



May 3, 2017

Submitted by Electronic Mail

California Air Resources Board
1001 I Street
Sacramento, CA 95814
Attn: LCFS GREET Model / iLUC Comments

Request for Comments: California Low Carbon Fuel Standard (LCFS) - Review of Latest Scientific Data and Update to Indirect Land Use Change Values

Dear Sir or Madam:

Flint Hills Resources (FHR) is pleased to submit comments in response to the request at the Public Working Meeting for lifecycle assessment modeling held on Tuesday, April 4, 2017.

FHR operates fuel ethanol plants in Iowa, Nebraska, and Georgia as well as a biodiesel plant in Nebraska. We produce a large quantity of ethanol and biodiesel that may be sold within the state of California.

During the previous rulemaking process ARB staff committed to undertaking a review of the latest scientific data for Indirect Land Use Change (iLUC) and update the LCFS iLUC values accordingly. FHR contends that now is the appropriate time for ARB Staff to conduct this review and update the iLUC value as part of the upcoming rulemaking process for the following reasons:

1. The current iLUC values are outdated and should be updated, as recommended by the Expert Working Group (EWG) and ARB Staff.

Since the original EWG work during 2010, significant progress has been made in respect to indirect land use scientific research, including the inclusion of actual data collected after initial LCFS rule implementation. Within Appendix I to the Initial Statement of Reasons (ISOR) to the 2015 LCFS Re-adoption rulemaking, ARB staff recognized this need to update and refine the iLUC analysis when new information becomes available, as follows:

“The EWG tagged several recommendations under long-term updates to the model. These have not been included in the current analysis for the re-adoption of the LCFS regulation. In addition, a comprehensive review by staff of the structure, input values, parameters etc. within the model has identified areas that need improvement. Staff, is therefore, proposing to consider these together with the recommendations by the EWG and stakeholders and refine the iLUC analysis in the future.” (Detailed Analysis for Indirect Land Use Change, Section 7 – Long Term Updates to iLUC Analysis)

2. ARB should use the latest available scientific data, specifically GTAP 9 with baseline data from 2011, to assess the impacts on iLUC values.

CARB adopted new iLUC values for 6 biofuel pathways as part of the 2015 LCFS Re-adoption. However, this work originated from EWG work concluded during 2010 and included the GTAP 7 model with 2004 baseline data. Since the conclusion of the EWG, GTAP 9 has been released with

2011 baseline data, representing a significant timeframe improvement over the previously used 2004 baseline data. Argonne National Laboratory has utilized the GTAP updates in conjunction with the modifications to the CCLUB model to reassess the impacts on iLUC and have documented significant decreases. Based on the underlying calculations by J. Dunn with Argonne National Laboratoryⁱ, this would reduce the carbon intensity (CI) for corn ethanol by approximately 12g CO₂e/MJ (~18% reduction overall for corn ethanol).

3. ARB should reevaluate the methodology of the AEZ-EF model and the Emission Factors (EF) used to assess the impacts on iLUC values.

New scientific research has been released during the 2011 to 2016 timeframe. This research has undergone rigorous independent peer reviews and was incorporated into the modeling of the latest iLUC values using CCLUB16, Winrock, and Woods Hole. These updates provide results, as determined by USDAⁱⁱ, that are superior to those calculated with the current AEZ-EF model.

Based on our review of CCLUB16, the databases and elasticity values used to assess land use area changes and carbon stock factors provides carbon impacts closer to an IPCC Tier 3 approach than the AEZ model which is based on a Monte Carlo assessment of varying literature tables. Therefore, we request that ARB review the latest changes to the CCLUB model to determine if the problematic assumptions identified by ARB within the Final Statement of Reasons (FSOR) to the 2015 LCFS Re-adoption rulemaking have been addressed and reconsider the use of the current CCLUB model.

In offering our comments, it is our hope that ARB will use our suggestions to produce updated iLUC values that will be more representative of actual, real-world emissions. Should you have any questions, please contact FHR's VP, Quality and Compliance, Rita Hardy (rita.hardy@fhr.com, 316-828-7840), or myself, for further information or to schedule a meeting.

Sincerely,

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ⁱ Dunn, J, Mueller S, Kwon H, Wang M: **Land-use Change and Greenhouse Gas Emissions from Corn and Cellulosic Ethanol**. *Biotechnology for Biofuels* 2013 6:51

ⁱⁱ USDA: **A Life-cycle Analysis of the Greenhouse Gas Emissions of Corn-Based Ethanol**. 2017
<https://www.usda.gov/media/press-releases/2017/01/12/usda-releases-new-report-lifecycle-greenhouse-gas-balance-ethanol>