



September 19, 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 (iLUC) Values**

Dear Mr. Sam Wade, Chief of Transportation Fuels Branch:

Flint Hills Resources (FHR) is pleased to submit a summary of iLUC research since the 2015 LCFS Re-adoption. This submittal was requested at the Public Working Meeting for the LCFS program amendments held on Monday, August 7, 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 2015 LCFS Re-adoption rulemaking process, ARB staff committed to undertaking a review of the latest scientific data for iLUC and update the iLUC values for the appropriate biofuels. According to the literature citations provided throughout the 2013-2015 LCFS public workshops, and other regulatory documents (including the 2015 LCFS Re-adoption Initial Statement Of Reasons (ISOR) and Final Statement Of Reasons (FSOR)), the scientific data was based on literature published prior to 2014. From this review, ARB updated the iLUC values for 6 biofuel feedstocks during the 2015 LCFS Re-adoption.

Since 2014, there have been numerous peer-reviewed publications, dissertations, and other scientific literature, focussed on various aspects of iLUC related to biofuels, as listed within Appendix A. There have been additional peer-reviewed publications and model updates that were not included in any aspect of the 2015 rulemaking, as presented in Appendix B. FHR contends that now is the appropriate time for ARB staff to conduct a review of these additional publications and global economic model updates during the upcoming rulemaking process. FHR's more detailed comments are as follows:

- 1. ARB should use the latest available scientific data, specifically GTAP Version 9 (Baldos, 2017) with baseline data from 2011, to assess the impacts on iLUC values. ARB should also include the biofuels update to GTAP 9 (Taheripour, 2016).**

Since the conclusion of the 2015 LCFS Rulemaking, GTAP Version 9 has been released with base year 2011 data, providing a more accurate depiction of land-use than the previously used base year 2004 data, when crop-based biofuels were being produced at a fraction of 2011 production levels.

Please also make note of ARB's response to PR-26 within the 2015 LCFS Re-adoption FSOR which acknowledged the need for updates and the potential affect the updates would have in the iLUC estimate: "Purdue is currently in the process of updating the baseline to a 2010 timeframe. When the update is completed, ARB will consider updating the iLUC analysis. Refining the baseline of the model may change the iLUC estimate."

2. **ARB should use the Carbon Calculator for Land Use Change (CCLUB) from Biofuels Production in the assessment of the impacts on iLUC values (Dunn, 2016).**

New scientific research has been released since the 2014 timeframe. This research has undergone rigorous independent peer reviews and was incorporated into the modeling of the latest iLUC values using CCLUB16 and Winrock. These updates provide results, as determined in the recent report published for the USDA (Flugge, 2017) that are superior to those calculated with the current AEZ-EF model.

Based on our review of CCLUB16, the database and elasticity values used to assess land use area changes and carbon stock factors provide carbon impacts closer to an IPCC Tier 3. FHR believes that the CCLUB16 model addresses the problematic assumptions identified by ARB within the FSOR to the 2015 LCFS Re-adoption rulemaking.

FHR requests ARB to use the referenced sources and models included in Appendix A and B respectively to produce revised iLUC values that are more representative of actual, real-world emissions as published by various experts in this field. (According to Flugge, the iLUC for corn ethanol should be 5,913 g CO<sub>2</sub>e/MMBTU.) Should you have any questions, please contact FHR's VP, Quality and Compliance, Rita Hardy ([rita.hardy@fhr.com](mailto:rita.hardy@fhr.com), 316-828-7840), or myself, for further information or to schedule a meeting.

Sincerely,

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