Date: May 3, 2013

Re: Method 2B Application- Excluding Confidential Business Information

Note: "xxx" in text indicates where information was redacted

California Air Resources Board
Industrial Strategies Division
Transportation Fuels Branch, Fuels Evaluation Section
1001 I Street
P.O. BOX 2815
Sacramento, CA 95812

To: The Executive Officer

Herewith, please find our application and supporting documents for a fuel lifecycle GHG emissions pathway using the Method 2B application process described in "Establishing New Fuel Pathways under the California Low Carbon Fuel Standard Procedures and Guidelines for Regulated Parties" report by ARB (California Air Resources Board) issued on March 25, 2010.

We seek a pathway for our Cocal – Comércio Indústria Canaã Açúcar e Álcool Ltda.mill ("Copersucar Cocal I Mill") ethanol plant located in Paraguaçu Paulista, São Paulo State, Brazil. At our facility, we produce ethanol from local sugarcane. Our facility uses bagasse for its process energy and electricity and exports surplus electricity to the local grid. We simultaneously produce sugar at the mill as well. During the production period upon which our new pathway is based, xxx% of our cane was mechanically harvested and our mill exported xxx kwh attributable to each anhydrous equivalent gallon produced.

The CARB LCFS regulations stipulate that only pathways lower in carbon intensity value than the main pathway they deviate from can use the Method 2B application. Our pathway is a sub-pathway of the "Ethanol from Sugarcane- Brazilian sugarcane with average production process" pathway because, except for the points of deviation summarized above, our pathway is identical to the pathway described in the Detailed California-Modified GREET Pathway for Brazilian Sugarcane Ethanol Well-to-Wheel (WTW) lifecycle analysis.[1]

We have used the CA-GREET Model 1.8b to calculate the lifecycle greenhouse gas emissions from this sub-pathway. Based on the input changes to the model described in the attachments, the carbon intensity value of this new pathway is 67.64 gCO2e/MJ.

[1] For reference, see CARB Report "Detailed California-Modified GREET Pathways for Brazilian Sugarcane Ethanol: Average Brazilian Ethanol, With Mechanized Harvesting and Electricity Co-product Credit, With Electricity Co-product Credit" September 23, 2009, Version 2.3. In this application this report is referred to at the "Sugarcane Ethanol WTW Analysis."

The following sections to this application provide the details and documentation of our application for new pathways under Method 2B. Portions of the following information are considered confidential business information and each page with "Contains Confidential Information" in the page header should be considered to contain confidential business information. Pages that have been redacted to remove confidential business information have "Non-Confidential, Redacted Version" in the header. Where redaction has occurs in the text, it is marked with one or more "x" symbols. The number of "x" symbols has no meaning. Each electronic file that includes the word "CONFIDENTIAL" in the file name should be considered to contain confidential business information. If the electronic file does not contain any confidential business information, the file name includes the word "PUBLIC".

We request your approval and would be glad to answer any questions you may have about our application.

Attachments

Attachments

Section Number and Contents

I. WTW Diagram of Copersucar Cocal I Mill Sub-Pathway of the Brazilian Sugarcane Ethanol (Average Brazilian Ethanol) Pathway

Figure 1: WTW Components of the Copersucar Cocal I Mill Pathway are Identical to the Brazilian Sugarcane Ethanol Pathway[2]

