Report, the NEMS model was used to simulate two scenarios. The first scenario was called the reference case and excluded the biodiesel mandate and removed the biodiesel blenders' credit. The second scenario included the biodiesel mandate but continued to assume the biodiesel blenders' credit was removed. Of particular importance, the NEMS model produced projections of crude oil prices and biodiesel supply and demand for each of the scenarios that became the basis for assumptions used by the other models. Kruse RFS2 Report at 2-3.

As described in the Kruse RFS2 Report (at 3-4), for international land use changes, the EIA scenario results for crude oil prices and biofuels supply and demand were plugged directly into the FAPRI model. For this analysis, corn, sorghum, barley, wheat, sugar, soybeans, sunflowers, rapeseed, palm, peanuts, beef, pork, and poultry were included while rice and cotton appear to have been excluded. Curiously the biofuels portion of the FAPRI model was not utilized and the NEMS model results for biofuels were used to overwrite the FAPRI model equation results. This allowed no simultaneity between crop prices (biofuels feedstocks) and biofuels production. In an asserted attempt to isolate the impacts from the RFS2 biodiesel mandate, the FAPRI model utilized the reference case projections from the NEMS model to establish a projection to 2022 that could be used as the reference case. A scenario including the biodiesel mandate required in the EISA was then run to determine the impact on crop acreage globally.

Although, as noted above, NEMS is not transparent, certain observations may be made. What is particularly interesting are the results from the NEMS model runs. In the reference case, the EPA projects the crude oil refiners' acquisition price to range from 81 to 85 dollars per barrel through 2020. Assuming that EPA made their forecast in late 2007 or early 2008 based on the historical data comparison, clearly the crude oil price forecast was not representative of the collapse in oil prices in late 2008. What is also curious is the difference between the EPA forecast and the EIA and IHS-Global Insight forecasts contained in the Kruse RFS2 Report. While both of the Kruse forecasts benefit from having more historical data on the collapse in oil prices, both forecast project substantially higher crude oil prices long term (see figure 1 of the Kruse RFS2 Report, at 7). Crude oil prices have been very volatile since 2004 and clearly macroeconomic forecasters expect higher long term crude oil prices. Kruse RFS2 Report at 6-7. It is not clear why EPA's crude oil price forecast is so different from others, but at a minimum it highlights the need for sensitivity analysis. *Id.* at 5. This difference has significant implications for the competitiveness of the biodiesel industry. It is also unclear what assumptions were made by EPA regarding the productivity of the biodiesel sector in feedstock conversion. These assumptions are very important in determining the competitiveness of the sector. *Id.* at 6.

IHS-Global Insight also maintains a global partial equilibrium agricultural modeling system that can be used for simulation of the impact of the biodiesel mandate in the RFS2. Four alternative scenarios were considered which address the underlying sensitivity to the assumptions laid out by EPA in the FAPRI analysis. Kruse RFS2 Report at 21.

- Scenario 1: Utilizes the oil price assumptions proposed by EPA, the yields used by EPA, removes the RFS2, and removes the blenders' credit. Essentially the only difference from the EPA reference case is the updated historical data through the 2007/08 marketing year and the use of the IHS-Global Insight model.
- Scenario 2: Utilizes the oil price assumptions proposed by EPA, the yields used by EPA, removes the RFS2, but maintains the blenders' credit.
- Scenario 3: Utilizes the oil price assumption proposed by EPA, the yields from IHS-Global Insight, removes the RFS2, but maintains the blenders' credit.
- Scenario 4: Utilizes the oil price projections from IHS-Global Insight, the yields from IHS-Global Insight, removes the RFS2, but maintains the blenders' credit.

The results of EPA's analysis of the biodiesel mandate are heavily dependent on the assumptions made regarding the extension of the blenders' credit, the crude oil price, and technology. EPA appears to have selected assumptions that result in a very low demand scenario for biodiesel. The most significant of these assumptions is the level of crude oil prices and if the blenders' credit is extended. By using more relevant crude oil price assumptions, it has been shown that U.S. biodiesel demand will exceed mandated levels in all years with the exception of 2009/10. *Based on EPA's scenario approach, with U.S. biodiesel demand exceeding levels of the RFS, there is no indirect land use change as a direct result of the mandate.* Kruse RFS2 Report at 25-26.

