

**Advanced BioEnergy, LLC, South Dakota
Aberdeen Corn Ethanol LCFS Pathway Method 2A Application**

Plant Summary

Advanced BioEnergy, LLC (ABE Aberdeen) operates a corn ethanol plant in Aberdeen, South Dakota. The ABE Aberdeen plant has applied for a Method 2A fuel pathway under the California Low Carbon Fuel Standard (LCFS). The original Aberdeen plant began operations in 1992. It was a Broin-designed facility with a nameplate capacity of 9 million gallons per year (MGY) of denatured ethanol. In January of 2008, an adjoining ICM-designed facility with a nameplate capacity of 40 MGY of denatured product began operating. The plants currently have a combined nameplate capacity of 49 MGY of denatured ethanol, but are permitted to produce 61 MGY of undenatured product. The plant is a dry mill, natural gas-fired facility producing dry distillers grains with solubles (DDGS) and wet distillers grains with solubles (WDGS). Approximately 84 percent of the DGS produced is DDGS and the remaining 16 percent is WDGS.

Carbon Intensity of Ethanol Produced

As shown in Table 1, the applicant is applying for a single pathway carbon intensity (CI) of 90.89 gCO₂e/MJ. The single CI for which ABE Aberdeen is applying reflects the energy consumed for the production of 84 percent dry and 16 percent wet DGS co-products, as specified in its Method 2A application. Proposed method 2A pathways must be evaluated against a reference pathway CI from the LCFS Lookup table. In the case of the ABE Aberdeen plant, the reference pathway is the Midwestern, gas-fired, dry DGS pathway, which has a CI of 98.40 gCO₂e/MJ. The production process for the proposed pathway must not differ significantly from the production process specified for the reference pathway. The proposed 2A pathway CI must also improve upon the reference pathway CI by five or more gCO₂e/MJ.¹

ABE Aberdeen pathway achieves lower carbon intensity value relative to the reference pathway through combined Broin and ICM-designed technologies which reduce energy consumption. Thermal energy use at the ABE Aberdeen plant is below the 32,330 BTU per gallon energy use value that forms the basis of the carbon intensity for the reference DDGS pathway. Electricity use at the ABE Aberdeen plant is also below the level assumed for the reference pathway (1.08 kw-hr per gallon).²

¹ In the LCFS regulation, this 5 gCO₂e/MJ threshold is referred to as the “substantiality requirement.”

² Actual plant energy use values are classified as confidential business information and not reported herein.

The total thermal energy and electricity use values for the ABE Aberdeen plant will become operating conditions upon approval by the Air Resources Board's Executive Officer of the proposed pathway carbon intensity value: thermal energy and electricity use shall not exceed the current values that are classified by the applicant as confidential business information. These conditions effectively limit ABE Aberdeen to the production of no more than 84 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 Entry for the ABE Aberdeen in South Dakota Plant

Fuel/Feedstock	Proposed Lookup Table Pathway Description	Carbon Intensity in gCO₂e/MJ (Including Indirect Effects)	Do Special Conditions Apply? (Y/N)¹
Ethanol/Corn	Midwest Dry Mill, dry DGS; Natural Gas	90.89	Y

¹ The special condition to which this column refers is discussed in the "Carbon Intensity of the Fuel Produced" section of this summary.

Staff Analysis and Recommendation

Staff has reviewed the ABE Aberdeen application and has replicated, using the CA-GREET spreadsheet, the carbon intensity value calculated by ABE Aberdeen. The ABE Aberdeen has provided documentation of the plant's thermal and electrical energy use. Staff is satisfied that the energy values presented in the application accurately represent the plant's actual thermal and electrical energy consumption. Staff believes that the carbon intensity value calculated by ABE Aberdeen is sustainable. Consequently, Staff believes that the carbon intensity value of 90.89 gCO₂e/MJ for the dry DGS pathway accurately represent the carbon intensity value of the ABE Aberdeen plant. Therefore, staff recommends that the ABE Aberdeen application for a Method 2A corn ethanol pathway be approved.