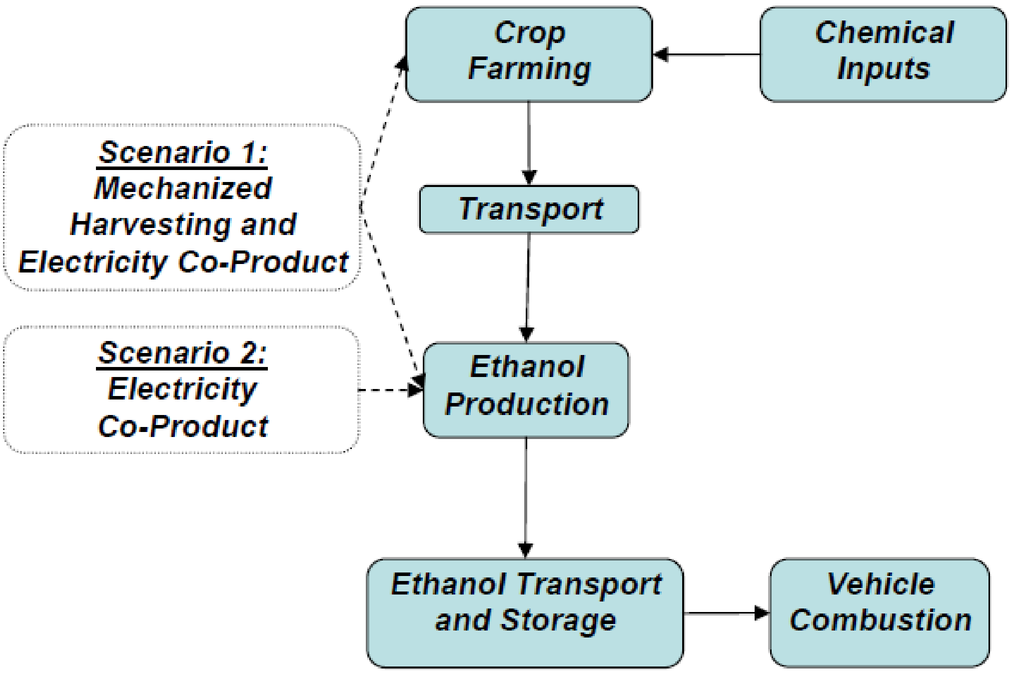

Figure 1. WTW Components for Sugarcane Ethanol Produced in Brazil and Transported for Use in CA

[2] See CARB Report "Detailed California-Modified GREET Pathways for Brazilian Sugarcane Ethanol: Average Brazilian Ethanol, With Mechanized Harvesting and Electricity Co-product Credit, With Electricity Co-product Credit" September 23, 2009, Version 2.3, page 3.

II. Copersucar Cocal I Mill Plant Information

Copersucar Cocal I Mill Plant Info

1. History of Mill, Nature of Ownership– Cocal I is a partner mill from Copersucar S.A.
2. Feedstock Type – Sugar Cane
3. Feedstock Harvesting Method and History – Mechanical harvesting began in 2005 and the method for it is: cutting of unburned sugarcane utilizing mechanical harvesters, loading this cut sugarcane into wagons and then unloading this sugarcane from the wagons into trucks that transport the mechanically harvested sugarcane to the mill.
4. Product – Ethanol
5. Co-Products - Sugar and Electricity, Vinasse
6. Process fuel and power supply – Bagasse for fuel. Power generated from bagasse.
7. Power exports - This mill exports power into the commercial grid.
8. Process Flow Description and Block Flow Diagram The numbers and letters in brackets throughout the process flow description refer to the items in the Block Diagram contained in a separate file named "*BLOCK DIAGRAM U-030 - Cocal I MILL CONFIDENTIAL.pdf* ". **However, because it contains Confidential Business Information, it is not included in this non-confidential version of the application.**

Extraction (1)

The ethanol production process starts with the juice extraction from sugar cane (1), generating bagasse (a) and mixed juice (c). The juice follows the process described below for production of ethanol as fuel, sugar and the bagasse which is used internally in the plant for generation of thermo-mechanical energy and electrical energy (b).

Preliminary Juice Treatment (2)

The mixed juice is screened to remove coarse impurities.

Chemical Juice Treatment (3)

The processes of liming (3.1), heating (3.2), clarification (3.3) and filtering of the decanted sludge is used for purification of the juice, producing a co-product called filter cake (d) that is applied in the fields of sugar cane as fertilizer. The clarified juice is then heated (3.4) and routed to a set of evaporators to concentrate the sugars in the juice to meet the feedstock requirements of sugar and ethanol production sections of the mill. The concentrated juice leaving the evaporators is then split with a portion routed to the sugar section. The remaining juice is combined with the molasses from the sugar centrifuge, cooled and routed to fermentation.

