Environmental and Energy Study Institute

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March 16, 2009

Mary D. Nichols, Chairwoman
California Air Resources Board
Headquarters Building
1001 "I" Street
Sacramento, CA 95812

Chairwoman Nichols:

Reducing greenhouse gas emissions from transportation fuels is an important and urgent challenge for both California and our nation. It is one of the many hurdles that our nation will need to overcome if we are to address the climate crisis effectively and quickly. We at the Environmental and Energy Study Institute commend the staff of the California Air Resources Board for its thoughtful effort and leadership to establish a low carbon fuel standard – for the State of California and as a model for the nation.

However, we are writing to express our concern that the excellent work the staff has done to assess the direct life cycle carbon emissions of various fuels, based upon scientifically sound and generally accepted methodologies, is significantly undermined by the inclusion of indirect carbon emissions from land use changes attributed to biofuels production, about which there is very little consensus in the scientific community. Scientists are only just beginning to explore the indirect relationships (if any) between biofuels production in the U.S. and land use changes around the world. To base such a critical policy decision upon such an uncertain and unsettled body of knowledge inserts a significant, unfounded bias against a class of fuels which may offer, in the final analysis, great promise in meeting our nation's pressing climate and energy challenges.

Traditional life cycle assessments include only what have come to be known as 'direct emissions'. Direct emissions include the carbon contents of the fuel itself, as well as the greenhouse gases released during each stage of production (from "well to wheels"). Direct emissions are measurable, attributable, and described in well-tested models (such as the GREET model).

"Indirect emissions", on the other hand, are those emissions that are **assumed** to occur somewhere in the world as a result of general market forces exerted by the production of a particular kind of fuel – in this case, the greenhouse gas emissions thought to be released from tropical deforestation and other land use changes as an indirect, market-driven result of farmland in the U.S. being diverted away from food or feed crops to growing biofuel crops. **Unlike direct emissions, indirect emissions cannot be observed, measured in situ or attributed to particular production chains.**

The CARB staff is calculating these indirect emissions using a general equilibrium model to estimate aggregate emissions from land use change at the global level due to the impact of U.S. biofuel production on global markets. General equilibrium models simulate changes and trends in commodity production by assuming a closed system that seeks economic 'equilibrium' as determined by regional constraints of supply and demand. These models, however, are especially sensitive to the assumptions underlying the inputs and processes included in the model. In particular, assumptions regarding the supply of agricultural land, the availability of marginal lands, farmer behavior, agricultural production practices, economic value and use of biofuel co-products, and competing uses

for land and natural resources, substantially affect model results. Determining the 'right' assumptions and assigning values can be a highly subjective process over which scientists, policymakers, and stakeholders frequently disagree.

Confounding the problem further is the difficulty of determining additionality. Even if one assumes that biofuel production is the proximate cause of a certain amount of deforestation, one cannot assume that those forests would have otherwise remained intact in the absence of biofuel production. There are many causes of deforestation and land use change – timber demand, livestock grazing, mining, urban sprawl, global food and feed demand, and subsistence activities. People continually seek to realize the highest value from the land. If biofuels are removed as a market driving factor, other factors will likely fill the void. **In sum, using these models to calculate indirect emissions remains a highly subjective and speculative process, dependent on a number of a priori assumptions that bias the outcome.**

There is another, more fundamental issue with including indirect emissions in the LCFS assessment: this concerns the precedent of holding an industry in the U.S. responsible for activities (real or supposed) undertaken by people across distant borders in other sovereign nations. If this standard is to be applied to biofuels, in fairness, should it not also be applied to the assessment of fossil fuels, hydrogen, and electricity? On a broader level, is this a new standard to which other industries and public policy decisions should be held? The analysis of indirect effects could be applied to regulate against a host of other economic and social activities. All large scale activities that use scarce resources, affect markets, or influence economic or social behavior are likely to have some distant, indirect effects.

Global deforestation, conversion of native grasslands and shrublands, and ecosystem degradation are very real problems, with impacts on biodiversity, water security, and the welfare of indigenous peoples. These land use changes have been accelerating for decades, driven by many factors – **long before the U.S. biofuel industry came on the scene**. The resulting greenhouse gas emissions are huge, amounting to over 18% of total global emissions. The international community must work together with urgency and speed – through international negotiations, treaties, and financial and technical assistance - to prevent further loss of forests and ecosystems across the globe.

Including indirect emissions from land use change in the LCFS, however, is not likely to promote the stable climate and healthy ecosystems that we all seek. Instead, **it will only reduce the political legitimacy of the LCFS as a fair and objective tool for comparing fuel options and unfairly penalize an industry that offers great promise for addressing the nation's climate and energy challenges.** If the LCFS is to be an objective, technology-neutral assessment tool, it must treat all fuels equitably, using consistent, generally accepted, scientific criteria and methods. Otherwise, it will merely serve to reinforce the predispositions of the modelers.

Sincerely,

Carol Werner
Executive Director, Environmental and Energy Study Institute

Cc: The Honorable Arnold Schwarzenegger, Governor of California
David Crane, Special Advisor for Jobs and Economic Growth, Office of Governor Schwarzenegger
Linda Adams, Secretary, California Department of Food & Agriculture
Mike Scheible, Deputy Director, Air Resources Board
Karen Douglas, Chairwoman, California Energy Commission