

Comments on Tier 1 Starch Ethanol Calculator version dated March 6, 2018

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Pathway: Corn Ethanol with CO extraction

Comment

Life Cycle Associates would like to take this opportunity to provide our comments on the starch ethanol LCFS released by ARB on March 6, 2018. Based on our review of the tier1-starch-fiber-ethanol-calculator.xls, the following considerations should be made to ensure accuracy of the CI calculation.

- Corn oil credit calculation in the calculator continues to perpetuate the corn oil energy accounting issue. The following table presents the current status and two different options to address the issue.

Options	Extraction energy treatment	Corn oil treatment
Current	Double counts extraction energy in Ethanol pathway	As DGS mass
Proposed	Allocate power to starch EtOH and Corn Oil on energy basis	DGS mass
More Accurate	Allocate all energy inputs to both products	Allocate ILUC (for corn and DGS credit) to both products

As per the discussions between ARB and Life Cycle Associates during February 2018, the solution to mitigate the double counting is to allocate the electricity consumption between the corn oil and the corn ethanol produced weighted by their corresponding total energy content.

- The GWP for the non-combustion (fugitive) emissions during the fuel production phase should be zero as they have biogenic origin. The change needs to be made in the CA_GREET3 as well as the starch sheet.

Allocating electric power used by the ethanol plant to corn oil and starch ethanol based on the energy content of each product is a reasonable approach in the interim until the distribution of ILUC to ethanol and corn oil can be evaluated. Both the ethanol plant operations and corn oil extraction both require electric power. Determining the power requirement for each operation would require additional data collection which is not warranted. Furthermore, allocating the roughly 0.5 kWh to 1 kWh of power per gallon of ethanol to both ethanol and corn oil yield provides a GHG savings to the ethanol plant that is comparable to the extraction addition in the corn oil biodiesel pathway. ARB could also align the extraction burden in the corn oil biodiesel pathway with the average data from corn ethanol plants that have registered under the LCFS.

To demonstrate the corrections described above, we are attaching with this letter tier1-starch-fiber-etho-calculator_LCA_v1.xls which includes the above corrections in formulas. The modified cells have been highlighted in blue. We are also attaching three of our previously submitted comments for reference.

Thank you for your consideration.

Best Regards,



Stefan Unnasch
Managing Director
Life Cycle Associates, LLC



Love Goyal
Environmental Scientist
Life Cycle Associates, LLC

Attachments: tier1-starch-fiber-etho-calculator_CO_elec_credit.xlsm; LCA_-_iLUC_Corn_ethanol v2.pdf; Unnasch_-_COB Allocation.pdf; LCA_-_Corn Ethanol biogenic VOC.pdf