



April 21, 2009

Mary Nichols, Chair
California Air Resources Board
1001 I St., PO Box 2815
Sacramento, CA 95812

RE: Indirect land use in the proposed California Low Carbon Fuel Standard

Dear Ms. Nichols:

The American Coalition for Ethanol (ACE) appreciates the opportunity to provide comments on California's Low Carbon Fuel Standard (LCFS) as proposed by the California Air Resources Board (CARB).

Founded in 1987, the American Coalition for Ethanol (ACE) is the grassroots voice of the U.S. ethanol industry. ACE unites ethanol producers, farm and commodity groups, businesses, and individuals behind coalition initiatives to support and promote the production and use of ethanol in the U.S. The 1500 companies, organizations, and grassroots individuals that comprise ACE membership employ nearly 1 million Americans nationwide.

In the future, low carbon energy supplies will be favored over highly carbon-intensive sources of energy, and ACE believes that policymakers should consider implementing a suite of initiatives designed to reduce greenhouse gas emissions, including a low carbon fuel standard for liquid transportation fuels.

We are committed to making certain that biofuels from all feedstocks make meaningful contributions to our nation's clean energy economy and understand a low carbon fuel standard will likely be part of the policy shifts that lead to that clean energy future. In fact, ACE is prepared to support a LCFS, but today we unite with scores of other organizations, scientists, academics, and advanced biofuel advocates in expressing our serious concerns with the proposed design and enforcement of the California LCFS.

California is about to set a precedent for how biofuels are treated under climate change policies, and ACE is deeply disappointed with what we can only describe as bizarre and scientifically indefensible lifecycle greenhouse gas estimates that are clearly designed to penalize biofuels unfairly vis-à-vis petroleum. As others have already pointed out, including a group of more than 100 scientists and academics in a letter last month to Governor Schwarzenegger, CARB is making extreme assumptions about the carbon intensity of biofuels, relying on an untested ideology called "indirect land use change," and remarkably assuming there are no such "indirect effects" from fossil fuels. As a result of the use of a number of indefensible assumptions in the LCA modeling, CARB will penalize biofuels, particularly corn ethanol, for so-called indirect land use changes, while petroleum will be given a free pass, as CARB has chosen to largely ignore indirect emissions from those fuels. This selective enforcement will place biofuels at an unfair competitive disadvantage in the California fuels market.

This is a classic case of allowing ideology to drive policy while ignoring good science. Predictions of greenhouse gas emissions based on "indirect land use change" rely on computer models, which are driven

entirely by assumptions used in those models. As many who have been following CARB's process have pointed out, the assumptions in CARB's models cannot be supported by any rational and objective review of the facts. As 111 scientists wrote to Governor Schwarzenegger in March of this year, "indirect effects have never been enforced against any other product in the world. California should not be setting a wide-reaching carbon regulation based on one set of assumptions with clear omissions relevant to the real world." The science is limited and not widely understood or accepted, and should not be enforced selectively against biofuels.

ACE is genuinely concerned about the impact of global warming and the effects of climate change and wants to see low carbon energy policies implemented successfully throughout the United States and indeed the world. The biofuels industry, policymakers, and other stakeholders need to better understand the opportunities and challenges associated with sophisticated low carbon energy models, policies, and markets. Further, to meet these new standards, U.S. biofuel producers will need to be able to identify how existing agricultural and biorefinery practices and new, innovative technology can help them reduce the carbon footprint of their biofuels. As an organization dedicated to helping its members better understand this issue, ACE commissioned a study by Global Insight entitled "Lifecycle Analysis of Greenhouse Gas Emissions Associated with Starch-based Ethanol" to examine the following issues:

- How agriculture contributes to, and can help reduce, emissions of greenhouse gases
- Lifecycle analysis of biofuels
- The direct and indirect greenhouse gas emissions associated with the production of biofuels, including a review of "indirect land use changes"
- Lifecycle analysis and greenhouse gas emissions associated with petroleum
- Identifying the marginal carbon footprint of biofuels versus the marginal impact of new sources of oil production

Some of the key findings from that report include:

- Changes in land use have always occurred and are not new, nor are biofuels the primary driver of them. Global population growth cannot be ignored as a factor.
- Lifecycle analysis is being used to actually quantify GHG emissions, and the scientific literature shows a huge variation in estimates of carbon release from land clearing in general, on the order of 50 percent plus or minus – a huge margin of error.
- If some land use change is due to increased biofuels production, the overriding challenge is to quantify which changes can indeed be directly attributed to biofuels.
- If the indirect GHG emissions of biofuels are counted toward the carbon footprint, so should be the indirect emissions associated with petroleum production.