Yeast Treatment (4)

The controlled addition of sulfuric acid to the yeast Saccharomyces cerevisiae is used to adjust the pH to 2.5, aiming to bacteria's control.

Fermentation (5)

Fermentation is controlled by adjusting the concentration and temperature of the mixture comprised of the juice, final molasses from sugar manufacturing (e), and yeast. During this phase, the sucrose is converted into ethanol and carbon dioxide. The total fermentation cycle takes about 6-8 hours and ends up producing a mixture called fermented wine containing between 7 to 10% (v / v) ethanol. This process is conducted in a batch set of fermentation tanks.

Wine Centrifugation (6)

After fermentation, the wine is sent to continuous centrifuges for recovery and recycling the yeast while the centrifuged wine is sent to the distillation columns for ethanol recovery.

Distillation (7)

The ethanol present in the centrifuged wine is recovered by distillation, a process that uses the principle of different boiling points of various volatile substances present in this wine. For the production of hydrated ethanol, two distillation columns are used, called distillation columns A and B. From the top of column B is taken a solution containing 93% (w / w) ethanol (hydrated ethanol), and from the bottom of these two columns vinasse is withdrawn as a co-product.

Dehydration (8)

To produce anhydrous ethanol, the alcoholic solution at 93%volume (hydrated ethanol) is sent to a process based on the concept of adsorption of water, known as molecular sieve, increasing ethanol concentration up to 99.3%volume.

Steam and Electric Energy Production (b)

As a co-product of the sugar cane juice extraction process , the sugar cane bagasse is obtained, which is the feedstock used for thermal energy production in the form of steam which is then converted into mechanical energy, electricity, and used in heat exchangers of the sugar and ethanol production processes. The steam produced feeds a turbo–generator set for electrical energy production and the steam turbines of the mechanical equipment drives of the Sugar Cane Preparation and Extraction sectors. The thermal energy of the exhaust steam of these turbines is used in the process for the juice treatment and distillation of wine.

9. Energy and Material Balance.

For legibility, the energy and material balance for the Copersucar Cocal I Mill ethanol plant is contained in an Excel file accompanying the electronic version of this application and is a separate document in the printed, hard copy version of this application**.** The file name is: "*Balance CARB - V 9_2 Cocal I crop 2011-2012 CONFIDENTIAL 16Apr13.xlsx*" **- However, because it contains Confidential Business Information, it is not included in this non-confidential version of the application.**

10. In two separate document/electronic files accompanying this application due to its size, please find the latest version of the plant's air permits. These permits contain information about the equipment in the plant that generates emissions from the combustion of fuel. One file is the original operating permit in Portuguese and the second is the English translation. The two file names are: "*Operation License - Cocal I Mill – English PUBLIC.pdf*" and "*Operation License - Cocal I Mill PUBLIC.pdf*".

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III. Table of CA-GREET Model Inputs for the Copersucar Cocal I Mill Pathway -

Table 1: CA-GREET Model Inputs for the Copersucar Cocal I Mill Pathway

CA GREET Model Input Changes to 1.8b Model						
Sheet Name	**Cell number**	**Default Value**	**Mill Pathway Value**	**Units**	**Description**	**Comments**
Fuel_Prod_TS	H291	100%	Confidential Business Information	%	Share of Corn Ethanol to Total Ethanol Production	By setting this to zero, Cane ethanol was calculated to be 100% in the model (Inputs H185)
Fuel_Prod_TS	CZ263	80%	Confidential Business Information	%	Percentage of Straw Burnt in Field	
Inputs	D307	zero or -0.96	Confidential Business Information	kwh/gal	Power exported attributed to ethanol	
T&D_Flowcharts	F1417	50%	Confidential Business Information	%	Percentage of ethanol shipped from mill to port by pipeline	No pipeline transport from mill to port
T&D_Flowcharts	F1418	500	Confidential Business Information	miles	Pipeline distance	No pipeline transport from mill to port
T&D_Flowcharts	F1421	50%	Confidential Business Information	%	Percentage of ethanol shipped from mill to port by rail	No rail transport from mill to port
T&D_Flowcharts	F1422	500	Confidential Business Information	miles	Rail distance	No rail transport from mill to port
T&D_Flowcharts	R1427	100	Confidential Business Information	miles	Trucking distance	Trucking distance from mill to Santos plus the default trucking distance from the CA. port to the bulk ethanol distribution terminal.
T&D_Flowcharts	M1420	7,416	Confidential Business Information	miles	Ocean transport distance	Average of the distance from Port of Santos to Los Angeles and San Francisco area ports

