

ARB Staff Summary:

Hereford Renewable Energy, Hereford, Texas Corn Ethanol Dry Mill LCFS Pathway ETHC072 Carbon Intensity Adjustment

May 17, 2013

Pathway Summary

Hereford Renewable Energy, LLC (HRE) operates a corn and grain sorghum ethanol plant in Hereford, Texas. The plant, which has a capacity of 120 million gallons per year, is a dry mill, natural-gas-fired facility which produces single co-product: wet distiller's grains with solubles (WDGS). Corn comprises most (as much as 99 percent) of the feedstock run at the plant. HRE applied for a Method 2A fuel pathway under the California Low Carbon Fuel Standard (LCFS) in August of 2012. In December of 2012, staff assigned HRE's pathway an LCFS identification code of ETHC072, and recommended it for approval at carbon intensity (CI) of 80.34 gCO₂e/MJ.¹

In April of 2013, HRE requested that its pathway CI be reduced to 78.90 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 confirmed that they were actually gross or higher heating values (HHV). Recalculating the pathway CI using the LHV reduced HRE's CI to 78.90 gCO₂e/MJ. This ARB Staff Summary updates the original Hereford Renewable Energy 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 a signed letter from its natural gas supplier stating (a) that the heating values shown on its invoices were "gross" heating values, and (b) that the industry-standard method for converting gross heating values to lower heating values is to divide them by 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 78.90 gCO₂e/MJ for pathway ETHC072.

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

¹ This and all staff-approved LCFS pathways are posted to <http://www.arb.ca.gov/fuels/lcfs/2a2b/2a-2b-apps.htm>

applicant specifies as confidential. HRE 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 URL). The operating conditions placed on the HRE plant in the original ETHC072 Staff summary will therefore remain in effect. Those conditions are as follows:²

1. The annual average proportion of sorghum (milo) in the feedstock stream shall not vary from the range specified in HRE’s pathway documentation. Should the proportion of sorghum processed change, HRE shall not sell the ethanol associated with those changed feedstock proportions in California using the pathway described in the HRE Method 2A application.
2. Thermal energy and electricity use shall not exceed the current values that are classified by the applicant as confidential business information.
3. Condition 2, above, effectively limits HRE to the production of only WDGS for the ethanol sold into the California market (drying any 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 | ETHC072 | 2A Application (Specific Conditions Apply): Ethanol from 99% Corn, 1% Sorghum (milo); Dry Mill; Wet DGS; NG | 48.90 | 30 | 78.90 |

² 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.

Staff Analysis and Recommendation

Staff has replicated, using the CA-GREET 1.8b spreadsheet, the reduced carbon intensity of 78.90 gCO₂e/MJ requested by HRE for Pathway ETHC072. HRE 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 in this summary, staff recommends that HRE's application for a CI of 78.90 gCO₂e/MJ for pathway ETHC072 be approved. Staff further recommends that this adjusted 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.