The report determines that computer-generated lifecycle predictions about indirect land use changes require considerably more analysis. According to the report, it is virtually impossible to accurately ascribe greenhouse gas impacts to biofuels based on indirect land use change. It also discusses how technology innovations are making both corn and ethanol production more efficient and carbon-friendly, developments that have clearly not been captured not quantified adequately by CARB in its analysis and modeling for the proposed LCFS.

In addition, a multitude of other studies and reports have recently been released that further underscore the inherent problems with the theory of indirect land use change. One article, published in the *Journal of Industrial Ecology*, shows that modern corn biofuel production facilities emit an average of 51 percent fewer greenhouse gas emissions than gasoline, thanks to technological innovation.

Another article, published in *Environmental Science and Technology*, indicates that “holding domestic industries responsible for greenhouse gas emissions by their competitors worldwide through market forces (indirect land use changes) is fraught with a host of ethical and pragmatic difficulties.”

A new report was recently published by Life Cycle Associates, LLC, entitled “Assessment of Direct and Indirect GHG Emissions Associated with Petroleum Fuels.” This report highlights that current policies relying upon “indirect effects” seem only to apply indirect effects to biofuels. However, to the extent that these indirect economic effects are considered part of the biofuel lifecycle carbon footprint, indirect effects of petroleum should also be of interest. To quote from the Executive Summary-Conclusion of the report:

“...the average GHG emissions (of petroleum) are expected to increase and new marginal supplies are likely to have even higher greenhouse gas emissions. Nonetheless, high cost, energy intensive marginal resources must be factored into current and future projections of the impact of petroleum based transportation fuels to the extent that marginal considerations are taken into account for alternative fuels.”

It has been reported that about one-half of the oil used in California is imported from nations such as Saudi Arabia, Iraq, and Columbia. These sources of oil have both direct and indirect effects that CARB inexplicably has chosen to ignore in its modeling to determine the carbon intensity of petroleum. It has been pointed out that the direct effects include pumping seawater into the oil wells of Saudi Arabia to increase pressure and powering shipping vessels during transport of Middle East oil to the U.S. According to Tom Waterman, publisher of “The Ethanol Monitor,” a weekly oil and biofuels newsletter, the distance from the Persian Gulf to California is about 9000 miles by sea. Even with the most efficient turbocharged engines to power sea-going vessels, shipping cargoes carrying Persian Gulf oil to the U.S. will consume about 1660 gallons of heavy oil per hour. At maximum fuel economy (which is just 50 percent thermal efficiency for the most efficient engines) a single cargo vessel will burn about 625,000 gallons of heavy fuel oil en route to California. Even this direct effect seems to be too difficult for CARB to include in its carbon intensity calculus for petroleum. Further, indirect activities, such as military operations to protect oil supplies and shipping lanes with ships, aircraft, tanks, jeeps, and trucks powered by oil are not accounted for in CARB’s analysis on the carbon intensity of petroleum.

In addition to the numerous scientists who have written in opposition to the inclusion of indirect land use change in the California LCFS, a variety of other groups have also voiced similar opinions. Sixty-six members of the Truman National Security Project opposed ILUC saying it “puts that source [biofuels] at a comparative disadvantage, thereby undercutting new investment and the development of new technologies. Fossil fuels create indirect effects and negative externalities as well, but neither they nor any other fuel source face punitive measures as a result.”

Dr. Jerry Shurson, professor of Animal Science at the University of Minnesota, pointed out the lack of attention and understanding given to the use of distillers grains in animal feeds, explaining that CARB assumes distillers grains replaces corn on a pound-for-pound basis, not the 1.24 pounds of base livestock feed he calculates. This miscalculation could reduce CARB's calculated ILUC for corn ethanol by around 50 percent.