Discussion - **Confidential Business Information**

The input values presented in this application are based on the period from April 1, 2010 through March 31 2012, the "Production Period." This coincides with the 2010/2011and 2011/2012 sugarcane crop years in the Center-South of Brazil.

The power exported from the mill was allocated between the sugar and ethanol production based on

Table 2: xxx

Table 2 is considered Confidential Business Information and is not included in this non-confidential version of the application.

Power exports were allocated to ethanol production based on xxx

The CA-GREET model input for power exports is in units of kilowatt-hours of power exports per gallon of ethanol. xxx

Table 3: xxx

Table 3 is considered Confidential Business Information and is not included in this non-confidential version of the application.

The power allocated to ethanol production based on the xxx The following table details the calculation of the kwh/gal input factor.

Table 4: Calculation of Power Exports Attributable to Ethanol

Table 4 is considered Confidential Business Information and is not included in this non-confidential version of the application

The percentage of cane mechanically harvested is calculated based on the amount of raw (unburnt) cane that was mechanically harvested divided by the total amount of cane harvested during the production period. The following table provides a summary of the calculation during the production period and during the crop year prior to the production period for comparison.

Table 5: Calculation of Percent of Cane Mechanically Harvested

Table 5 is considered Confidential Business Information and is not included in this non-confidential version of the application.

IV. CA-GREET Model Output and Analysis of Results

The Copersucar Cocal I Mill pathway carbon intensity value is 67.64 gCO2e/MJ.

Table 7: CI of Copersucar Cocal I Mill Pathway

This table is considered Confidential Business Information and is not included in this non-confidential version of the application.

V. Production Range of Copersucar Cocal I Mill Pathway

The new pathway is applicable to the Copersucar Cocal I Mill facility from 20.75 MGY to 28.08 MGY. The production range is attested to in our Method 2B LCFS Application form.

VI. Sustainability of Copersucar Cocal I Mill Pathway

The Copersucar Cocal I Mill facility was designed and constructed using well-established modern designs and equipment and is managed by professional staff well-qualified to assure that over time the energy efficiency of and emissions from the facility do not deteriorate. Any deterioration would result in a less profitable business. Thus the sustainability of the plant is well aligned with the business objectives of the owners.

VII. Impact on Land Use

There is negligible difference between the land use of this sub-pathway and that of the "Ethanol from Sugarcane- Brazilian sugarcane with average production process".[3]

[3] See CARB Report "Detailed California-Modified GREET Pathways for Brazilian Sugarcane Ethanol: Average Brazilian Ethanol, With Mechanized Harvesting and Electricity Co-product Credit, With Electricity Co-product Credit" September 23, 2009, Version 2.3. In this application this report is referred to at the "Sugarcane Ethanol WTW Analysis."

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VIII. Documents supporting Annual Quantities of Ethanol, Cane, Sugar, Molasses, Bagasse and Power

The Excel files with the energy and material balance for the mill contains the actual amounts during the Production Period and the crop year prior to the Production Period crop year. The file names are:

Balance CARB - V 9_2 Cocal I crop 2011-2012 CONFIDENTIAL 16Apr13.xlsx
Balance CARB - V 9_2 Cocal I crop 2011-2012 CONFIDENTIAL 16Apr13.xlsx

Mechanical Harvesting Percentage – xxx.

Cocal I Mill - 2011-2012 crop CONFIDENTIAL.pdf
Cocal I Mill - 2010-2011 crop CONFIDENTIAL.pdf
xxx

xxx.

Power exports - xxx

CCEE Crop 11-12 CONFIDENTIAL 16Apr13.pdf

CCEE Crop 10-11 CONFIDENTIAL 16Apr13.pdf

1) xxx

xxxxxx