

ARB Staff Summary:

Flint Hills Resources – Fairmont, Nebraska Corn Ethanol Dry Mill LCFS Pathway ETHC064 Carbon Intensity Adjustment

Deemed Complete Date: June 15, 2013

Certification Date: August 1, 2013

Pathway Summary

Flint Hills Resources (FHR) operates a corn ethanol plant in Fairmont, Nebraska. The plant is a dry mill, natural-gas-fired facility producing dry distillers grains with solubles (DDGS) and modified distiller's grains with solubles (MDGS). Approximately 91 percent of the DGS produced is DDGS and the remaining 9 percent is MDGS. A method 2A pathway for this plant was originally certified in December of 2011, when the plant was owned by Advanced BioEnergy LLC. It was assigned a pathway identification code of ETOHC064 and certified to sell ethanol in California at a CI of 88.84 gCO₂e/MJ¹. The plant was acquired by FHR in December 2012.

In May of 2013, FHR requested that its pathway CI be reduced to 86.62 gCO₂e/MJ, citing an error in the natural gas heating value used to calculate the pathway CI. At the time the original application was submitted, the applicant believed that the energy amounts shown on the invoices from the natural gas supplier were lower heating values (LHV). The applicant has since confirmed that they were actually gross or higher heating values (HHV). Recalculating the pathway CI using the LHV reduced FHR's CI to 86.62 gCO₂e/MJ. This ARB Staff Summary updates the original Advanced BioEnergy LLC Staff Summary, but incorporates by reference all sections of that Summary except the pathway carbon intensity value sought by the applicant.

Carbon Intensity of Ethanol Produced

The applicant provided documentation from its natural gas supplier indicating that the heating values shown on its invoices were "gross" heating values. The industry-standard method for converting gross heating values to lower heating values is to divide them by the ratio of 1,030 btu/ft³ HHV to 930 btu/ft³ LHV (approximately 1.11). The applicant used this method to convert the heating value of the natural gas its plant consumed to a LHV basis. Using the resulting LHV to recalculate its pathway CI produced a value of 86.62 gCO₂e/MJ for pathway ETHC064_1².

¹ This and all staff-approved LCFS pathways are posted to

<http://www.arb.ca.gov/fuels/lcfs/2a2b/2a-2b-apps.htm>

² The pathway code is changed to ETHC064_1 to reflect the difference compared to the original ETHC064.

The use of the correct natural gas heating value has the effect of reducing the amount of natural gas used per gallon of ethanol produced by an amount the applicant specifies as confidential. FHR has provided a signed letter confirming that current and anticipated future plant operations are consistent with the operations described in the original application posted on the ARB website (please see footnote 1 for the web address). The operating conditions placed on the FHR plant in the original ETHCO64 Staff summary will therefore remain in effect. Those conditions are as follows:³

1. Thermal energy and electricity use shall not exceed the current values that are classified by the applicant as confidential business information.
2. Condition 1, above, effectively limits FHR to the production of no more than 91 percent dry DGS for the ethanol sold into the California market (drying a higher proportion of its DGS co-product will increase energy consumption and carbon intensity beyond the values specified in the company’s Method 2A application).

Table 1: Proposed Lookup Table Entries

Fuel	Pathway Identifier	Pathway Description	Carbon Intensity in gCO ₂ e/MJ (Including Indirect Effects)		
			Direct Emission	Land Use or Other Indirect Effect	Total
Ethanol	ETHC064_1	2A Application: Midwest; Dry Mill; 91% Dry DGS, 9% Modified DGS; NG	56.62	30	86.62

Staff Analysis and Recommendation

Staff has replicated, using the CA-GREET 1.8b spreadsheet, the reduced carbon intensity of 86.62 gCO₂e/MJ requested by FHR for Pathway ETHC064. FHR has confirmed that its plant is capable of continuing to operate at that CI. On the basis of these findings, and subject to the conditions enumerated in this summary, staff recommends that FHR’s application for a CI of 86.62 gCO₂e/MJ for pathway ETHC064 be certified. Staff further recommends that this adjusted

³ Compliance with the “not-to-exceed” values will be based on monthly, quarterly, or annual average values, as determined by operational conditions. Calculation of the average values can exclude periods of abnormal operations, such as planned maintenance or force majeure events.

CI take effect on the date it is posted to the public LCFS Method 2 web site, and apply solely to fuel volumes sold on and after that date.