The FAPRI model used to access the indirect land use change finds impacts from the imposition of the mandates given the EPA assumptions. However, the impacts found are within the error ranges of the acreage equations in their model in nearly all countries with the possible exception of Nigeria. This makes the impacts not statistically different from zero. In addition, the magnitude of the impacts are inflated by weak yield growth assumptions, the high price responsiveness in the key acreage equations for the countries with the greatest indirect land use impacts, the presence of lagged dependent variables in the area equation which inflate long run acreage responsiveness, and the linear extension of historical acreage responsiveness to the current period of high prices and price volatility. In combination, this makes the results of the FAPRI model for assessing indirect land use change very unreliable. Kruse RFS2 Report at 26-27. NBB believes that this would be further supported by a more detailed sensitivity analysis of these variables.

XIII. SETTING ASIDE EPA'S ANALYSIS OF INDIRECT EMISSIONS FROM INTERNATIONAL LAND USE CHANGES, EPA MUST UPDATE ITS MODELING WHICH SUBSTANTIALLY UNDERESTIMATES THE REDUCTION IN GHG EMISSIONS FROM BIODIESEL.

A. EPA's Lifecycle Analysis For Biodiesel Must be Updated.

We have found three significant omissions in EPA's methodology and when updated and corrected, the lifecycle GHG emission reductions for biodiesel will be greater than the 50 percent minimum threshold established by Congress. In fact, after the corrections and updates

are taken into consideration, then biodiesel derived from virgin vegetable oils will have a lifecycle GHG reduction performance of greater than 60 percent (including direct emissions and significant indirect emissions such as significant emissions from land use changes). These corrections should be included in EPA's analysis of the lifecycle GHG emissions of biodiesel.

1. EPA's methodology calculates N_2O emissions as it relates to soybean production based on outdated information.

Historically, the application of nitrogen fertilizer and the growth of nitrogen fixing crops results in increased N_2O emissions. However, soybean production only uses a small quantity of nitrogen so most of the N_2O emissions result from nitrogen fixation and the decomposition of crop residues. Figure 2.6-12 of the DRIA at 334, indicates that a total of about 750 kg CO_2 eq/acre of N_2O are released during soybean production. Five hundred kg CO_2 eq/acre are due to nitrogen fixing. There has been some debate in the scientific community in the last decade about the generation of N_2O from nitrogen fixing crops. This debate was resolved several years ago when the IPCC released their 2006 Guidelines for National Greenhouse Gas Inventories. EPA's methodology, however, relies on outdated data that does not incorporate the IPCC's updated nitrogen findings, and thus inaccurately attributes excess nitrogen emissions to soybean cultivation. *Using the updated IPCC data alone reduces the GHG emission score for soy-based biodiesel by more than 20 points.*[57]

As plants decompose they release carbon into the atmosphere. But, with soybeans the fundamental calculation is different than other plants, because Nitrogen is created (fixed) by the plant. In 2006, the IPCC -- which won a Nobel Prize for its work in this area -- issued revised Guidelines for National Greenhouse Gas Inventories which determined that nitrogen fixed in the soil by soybeans should not be considered GHG emissions. In Volume 4, Section 11.2, it is stated that:

> *Biological nitrogen fixation has been removed as a direct source of N2O because of the lack of evidence of significant emissions arising from the fixation process itself (Rochette and Janzen, 2005). These authors concluded that the N2O emissions induced by the growth of legume crops/forages may be estimated solely as a function of the above-ground and below-ground nitrogen inputs from crop/forage residue (the nitrogen residue from forages is only accounted for during pasture renewal). Conversely, the release of N by mineralization of soil organic matter as a result of change of land use or management is now included as an additional source. These are significant adjustments to the methodology previously described in the 1996 IPCC Guidelines.*

IPCC, *2006 IPCC Guidelines for National Greenhouse Gas Inventories, Vol. 4, Agriculture, Forestry and Other Land Use*, at 11.6 n.2 (2006), *available at* http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/4_Volume4/V4_11_Ch11_ N_2O&CO_2.pdf.

