

**Staff Summary  
Method 2B Application  
Duonix Beatrice, LP  
DDGS Associated Corn Oil to Biodiesel Pathway (BIOD035)**

Deemed Complete Date: September 03, 2015  
Posted for Comment Date: November 19, 2015  
Certified Date: December 1, 2015

**Pathway Summary**

Duonix Beatrice, LP (henceforth Duonix) will produce Midwestern mixed-feedstock fatty acid methyl ester (FAME) biodiesel (BD) at its newly constructed plant in Beatrice, Nebraska (NE). The facility commenced construction on September 16th, 2014 and is expected to start producing biodiesel in December 2015. The plant is permitted to produce 62.5 million gallons of BD annually. Duonix produces BD from the following feedstocks, including intrinsic free fatty acids: tallow (high-energy rendered), used cooking oil (cooking required), and corn oil (WDGS and DDGS associated production). Duonix's BD process converts fats, oils, and free fatty acids into biodiesel. This staff summary focuses on the dry DGS (DDGS) associated corn oil to BD pathway as described henceforth and summarized in the proposed Table below.

Duonix has not yet begun commercial production of BD at this facility. Because Duonix does not have two years of data based upon normal operation, the pathway discussed in this summary is prospective (provisional) until the required two years of normal operation data has been received by staff and is used to confirm that the pathway carbon intensity (CI) is less than or equal to the CI in the Table below. Duonix has estimated their BD CI conservatively high to ensure the CI of their BD is less than or equal to the CI tabulated below. Duonix may accrue Low Carbon Fuel Standard (LCFS) credits during the prospective (provisional under the new regulation) period after their pathway has been certified.

Duonix's dry DGS associated corn oil pathway utilizes feedstock lifecycle analysis (LCA) from an existing Method 1 LCFS biodiesel pathway. The Method 1 reference pathway code is BIOD007, which is based on the feedstock CI from ethanol plants that produce DDGS and has been modified as necessary to reflect BD produced in the Midwest and specifically in Beatrice, NE. Duonix used feedstock supply chain specific parameters for transportation of the dry DGS associated corn oil to Duonix as well as the grid electricity utilized to render the feedstock. Duonix provided a confidential business information list of all potential corn oil suppliers and their weighted average shipping distance to their BD plant, which is required when using the Method 1 basis for the feedstock phase of this pathway. Duonix also supplied the final Renewable Fuels Standard (RFS2) third-party engineering report, which was originally submitted in draft form and is required for Duonix to sell BD in California for the pathway codes: BIOD032,

BIOD033, and BIOD034, which were certified on August 7, 2015 and for the pathway code in the Table below, BIOD035.

**Carbon Intensity of the Fuel Produced**

Duonix’s production process results in a prospective (provisional) pathway CI (see Table below) that is greater than the respective Method 1 reference pathway. Due to their CIs being higher than the respective Method 1 reference pathway, Duonix had to apply under Method 2B. Because Duonix’s application was submitted under the Method 2B process, it is not subject to the substantiality requirements with which Method 2A applications must comply (a minimum improvement of five gCO<sub>2</sub>e/MJ, and a minimum production volume of ten million gallons per year).

**Proposed Lookup Table Entries**

Fuel	Pathway Identifier	Pathway Description	Carbon Intensity in gCO <sub>2</sub> e/MJ		
			Direct Emissions	Land Use or other Indirect Effects	Total
Biodiesel	BIOD035	2B Application*: Midwest Corn Oil extracted at Dry Mill ethanol plants, DDGS; Biodiesel Produced in Nebraska; NG	14.13	0	14.13

\*Specific Conditions Apply

**Operating Conditions (\*Specific Conditions Apply)**

Operations at the plant will be subject to the following conditions designed to ensure that the CI of the BD produced at the Duonix plant will remain at or below the value appearing in the above table for all volumes of BD sold in California:

- 1) Staff must receive any updates or changes to Duonix air quality construction permit or similar permits.
- 2) Duonix must submit two years of quarterly operating data that is indicative of long-term stable operation and GHG emissions encompassed in the pathway CI in the table above. The data must be submitted every quarter once Duonix Beatrice is operating normally.
- 3) Except for periods of abnormal operations, such as planned maintenance or unpredictable, unavoidable, and uncontrollable *force majeure* events, the resulting fuel CI, which is primarily based on total thermal and electrical energy use, shall not be exceeded.

- 4) All gallons produced under all certified LCFS Method 2 pathways shall inherit the same CI increment from the consumption of process energy at the plant. The applicants may not allocate process energy CIs so as to reduce the total life cycle CI of some subset of the gallons produced (e.g., those being shipped to California) and increase the CI of the remaining gallons.

### **Staff Analysis and Recommendation**

Staff has reviewed Duonix's Method 2B application, and finds the following:

- Staff has replicated, using the CA-GREET 1.8b spreadsheet, the CI values calculated by the applicant.
- