



April 10, 2014

Michael S. Waugh, Chief, Transportation Fuels Branch
California Air Resources Board
1001 I Street, PO Box 2815
Sacramento, CA 95812

Katrina Sideco, Air Resources Engineer, Fuels Section
California Air Resources Board
1001 I Street, PO Box 2815
Sacramento, CA 95812

Sent via email to ksideco@arb.ca.gov

Dear Chief Waugh and Ms. Sideco:

On behalf of the 600 members of the American Coalition for Ethanol (ACE), I appreciate the opportunity to comment on the Low Carbon Fuel Standard (LCFS) Re-Adoption Plan discussed at the March 11, 2014 workshop held by the California Air Resources Board (ARB).

Founded in 1987, ACE is the grassroots voice of the U.S. ethanol industry, uniting ethanol producers, farmers, agriculture and commodity groups, cellulosic and advanced biofuel companies, rural electric cooperatives, and grassroots individuals in support of our mission to make American ethanol the consumer fuel of choice.

We offer the following comments and suggestions regarding the amendments ARB staff have proposed for the LCFS.

Corn ethanol continues to get better while petroleum-based fuels continue to get worse

The LCFS was designed to reduce lifecycle greenhouse gas (GHG) emissions associated with the production, distribution, and use of motor fuels by providing market and performance based incentives for fuel suppliers to innovate.

As noted by ARB, ethanol has been the primary low-carbon fuel used to fulfill the LCFS to date. Many ACE member ethanol facilities are supplying low-carbon corn ethanol to California and the LCFS is a useful policy tool in helping drive further innovation and reductions in carbon intensities by our member plants. In fact, at the same time ethanol producers are taking steps to innovate and produce low carbon

fuels that are less expensive for consumers, gasoline from petroleum continues to get more expensive to refine and much more harmful to the environment in terms of carbon intensity.

To underscore how petroleum based fuels are getting worse at the same time ethanol is getting better, consider that under the original LCFS, the carbon intensity (CI) assigned to CARBOB gasoline was 95.86 grams per MJ and the average CI assigned to Midwest corn-based ethanol was 98 grams per MJ (which included an indirect land use change [ILUC] penalty of 30 grams per MJ).

In the latest version of Table 6, Carbon Intensity Lookup Table for Gasoline and Fuels that Substitute for Gasoline, ARB has increased the CI of CARBOB gasoline to 99.18 grams per MJ. Conversely, today more than 100 corn ethanol pathways have been approved by ARB and the average CI of these corn ethanol pathways is just 86 grams per MJ (which still includes a 30 gram per MJ ILUC penalty). Gasoline's carbon intensity has increased by more than 3 grams per MJ while the *average* Midwest corn-based ethanol CI has improved by 12 grams per MJ.

As long as the LCFS continues to drive market-based innovations, corn ethanol will play an ever-growing role in fulfilling the goals of the program to produce and use low-carbon fuels.

Updates to indirect land use change (ILUC) values

We appreciate that ARB ordered staff to refine ILUC analysis, taking into account advancements in methodology, data, and scientific understanding. ARB's proposal to reduce ILUC for corn ethanol from 30 grams per MJ to 23.2 grams per MJ is a step in the right direction.

Since this controversial topic was introduced, economists, scientists, and lifecycle experts have worked to improve the predictive models used to try and estimate ILUC. These improved models overwhelmingly indicate indirect land use effects from corn ethanol are substantially less than first estimated. We are confident that if ARB continues to search out the best ways to quantify the benefits and effects of corn ethanol, you will find even larger reductions than the proposed 23.2 grams per MJ are warranted. As you know, on March 6, a group of 14 experts in this field sent ARB a letter indicating the following: "In general, our recent work, and analyses conducted by other experts in the field, indicates that CARB's existing factors significantly overestimate the GHG emissions associated with potential ILUCs resulting from corn ethanol expansion. Analyses conducted since CARB adopted the LCFS in 2009 show that potential ILUC emissions associated with corn ethanol are more likely in the range of 6-15 grams per MJ compared to CARB's estimate of 30 grams per MJ."

ACE also urges ARB to follow the guidance and recommendations of GTAP experts such as Dr. Wally Tyner from Purdue University when estimating Yield Price Elasticity (YPE) in ILUC calculations. ARB's latest proposal does not sufficiently take into account how farmers respond to higher prices to maximize productivity. Given the fact that YPE is by far the most impactful factor in ILUC calculations it is imperative that the ARB use the best data and science available.

Predictive Models versus Real-World Data

We are concerned about an inconsistency in how ARB evaluates or weighs the importance of data from predictive models to make ILUC estimations versus how it weighs real-world data to judge pathways for reducing the CI of corn ethanol. This leads to serious questions about the usefulness of including an ILUC factor in a regulatory environment like the LCFS given the results from models often differ from on-the-ground measurements.