[57] For further discussion of this analysis, *see* O'Connor Direct Emissions Report at 19-20.

In simple terms, when a soybean plant is uprooted, small nodules on the roots are visible. These nodules house bacteria that fix nitrogen, making it available to the host plant. Legumes (soybeans, clovers, dry edible beans, etc.) turn atmospheric nitrogen in to usable soil nutrients and decrease emissions. The IPCC stated that N20 emissions from the nitrogen fixed by soybeans should not have negative emissions implications.

The DRIA included by EPA in the Proposed Rule, presents the technical analysis and data used to prepare the Proposed Rule. Page 338 of the DRIA includes Table 2.6-13, *Domestic Agriculture GHG Emission Changes by Scenario, 2022*, which lists the fertilizer application and Soil N_2O Emissions for soybean production. Table 2.6-13 shows an increase in CO_2 emissions by 654,440 tons and 14,730 g/MMBtu, respectively. The domestic GHG emissions reported in Table 2.6-13 of DRIA are overstated because of FASOM's incorrect treatment of nitrogen fixing crops. FASOM states that they calibrated the model to the 2001 EPA emission data, that data would have used the old IPCC guidelines and methodology rather than the most recent 2006 IPCC guidelines. Robert H. Beach , *et al.*, *Agricultural Impacts of the Energy Independence and Security Act: FASOM Results and Model Description, Final Report,* at A-52 (Oct. 2008). The accurate calculation should show a **decrease** in CO_2 emissions by -244,560 tons and -5,504 g/MMBtu, respectively, a decrease of 899,000 tons. In terms of a percentage for reducing GHG emissions the **decrease** is ***20.9 percentage points.*** Thus the DRIA overstates the N_2O emissions by a factor of three compared to that which would be calculated by the IPCC guidelines (which EPA states is methodology being followed).

Additionally, unlike the emissions estimated by the FASOM model, the international N_2O emissions have been calculated manually using the IPCC guidelines and Tier 1 default values. In this case there are no emissions calculated for nitrogen fixing crops, other than those related to fertilizer application and crop residues. This is further evidence of the error in the FASOM estimates for soybean production.

2. Credit for the glycerin co-product of biodiesel production from soybean oil should be included in the lifecycle analysis.

There is no mention of the glycerin co-product in the DRIA. While the approach used by the EPA with the FASOM and FAPRI models should deal with the agricultural co-products as part of the new equilibrium, the models are not capable of automatically compensating for non-agricultural co-products and these would have to be dealt with outside of the models. EPA did not account for glycerin as a co-product of biodiesel production. *When the emissions value for glycerin is calculated and included in the analysis, it decreases EPA's emissions analysis for biodiesel by at least 15 percent.*

The biodiesel process produces one pound of glycerin for every ten pounds of biodiesel produced. This means that 0.74 pounds are produced for every gallon of biodiesel or 6.2 pounds per mm BTU of biodiesel. GREET calculates the GHG emissions associated with the

materials that are embedded in the glycerin. These emissions are 2,735 g CO_2eq/pound of glycerin. This amounts to 16,957 g CO_2eq/mm BTU.

There is more energy required to produce glycerin than the energy embedded in the raw materials. In 1990, it was reported that the processing energy required was 17,400 BTU/pound in addition to the energy embedded in the raw materials. O'Connor Direct Emissions Report at 26 (citing G.P. Agarwal, Advances in Biochemical Engineering/Biotechnology. Microbial Bioproducts. ISSN 0724-6145 (Print) 1616-8542, Vol. 41 (1990)). He also reported that glycerol produced from crude glycerin from the soap making process required 13,000 BTU/pound of glycerin. *Id.* The conservative approach would be to assume that the crude glycerin from a biodiesel plant has the same values as the ingredients used to make synthetic glycerin, this approach still results in a significant emission credit for biodiesel that is not accounted for in the EPA analysis. *Id.*

Glycerin is a valuable co-product in today's expanding biodiesel production industry. Crude glycerin has become a versatile alternative for today's cost-prohibitive petroleum-based products. It is sweet syrupy trihydroxy a 3 carbon (sugar) alcohol and is sold as crude, Kosher and Non-Kosher.

Glycerin applications include the following:

- Petroleum substitute: Epichlorohydrin and Propylene Glycol are substitutes for petroleum-based Polypropylene
- Lecithin source: utilized in foods as a fat emulsifier and vital component of cell membranes
- Biogas: a source of energy used in waste water treatment plant digesters
- Health and Beauty: a main ingredient in skin moisturizers, lotions, deodorants, cosmetics and toothpaste
- Industrial: used in electronic components, paper manufacturing, printing ink, textiles, plastics, de-icing materials, paint, epoxy, and resins

The industry is developing new markets for glycerin in animal nutrition, boiler fuels, dust controls and agricultural chemical adjuvants. Dave Elsenbast, *Linking the Value Chain: Biodiesel – Glycerin – Markets,* Iowa Renewable Fuels Summit, January 27, 2009, *available at* http://www.iowarfa.org/documents/Elsenbast.pdf.

3. EPA should update the energy balance of biodiesel production.

NBB has conducted the most comprehensive survey of the actual energy used by commercial biodiesel production plants in the United States and is releasing the data for public use. These numbers represent the most accurate depiction of the real energy used to produce biodiesel, and this data should replace all existing data in life cycle energy and GHG models for

biodiesel, including those used by CARB and EPA for the recently released rulemakings.[58] These numbers are considered conservative, as no subtraction from total energy use has been made for co-product generation, such as crude glycerin.

Based on this survey, the average energy used to produce a gallon of biodiesel from virgin vegetable oils is 3,184 BTUs. Energy use among plants that use blends of virgin oil and recycled or reclaimed fats and oils varies, as does the composition of these feedstocks. Taking into account all of these variations, the overall industry average for all feedstocks and all production technologies is 4,192 BTUs per gallon of biodiesel, as summarized in Table 6.

Table 6.

	Virgin Oils	**Industry Average**	
	(Soy and Canola)	**(including all feedstocks)**	
Inputs per gal biodiesel			Units
Electricity, Kwh	0.12	0.19	Kwh (3,413 BTU/Kwh)
Coal, lb	0.00	1.8×10^{-3}	lbs (14,000 BTU/lb)
Natural Gas, SCF	2.69	3.45	SCF (1,027 BTU/SCF)
Diesel, gal	0.00	3.1×10^{-5}	gal (129,500 BTU/gal)
Fuel Oil, gal	7.5×10^{-7}	0.00	gal (138,700 BTU/gal)
used motor oil, gal	7.5×10^{-5}	3.8×10^{-5}	gal (140,000 BTU/gal)
total energy BTU/gal	**3,184**	**4,192**	**BTU/gal**

These updated numbers indicate that the input data used by EPA on the amount of energy used to create a gallon of biodiesel is overstated. It takes less energy to produce a gallon of biodiesel than considered by EPA. EPA used a factor of 3.2 units of energy produced per unit of energy used. The updated factor should be a factor of 5.2 units of energy produced per unit of energy used. Updating this data point, decreases the biodiesel emissions factor by 1.5 percent. Separately, USDA has reanalyzed the energy balance of biodiesel facilities and released its own report in September 2009, which had results consistent with the proposed updated factors. A. Pradhan, *et al.*, *Energy Life-Cycle Assessment of Soybean Biodiesel* (2009) (Attachment 19). USDA found the estimated fossil energy ratio of biodiesel was 4.56 based on 2002 soybean production, which is about 42 percent higher than the 3.2 upon which EPA relied. *Id.* at iv. USDA also found that this was likely to increase over time, finding that the ratio is

58 In 2008, NBB undertook a survey of its members to determine the current, average energy use for the conversion of fats and oils into biodiesel. 2008 was a record year for the volume of biodiesel production in the US. The survey data returned by U.S. producers represents 37 percent of that record volume. The energy use reported by each plant was weighted against the 2008 volume production for that plant. This is the first survey of actual data ever representing such a substantial volume of biodiesel production.

expected to reach 4.69 when projected soybean yield reaches 45 bushels per acre in 2015 -- about a 3-percent increase. *Id.* at iv-v. "In addition to higher yields, improvements can be expected to occur in other areas of the life cycle as the agricultural sector, along with the biodiesel industry, continues to make energy efficiency gains in order to lower production costs." *Id.* at v.

4. Adjusting for these factors, biodiesel would have a 62 percent reduction compared to EPA's proposed 22 percent.

As explained further in the O'Connor Report, adjusting for the three issues noted above would result in a 62 percent reduction in GHG emissions for biodiesel compared to baseline petroleum diesel utilizing EPA's proposed methodology. A summary of these results is provided in Table 7.

Table 7.

	EPA	**NBB**	**Difference**	% Difference
1. N_2O Emissions from Soybean Production (Tonnes CO_2eq.)	**654,440**	**-244,560**	**-899,000**	- 20.9
2. Glycerin Co-product (g CO_2eq./mm BTU)	**0**	**- 16,960**	**- 16,960**	- 17.0
3. Energy Balance (energy used to make biodiesel) (BTU/gal Biodiesel)	**5,899**	**3,184**	**- 2,789**	- 01.5%
NBB *Additional* Decrease in Emissions				- 39.9%
EPA Proposed Decrease in Emissions				**- 22.0%**
Total Actual Decrease in Emissions				- 61.9%

B. Emissions calculated for the Domestic Agriculture Sector may be overstated.

EPA's analysis of the domestic agricultural sector also may overestimate domestic agricultural emissions. The domestic agricultural emissions are based on very high energy consumption rates -- 50 percent higher than those used in GREET and 300 percent higher than a recent survey of Iowa soybean producers. O'Connor Direct Emissions Report at 18-19, 31.

In addition, the transportation emissions for feedstock and fuel are calculated from the GREET model using the model defaults. The concern here is that the feedstock transportation emissions may also be included in the FASOM emission estimates because this energy is included in farm energy. These emissions would amount to 2,615 g CO_2eq/mm BTU and could be double counted. O'Connor Direct Emissions Report at 28. This is another example of the lack of transparency in the FASOM and FAPRI modeling, and the inability to reproduce EPA's results.

C. The Baseline for Petroleum Should be Based on Updated Information.

In addition to the omissions in EPA's analysis of the 2005 baseline diesel noted above, its baseline emissions are based on outdated information. Although NBB generally supports use of the GREET model, as an excellent lifecycle assessment tool, the inputs in GREET need updating. *See generally* O'Connor Direct Emissions Report at 5-16. For example, more recent data indicates that the petroleum sector has 96.7 percent efficiency compared to the almost 98 percent used by GREET. *Id.* at 5-6. Additional evidence supports higher emissions associated with flaring than is used by GREET, 26,227 BTU of natural gas flared for each million BTU of crude oil produced compared to 16,800 BTU/million BTU used by GREET. *Id.* at 6. GREET also underestimates the unburned methane component of the gas. Data indicates that methane emissions from oil production is 18.43 g/million BTU, 40 percent higher than GREET's default of 13.15 g/million BTU. *Id.* Further, more recent data indicates that energy used for crude oil production has increased substantially from the information used by GREET. *Id.* at 7. GREET also appears to underestimate the emissions attributable to oil sands and crude oil transportation. *Id.* at 8-13.

As an additional point, EPA uses the 1995 IPCC global warming potentials (GWPs) for methane and nitrous oxides. These numbers have been updated twice since these values were produced, resulting in a greater weighting on methane and a lower weighting on nitrous oxide. O'Connor Direct Emissions Report at 29. While the use of 1995 GWPs may have a small impact on results, "the 2007 IPCC GWPs could be expected to increase the emissions related to gasoline and diesel fuel and reduce the emissions associated with biofuels." *Id.* The most updated GWP's should be used.

D. EPA Should Give Biofuels Credit for the Avoidance of Increased Use of Marginal Sources of Crude Oil, Which Have Significantly Higher GHG Emissions.

EPA's analysis does not account for the fact that biodiesel is reducing and delaying the need for diesel derived from high carbon sources of crude oil such as Canadian tar sands and Venezuelan extra heavy crude. EPA's lifecycle analysis is based on future production of biofuels, but the results are compared against baseline petroleum, which is defined as the "gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005." 42 U.S.C. § 7545(o)(1)(C). Based on this definition, EPA has focused on the mix of fuels in 2005 to determine the baseline against which biofuels are compared. 74 Fed. Reg. at 25,040. EPA's approach results in an "apples-to-oranges" comparison, and fails to recognize the increasing inefficiency of petroleum production compared to the increasing efficiency of renewable fuels.

Unlike renewable fuels, petroleum based fuels are produced from a finite resource, and, with high oil prices, there is an increased use of marginal sources of petroleum. Marginal sources of petroleum include those "produc[ed] at such a rate that it is at the margin of profitability," which depends on many factors such as operating costs, product prices, tax liability of the operator, capital recovery costs, environmental costs, and plugging and abandonment liability. Don J. Remson, Northrop Grumman Mission Systems, *A Forecast of*

Marginal Natural Gas and Oil Well Data; Topical Report, at 6-7 (June 2005). In particular, marginal sources of petroleum include tar sands and heavier crudes, which have greater GHG emissions than lighter crudes that were more prevalent in 2005. "Over two thirds of currently planned expansions of U.S. oil refining capacity are designed and intended to accommodate heavier, dirtier crude oil from Canadian 'tar sands.'" Environmental Integrity Project Report at 2. Analyses suggest that tar sands generate 150-300 percent more direct GHG emissions than ethanol. Kruse Study at 57. *See also* Life Cycle Associates Report at 26 ("Energy inputs for unconventional oil resources and the processing of heavy oils are higher than those of conventional resources."). Thus, the carbon footprint of oil will continue to increase, while that for renewable fuels will continue to decrease.

EPA's own peer reviewers recognized that the 2005 baseline was inappropriate. Model Linkage Report at I-8. Dr. Wang, a well-recognized expert in the field of lifecycle analysis of fuels, noted the problem with focusing on the mix of fuels in 2005:

> This decision potentially underestimates GHG emissions of petroleum fuels, since future petroleum fuels will come increasingly from unconventional crudes and since continuing global petroleum demand growth over time could generate unanticipated indirect effects in the petroleum sector.

Id. at E-7 (Comments of Dr. Wang). While the statute refers to 2005, EPA is given discretion in determining how to account for the change in fuel mix.

EPA should account for this key omission in at least two ways. First, EPA can focus on the marginal sources of petroleum in identifying the baseline. EPA's baseline includes 5 percent Canadian tar sand, 1 percent Venezuela extra heavy, and 23 percent heavy crude based on the mix of fuels in 2005. While the statute defines baseline lifecycle GHG emissions as the "average" lifecycle emissions, it also refers to the gasoline or diesel that "is being replaced by the renewable fuel." Increased reliance on renewable fuel reduces the need to look for new sources of petroleum. In so doing, the fuel being replaced is the petroleum that otherwise would have come from these marginal sources in 2005. EPA admits "that an additional gallon of renewable fuel replaces the marginal gallon of petroleum fuel," and "[t]o the extent that the marginal gallon is from oil sands or other types of crude oil that are associated with higher than average GHG emissions, replacing these fuels could have a larger GHG benefit," while replacing lighter crudes would have less benefit. 74 Fed. Reg. at 25,040.

While EPA seeks comment on addressing the benefits of replacing these marginal gallons, it only seeks comment with respect to understanding the regulatory impacts of the rule. Because EPA is projecting lifecycle emissions from biofuels into the future, EPA must also consider the extent to which renewable fuel replaces marginal gallons from these marginal sources of petroleum in developing the baseline emissions to make a fair comparison. "Comparing marginal alternatives to average petroleum understates the potential GHG impact." Life Cycle Associates Report at 11.