Monsanto has made several critical points in their comments to CARB regarding the methods used in accounting for crop yield, emissions, and ethanol production. They note that the proposed standard treats yield as a fixed value, "selecting yield averages from specific time ranges" while contradictorily allowing emissions from land use change to be measured using a time accounting method. They suggest that "crop yields should be treated similarly to indirect land use change emissions as both values 'vary over time.'" Monsanto also importantly noted that CARB appears to be relying upon inconsistent baselines in its modeling. Monsanto points out that "2001 was used as the base line year in the global economic model" and assumes ethanol production is 1.5 billion gallons for the beginning of the period modeled. However, 9.2 billion gallons of ethanol were produced in 2008 and it is assumed that 2010 gasoline in California will contain 10 percent ethanol. As Monsanto puts it, "using 2001 as the baseline appears to be back charging prior production increases to the ethanol produced in 2010 and beyond" and that "rather 2010 ethanol production levels should be used if the carbon intensities of gasoline and diesel transportation fuels in 2020 are each to be reduced by 10 percent relative to 2010."

Finally, even Shell has weighed in with questions about the application of ILUC. According to press reports, Shell commented to CARB that "we recognize and support the need to ensure biofuels contribute to greenhouse gas emission reductions...however, there is a growing body of opinion and evidence that the methodologies for determining biofuel ILUC impacts are not yet sufficiently advanced to reliably establish ILUC factors for use in regulation."

The politicization of lifecycle analysis – in this case to attack biofuels – undermines confidence in this tool, which will become an increasingly important aspect of all state and national efforts to reduce greenhouse gas emissions. By insisting on arbitrarily and capriciously ascribing greenhouse gas emissions to biofuels that cannot in fact be shown empirically and which depend entirely upon tortured use of computer models that lack the confidence of so many reputable scientists, CARB invites cynicism about its motives, about the basic veracity of its work, and about the use of this tool as a political weapon in other greenhouse gas control programs. As society embarks on this enormously important mission to reinvent the way humans produce and consume energy, this is a very dangerous precedent to set. Further, the signal that CARB may be precluding biofuels from a fair shake in the California fuels marketplace may unnecessarily and irreversibly jeopardize promising advanced biofuel technology innovations that will depend upon entrepreneurial investment to be realized.

ACE is eager to work with the state of California to enact a LCFS that does not unfairly penalize biofuels while ignoring the indirect emissions from petroleum. We are concerned that the LCFS, as proposed, would hold oil harmless for much of its carbon intensity while unfairly inflating and distorting the carbon intensity of biofuels. A fair set of principles must be generated that allows biofuels to participate on an equal playing field with petroleum products. We encourage the implementation of a low carbon fuel standard in California, but based on the ample research indicating the arbitrary and inequitable use of indirect land use change measurements, we believe the proposed standard is the wrong approach.

The Honorable Chairperson Nichols – CARB LCFS
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ACE looks forward to working with the state of California in constructing a fair standard based on sound science and would be happy to serve as a resource to the California Air Resources Board.

Sincerely,

A handwritten signature in black ink, appearing to read "B. Jennings". The signature is fluid and cursive, with a large initial "B" and a long, sweeping tail.

Brian Jennings, Executive Vice President
American Coalition for Ethanol

References

Kim, H., Kim S., Dale, B.E. (2009). Biofuels, land use change, and greenhouse gas emissions: some unexplored variables. *Environmental Science & Technology* 43(3). 961-967.

http://www.ethanol.org/pdf/contentmgmt/EST_Land_Use_Change_final.pdf.

Kruse, J., Jackson, T., and Ramsey, S. (2008). Lifecycle analysis of greenhouse gas emissions associated with starch based ethanol. Global Insight Report. Prepared for the American Coalition for Ethanol.

http://www.ethanol.org/pdf/contentmgmt/LCFS_Study_Final_Report.pdf.

Liska, A.J., Bremer, V.R., Cassman, K.G., Erickson, G.E., Klopfenstein, T.J., Walters, D.T., and Yang, H.S. (2008). Improvements in life cycle energy efficiency and greenhouse gas emissions of corn-ethanol. *Journal of Industrial Ecology* 13(1). 58-74.

<http://www3.interscience.wiley.com/cgi-bin/fulltext/121647166/HTMLSTART>.

Unnasch, S., et al. (2009). “Assessment of Direct and Indirect GHG emissions Associated with Petroleum Fuels,” Life Cycle Associates Report LCA-6004-3P. 2009. Prepared for New Fuels Alliance.

http://www.newfuelsalliance.org/NFA_PImpacts_v35.pdf.

Letter to Governor Schwarzenegger from the Truman National Security Institute.

http://www.trumanproject.org/files/Petition_Letter.pdf

Letter to Governor Schwarzenegger from 111 Scientists.

http://www.arb.ca.gov/lists/lcfs-general-ws/28-phd_lcfs_mar09.pdf.