Despite the recent improvements employed by ARB and others to estimate ILUC, it should be noted that the calculations used by ARB are still primarily estimations based on assumptions plugged into computer models, not actual measurements of anything. Meanwhile, to justify CI reduction pathway applications, corn ethanol producers are supplying ARB with real-world data.

Actual data on corn yields and land use has been collected that undermines the entire premise of ILUC. For example, corn grown continually on current crop land in the U.S. has proven to increase the carbon stocks of those lands, which should erase any ILUC penalty if not result in a credit. There is a deep body of evidence on corn yields and soil carbon stocks, including years of actual yield data and measurements from many soil test labs, proving that farmers are producing more corn on the same acres and increasing the carbon stocks of their soils. In fact, in some regions soil scientists have documented increases in soil carbon stocks that are large enough on an annual basis to reduce corn ethanol's GHG footprint by 60 percent compared to gasoline. Using model based predictions for ILUC yet neither allowing model predictions nor actual yield data and measurements of soil carbon stocks change for low carbon pathways seems scientifically inconsistent.

We encourage ARB pay close attention to improved corn yields and reduced tillage as it tries to do a better job of lifecycle carbon accounting, because these farmers, and the corn ethanol derived from their lands, should receive credit for capturing soil carbon.

ARB's current approach to carbon accounting is simply not level. For example, it gives artificial credit to unfermented sugar leftover from outdated Brazilian mills as a "waste" molasses product. As a result of ARB's proposal to count this unfermented sugar as waste, some in Brazil have acquired this product and fed it into the fermentation stream of modern-day mills to get credit from ARB for producing a very low CI ethanol. ARB received a backlash of criticism for this. Similarly, modern-day corn ethanol producers aren't given meaningful credit for corn oil, which is used to make biodiesel, yet ARB provides a substantial credit for biodiesel. As a result, ARB assigns corn based ethanol with all the carbon intensity but none of the benefit/credit of the corn oil.

We urge you to correct these inconsistencies as part of the amendment process.

CI Bins for Fuel Pathways and Producer Facility Registration

ARB is proposing to streamline and simplify the fuel pathway certification and registration process. So-called conventionally produced first generation fuels such as corn and sugar based ethanol, biodiesel, electricity, and others would fall into a tier one category while next-generation fuels and some "innovatively produced first-generation fuels" would fall into tier two.

Under ARB's proposal, tier one fuels will be registered into CI bins. Under this bin approach, when an ethanol producer registers a tier one pathway, that fuel won't be assigned the precise CI it meets, rather, the fuel will be assigned the CI at the middle of the range for the bin into which it falls.

While ACE applauds efforts by ARB to reduce complexity and time delays in getting low carbon fuel pathways approved for the market, we do not support this bin approach. ARB's proposed approach could remove incentives for corn ethanol producers to become more efficient and innovate and harm the goals of the LCFS. For example, under a bin approach, an ethanol producer who invested in technology to reduce energy use resulting in ethanol with a CI of 81 grams per MJ could be assigned the midpoint of the range (82.5) for the 80-85 CI bin instead. This 1.5 gram difference might seem trivial, but the incentive is real. If LCFS carbon credits are valued at \$50 per metric ton of CO₂, the 1.5 gram difference provides an incentive of six tenths of one cent per gallon to ethanol plants. Plants that produce 100 million gallons of ethanol each year benefit by more than \$600,000 to reduce total energy consumption by as little as 5 percent. What CARB is proposing to do with this bin approach is erase that \$600,000 value for ethanol producers to become more efficient and help supply a lower CI fuel for the California market. This contradicts the goals of the LCFS.

Adoption of newer versions of GREET models

ACE applauds the ARB's proposal to adopt the latest versions of the GREET Model. Argonne National Lab is the world leader in the lifecycle GHG analysis of biofuels and their newer versions incorporate the latest data and science regarding corn ethanol fuel. ACE also urges ARB to follow Argonne GREET default values regarding displacement ratios for co-products displaced by distillers grains (DDGs) produced by corn ethanol dry mills. It is scientifically indefensible (as the ARB does in CA-GREET 1.8b) to assume that one pound of DDGs only displaces the equivalent of one pound of corn when Argonne GREET 1.8b recommends that one pound of DDGs displace .951 pounds of corn, .297 pounds of soybean oil meal, and .025 pounds of N-Urea in cattle rations. Adopting a dry mill default value that simply assumes one pound of DDGs displaces one pound of corn completely ignores the fact that the concentration of protein, minerals, vitamins, and oil in DDGs is three times that of corn.

In dry mill corn ethanol production only the starch portion of the corn kernel is used to make ethanol while the important high value nutrients that remain become part of the food and feed supply. Hunger and starvation are largely a result of protein, vitamin, and mineral malnutrition, not from a lack of starch. ACE urges the ARB to make this long overdue correction to dry mill co-product displacement ratios in the current and any new version of the GREET model that the ARB chooses to use.

Thank you for your time and consideration of these comments.

Sincerely,



Brian Jennings, Executive Vice President
American Coalition for Ethanol (ACE)