Second, EPA could credit biofuels with the avoidance of GHG emissions in replacing these marginal sources in the future. EPA's lifecycle analysis must include "significant indirect emissions." The avoidance of these GHG emissions is a significant indirect impact of increased use of biofuels. In addition, increased use of renewable fuels reduces the need to continue exploration into environmentally sensitive areas. The need to explore for and develop petroleum reserves in less accessible areas, *e.g.*, the Amazon, could also be a significant factor in the conversion to agricultural uses of virgin forests and other important lands. Oil production has been identified as "the latest, perhaps greatest, threat to preserving what remains of the world's largest remaining tropical wilderness." Michael Astor, Associated Press, *Scientists say oil exploration threatens Amazon*, Aug. 13, 2008, *available at* http://www.sfgate.com/cgi-bin/article.cgi?f=/n/a/2008/08/13/international/i144701D34.DTL (Attachment 20). Petroleum companies already drill or have leases to explore and drill in substantial portions of the Amazon, and recently there has been unprecedented exploration and development in the region, including Brazil. Matt Finer, *et al.* (2008) at 1. Colombia, Ecuador, Peru, Bolivia, and Nigeria have substantial oil operations in rainforest areas. Mongabay.com Article. For example, since 2004, the area of the Peruvian Amazon designated for oil concessions has jumped from less than 15 percent to well over 70 percent. Environmental News Service, *Indigenous Peruvians Oppose New Oil Concessions on Their* Lands (Feb. 2007), *available at* http://www.ens-newswire.com/ens/feb2007/2007-02-06-02.asp.

There also has been work in developing additional forms of energy that are likely to have even greater impacts on GHG emissions than gasoline. For example, EPA estimated (without indirect emissions) coal-to-gas liquids, liquid hydrogen, and gas-to-liquid diesel to have higher emissions than baseline petroleum. EPA Fact Sheet, *Greenhouse Gas Impacts of Expanded Renewable and Alternative Fuels Use*, EPA420-F-07-035, at 2 (Apr. 2007). Without carbon capture and sequestration, coal-to-gas liquids was estimated to *increase* GHG emissions from baseline petroleum by 118.5 percent.

To the extent that the use of biofuels substitutes for petroleum and other fossil fuels, there would be a significant indirect GHG emissions benefit from the increased production and use of biofuels.[59]

XIV. REGULATORY IMPACT ANALYSIS -- WATER QUALITY

NBB believes the Proposed Rule addresses several issues that are irrelevant to EPA's finalizing the RFS2 regulations. In particular, EPA states that it "is seeking comment on how best to reduce the impacts of biofuels on water quality," and "on the use of section 211(c) of the Clean Air Act, as amended by EISA, to address these water quality issues." 74 Fed. Reg. at 25,105. But, this is a rulemaking under Section 211(o). Moreover, EPA's authority under Section 211(c) is not intended to address any potential impact that might arise as a result of the RFS

[59] Canada, Colombia, Ecuador and Nigeria are among the top 15 countries from which the U.S. imported crude oil in 2008 and year-to-date 2009. Energy Information Administration, *Crude Oil and Total Petroleum Imports Top 15 Countries* (Aug. 28, 2009), *available at* http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/company_level_imports/current/import.html.

program, but is limited. 42 U.S.C. § 7545(c). Congress addressed this separately, requiring EPA to conduct a study of the potential impacts of the program, including potential impacts on water quality from agricultural practices. EISA, Pub. L. No. 110-140, § 204(a). NBB notes that EPA does not have the authority to regulate agricultural practices, and believes that attempts to regulate agricultural practices by imposing additional requirement on the feedstock that can be used by renewable fuel producers is beyond the authority provided in Section 211(c).

