

Illinois River Energy Corn Ethanol LCFS Pathway 2A Application

Plant Summary

Illinois River Energy, LLC (IRE) operates a corn ethanol plant in Rochelle, Illinois. The IRE has applied for a Method 2A fuel pathway for its Rochelle plant under the California Low Carbon Fuel Standard (LCFS). The Rochelle plant began operation in 2006 with a nameplate capacity of 50 million gallons per year (MGY) and expanded to a nameplate capacity of 100 MGY of denatured ethanol in 2007. The plant is a dry mill, ICM-designed, natural gas-fired facility producing dry distillers grains with solubles (DDGS), wet distillers grains with solubles (WDGS), and modified distillers grain with solubles (MDGS). Approximately 98.4 percent of the DGS produced is DDGS. A small quantity of MDGS (0 – 0.2 percent) makes up the balance. MDGS and WDGS are only produced when the DGS dryers reach their operating capacity.

Carbon Intensity of Ethanol Produced

As shown in Table 1, the applicant is applying for two pathway carbon intensities (CIs): one associated with DDGS production (88.63 gCO₂e/MJ) and the other with WDGS production (80.55 gCO₂e/MJ). The energy used to dry the small amounts of MDGS produced are included in the calculation of the DDGS pathway carbon intensity. Proposed Method 2A pathways must be evaluated against reference pathways from the LCFS Lookup table. Although a Method 2A pathway must be very similar to its reference pathway, it must achieve at least a five gram CO₂e/MJ CI improvement over that pathway.¹ The reference pathways for the IRE's proposed method 2A pathways are two Midwest dry mill, natural gas pathways: the DDGS pathway with a CI of 98.4 and the WDGS pathway with a CI of 90.1. Both IRE pathways improve upon their reference pathway CIs by more than the requisite five grams of CO₂e/MJ.

Both IRE pathways achieve lower carbon intensity values relative to the reference pathways through two principal means. First, the plant incorporates a modern plant design developed by ICM that results in less energy use. Thermal energy use at the IRE plant is below the 32,330 BTU per gallon energy use value that forms the basis of the carbon intensity for the reference dry DGS pathway. Second, electricity use at the IRE plant is below the 1.08 kW-hr per gallon that is assumed for the reference pathway.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 IRE plant will become operating conditions upon approval by the Executive Officer of the proposed pathway carbon intensity values: thermal energy and electricity use shall not exceed the current values that are classified by the applicant as confidential business information.

Table 1: Proposed Lookup Table Entries for the Illinois River Energy in Rochelle Plant

Fuel/Feedstock	Proposed Lookup Table Pathway Description	Carbon Intensity in gCO ₂ e/MJ (Including Indirect Effects)	Do Special Conditions Apply? (Y/N) ¹
Ethanol/Corn	Midwest Dry Mill, dry DGS with small amounts of modified DGS; Natural Gas	88.63	Y
Ethanol/Corn	Midwest Dry Mill, 100% wet DGS; Natural Gas	80.55	Y

¹ The special conditions to which this column refers are discussed in the “Carbon Intensity of the Fuel Produced” section of this summary.

Staff Analysis and Recommendation

Staff has reviewed the IRE application and has replicated, using the CA-GREET spreadsheet, the carbon intensity values calculated by IRE. The IRE 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 values calculated by IRE are sustainable. Consequently, staff believes that the carbon intensity values of 88.63 and 80.55 gCO₂e/MJ for the DDGS and WDGS pathways, respectively, accurately represent the carbon intensity values of the IRE plant. Therefore, staff recommends that the IRE application for a Method 2A corn ethanol pathway be approved.