

December 15, 2011

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

RE: Consideration of Amendments to the Low Carbon Fuel Standard Regulation

Dear Chairman Nichols,

We are writing to comment on the ongoing administration of the California Low Carbon Fuel Standard (LCFS), pursuant to the December 16th Board Hearing scheduled to consider 2011 amendments to the regulation.

The Advanced Ethanol Council (AEC) represents leading global companies in the development and commercialization of the next generation of ethanol fuels, ranging from cellulosic ethanol made from dedicated energy crops, forest residues and agricultural waste to advanced ethanol made from municipal solid waste, algae and other feedstocks. Many of our members are breaking ground on first commercial plants, while others are in the final stages of project finance. These plants will produce a next generation ethanol with a very low carbon footprint which will be critical in facilitating compliance with the goals of the LCFS. The bulk of our membership is interested in doing business in California, as the right policy pieces fall into place.

The California LCFS has great potential to provide real value to our industry. The advanced ethanol industry is at a critical stage in its development. The private sector has invested billions of dollars in various technologies that have greatly reduced the cost of producing advanced ethanol from a variety of different feedstocks and processes. The final stage of deployment is building first commercial plants to prove out the technology and realize process efficiencies that can only be achieved at scale. When these plants come online, the advanced ethanol industry will be in a position to serve the California marketplace with ultra low carbon liquid fuels and help facilitate compliance with the LCFS. Our industry is already well-positioned to bring a number of commercial plants online over the next several years, which will only accelerate the development of low carbon fuel projects towards the goals of the LCFS.

In order for the LCFS to drive investment in our industry, we believe a number of changes are necessary to minimize uncertainty. We discuss several of these below.

- I. **To the maximum degree possible, the LCFS should be predictable and transparent enough to forecast its impact on the marketplace and drive investment.**

As you know, the primary value of the LCFS is the method by which it assigns value in the marketplace for producing low carbon fuels. We recognize that there is considerable uncertainty with regard to key aspects of both the science and compliance scenarios published to date.

However, even with these constraints and data gaps, it is critical that the LCFS commit to a consistent and transparent methodological framework that will in turn help our companies and the investment community to anticipate the value of advanced ethanol in California and provide the certainty necessary to drive large scale investment in low carbon fuels.

We would like to take this opportunity to provide comment on a few key variables:

1. The AEC encourages CARB staff to design and implement a transparent credit trading program. While we support the flexibility inherent with credit trading under the LCFS, it is critical that the companies producing the credits (i.e. the low carbon fuel) can engage in the marketplace in a way that reflects the true market value of its fuel. A transparent credit trading program is critical to our ability to value compliance under the LCFS and secure investment, and should be considered the cornerstone of a well functioning carbon market that properly rewards the production of carbon reductive fuels. Other entities have proposed adding an electronic trading platform for LCFS credits and opening up the marketplace to outside investment. We hope the Board will seriously consider these proposals in the context of early implementation of the LCFS.
2. The AEC supports the ongoing development and Board consideration of a Flexible Compliance Mechanism (FCM). To meet its ambitious goals, the LCFS must create the most favorable investment climate possible. A flexible compliance mechanism – or FCM – could significantly enhance investor interest in pursuing low-carbon fuels by clarifying the rules of operation during tight markets, which in turn will drive investment and increase fuel supplies and options for complying with the LCFS. It is critical to ensure that an FCM does not undermine market demand for emerging low carbon fuels while simultaneously ensuring that investors have confidence that the program schedules will not be subjected adjustments or debates about adjustments at times when the supplies of low carbon fuels are tight. We would look forward to discussing this type of mechanism further with you.
3. The AEC supports proper accounting for the incremental carbon deficits from the use of High Carbon Intensity Crude Oil (HCICO). Proper accounting for all gasoline and diesel substitute pathways is critical to the development of low carbon fuels for several reasons. First, the underlying premise of the LCFS is that it scores different fuels coming into the marketplace based on their full lifecycle carbon intensity value (CI value). One of the primary reasons a performance standard is useful is it provides a predictable framework for investment over time by allowing investors to react to market trends, assess value within the overlying LCFS regulation, and invest accordingly. HCICO is a significant and quickly increasing percentage of California's crude oil slate. According to recent reports presented to CARB, the carbon intensity of producing and transporting crude oil in California increased by 20 percent in the last four years alone. If the actual CI values of HCICO pathways are not properly accounted for, there will be an unnecessary disconnect between actual market performance and the performance predicted by the LCFS. While it is impossible for any regulation to be perfect with regard to reflecting actual CI values in the marketplace, improper accounting for HCICO has the potential to create very large disconnects between the emerging marketplace and the regulation, which in turn will reduce the predictability of the program and increase investment risk. Second, as a matter of consistency, the LCFS requires detailed documentation and regulatory accountability from the point of origin of the biofuel feedstock through the production