Nonetheless, NBB would like to note that soybean farming and biodiesel production provide water quality benefits. For example, soybean is often used as part of a crop rotation program, which promotes sustainability, including reducing impacts of agricultural production on water. Soybeans require an insignificant amount of fertilizer, pesticide, and irrigation inputs, and therefore represents significantly less potential water quality and quantity impacts. In addition, biodiesel production also involves little water per gallon. In any event, EPA need not, and should not, address Section 211(c) in the context of this rulemaking.

LIST OF ATTACHMENTS

1 John Urbanchuk, *Economic Contribution of the Biodiesel Industry* (Dec. 16, 2008)

2 J. Alan Weber, *Feedstock Supplies for U.S. Biodiesel Production* (Jan. 2009)

3 Alan Weber, *Review of EPA's Proposed RFS2 Program for Biodiesel: Implications of Land Use Restrictions & EPA's Production Estimates* (August 2009).

4 Letter from Association of Public Land-Grant Universities to the Honorable Colin Peterson and the Honorable Frank D. Lucas (Sept. 8, 2009)

5 Letter from Blake A. Simmons, *et al.*, to the Honorable Arnold Schwarzenegger, Office of the Governor (Mar. 2. 2009); Letter from Bruce Dale, *et al.*, to Stephen L. Johnson, Administrator, EPA (Oct. 2008); Letter from Blake A. Simmons, *et al.*, to Mary D. Nichols, Chairman, California Air Resources Board (June 24, 2008); Letter from Bruce Dale to Colleagues (Mar. 3, 2008)

6 Dr. Richard Nelson, Co-Director, Center for Sustainable Energy, Kansas State University, *Review of US Environmental Protection Agency RFS-2 Rule* (Sept. 17, 2009)

7 John M. Urbanchuk, *Review of Models Used By EPA to Estimate Indirect Land Use Changes to Renewable Fuel Standard* (Sept. 7, 2009)

8 (S&T)2 Consultants Inc., *Comments on EPA RFS2 Preamble and Draft Regulatory Impact Analysis: Direct Emissions,* Prepared for the National Biodiesel Board (Sept. 21, 2009)

9 Bruce E. Dale, *Life Cycle Analysis Deficiencies in EPA Draft Report* (May 26, 2009)

10 John Kruse, IHS Global Insight, *Indirect Land Use Analysis and Review of EPA's Proposed RFS2 Rules for Biodiesel* (Sept. 18, 2009)

11 (S&T)2 Consultants Inc., *Comments on EPA RFS2 Indirect Land Use Change Calculations,* Prepared for the National Biodiesel Board (Sept. 21, 2009)

12 Bruce E. Dale, Michigan State University, Life Cycle Analysis Of Biofuels & Indirect Land Use Change, Presentation at National Biodiesel Board, June 17, 2009

13 Letter from Shelby Neal, National Biodiesel Board to Mary D. Nichols, Chair, California Air Resources Board, Apr. 21, 2009

14 Douglas Morton, *et al.*, entitled *Cropland expansion changes deforestation dynamics in the southern Brazilian Amazon*, 103 PNAS 14637, (Sept. 26, 2006), *available at* http://www.pnas.org/content/103/39/14637.full.pdf+html

15 LMC International, *Indirect Land Use Analysis: Further Comments* (2009)

16 Nicholas Zeman, *Greenpeace: biodiesel not seen as significant driver in Amazon deforestation,* Biodiesel Magazine, posted online, May 4, 2009, *available at* http://www.biodieselmagazine.com/article.jsp?article_id=3437

17 David Adam, *Amazon rainforests pay the price as demand for beef soars,* guardian.co.uk, May 31, 2009, *available at* http://www.guardian.co.uk/environment/2009/may/31/cattle-trade-brazil-greenpeace-amazon-deforestation

18 LMC International, *Indirect Land Use Analysis: The Impacts of a Rise in U.S. Biodiesel Demand* (2009)

19 A. Pradhan, *et al.*, *Energy Life-Cycle Assessment of Soybean Biodiesel* (2009)

20 Michael Astor, Associated Press, *Scientists say oil exploration threatens Amazon*, Aug. 13, 2008, *available at* http://www.sfgate.com/cgi-bin/article.cgi?f=/n/a/2008/08/13/international/i144701D34.DTL