process and path to market. We believe the LCFS should eliminate, to the greatest degree possible, any compliance inequities that exist among the many compliance fuels relative to petroleum-based fuels, and seek to define “performance” consistently across all fuel pathways. Third, if refiners are allowed to utilize increasing volumes of HCICO without penalty, the effect will be the creation of a carbon “black box” that, if current trends continue, could greatly offset the actual carbon reductions achieved by the LCFS. This outcome could jeopardize both the effectiveness and credibility of the program here and abroad. The amendments proposed to §95486 are certainly a step in the right direction, but it is unclear why individual bio-refineries are held accountable for individual fuel pathways from cradle to grave, but individual petroleum refineries are not. We encourage CARB staff to tighten the HCICO provisions commensurate with the protocols established for bio-based fuels under the regulation.

4. The AEC encourages CARB to move quickly to adopt the latest science with regard to land use change. As you know, the regulation’s treatment of indirect land use change (ILUC) is the single-most controversial aspect of the regulation. CARB Resolution 10-49 recognized this reality, and set the rulemaking on a path to close the data gaps and explore the indirect effects of other fuels. While CARB’s focus to date has been on the land use impacts of conventional biofuels, the lack of resolution of this issue has caused considerable uncertainty with regard to the predictability and durability of the regulation. There were also preliminary land use change model runs conducted for cellulosic ethanol, but they have not yet been finalized or formalized. While we commend the CARB staff for processing a tremendous amount of technical work in time to include the LCFS as an Early Action Measure, we hope we can resolve the major questions about land use change (many of which transfer over into advanced ethanol production) as expeditiously as possible, and not later than the new deadlines likely adopted this week.
5. The AEC encourages CARB staff to refocus its effort on the critical issue of indirect effects of other fuels. As is the case with land use change, we believe it is important to view the issue of “indirect effects of other fuels” as one that can undercut the credibility and durability of the program. The LCFS Expert Workgroup published a clear analysis of the issue and possible resolution roughly 12 months ago.¹ The importance of consistency with regard to carbon accounting is often misunderstood. First, consistency is very likely critical to the credibility, durability and success of the program here and abroad. But consistent carbon accounting also gives investors and project developers a framework for assessing the value of their fuel relative to other fuels even with the number of data gaps and uncertainties associated with measuring supply-chain emissions and second-order effects. Inconsistent carbon accounting adds an additional layer of uncertainty and risk by virtue of the fact that asymmetrical and/or unsettled methodologies could shift at any time. We encourage CARB staff to reprioritize some of the issues contained in the EWG report. More specifically, the AEC recommends that CARB commit to a process to assess the marginal, indirect effects of all fuels so that investors and fuel developers see that all fuels will ultimately be assessed in the same way.

¹ See <http://www.arb.ca.gov/fuels/lcfs/workgroups/ewg/010511-final-rpt-alternative-modeling.pdf>.

6. The AEC supports adjusting the compliance schedule to account for changes to the CaRFG baseline from 2006 to 2010, but opposes ethanol's inclusion in the baseline. As discussed in earlier sections, the carbon intensity of producing and transporting crude oil in California has increased by roughly 20 percent over the last four years. We support efforts to adjust the compliance schedule to reflect the most recent data. However, it remains unclear to the AEC why ethanol is included in the baseline. This creates unnecessary uncertainty with regard to how the baseline will evolve as the ethanol industry evolves, and seems inconsistent with the underlying premise of the LCFS to encourage different fuels to compete with one another based on performance. It also has the potential to dilute the true market value of lower carbon ethanol fuels by masking the real differential between ethanol and gasoline vis-à-vis the roughly 1 billion gallons of ethanol currently averaged as part of the baseline. While advanced ethanol offers the lowest CI values of any alternative fuel eligible under the LCFS to date, the molecule ultimately blended with gasoline is identical to conventional ethanol. We believe it would be better and more consistent to remove ethanol from the baseline and allow it to compete in the marketplace as an alternative fuel against a CARBOB baseline.

II. As is the case with any alternative fuel, rapid deployment involves resolving issues outside of the confines of the LCFS. We encourage the Board to look at ways to facilitate LCFS compliance with efforts in other key areas.

As discussed, AEC members are either breaking ground on first commercial advanced and cellulosic ethanol plants or are in the final stages of securing project finance. However, one of the challenges we face as an industry is the lack of an open marketplace in which ethanol is allowed to compete with petroleum based on price. Ethanol market constraints deprive the marketplace of a domestic fuel that could help stem the costs of foreign oil dependence, but they also have the potential to dampen investor interest in second generation ethanol production as the United States approaches what is often called the ethanol "blend wall."

Overlying the blend wall problem is the federal Renewable Fuel Standard (RFS), which calls on advanced biofuel producers to bring large volumes of fuel to market over the next ten years. While the bulk of the remaining fuel volume required by the RFS between now and 2022 is advanced biofuel, the federal government must more aggressively open the marketplace in order for our industry to reach its full potential.

California is in the unique position to address some of these market constraints by virtue of its legal authority under the Clean Air Act (CAA). We are also aware that increased penetration of flex-fuel vehicles (FFVs) is a major factor in CARB's compliance scenario analyses going forward, and higher ethanol blends also appear in some of these scenarios. If California is to realize some of these scenarios and put the LCFS in a position to succeed in the short to medium timeframe, there are a number of strategies available to CARB to facilitate these outcomes.

For example, as you know, U.S. EPA has approved E15 for use in 2001 and newer vehicles. Higher ethanol blends offer a number of public health benefits, including lower toxic and soot emissions. However, in the context of the LCFS, providing flexibility for more (discretionary) ethanol blending will provide greater headspace for the development and deployment of advanced ethanol fuels. We understand the resources necessary to amend the CaRFG program. However, we encourage the Board to take into consideration the fact that CaRFG updates are required on a regular basis

by California law and advanced ethanol fuels have the upside of offering the lowest CI values of any fuel or electron eligible for use under the LCFS.

We also encourage the Board to consider the importance of vehicles to compliance with the LCFS. We believe California has unique authorities with regard to vehicle regulation, and there are a number of vehicle-based strategies that could be of tremendous value to a wide variety of low carbon alternative fuels. We would look forward to discussing a number of options related to opening the marketplace to advanced ethanol.

Again, thank you for the opportunity to provide public comment on the LCFS. We look forward to further discussion of the recommendations delineated above.

Sincerely,



R. Brooke Coleman
Executive Director
Advanced Ethanol Council (AEC)

*The founding members of the Advanced Ethanol Council (AEC) include:
Abengoa BioEnergy, BlueFire Renewable, Coskata, Enerkem, Fulcrum BioEnergy, Inbicon, Iogen, Mascoma,
Osage BioEnergy and Qteros*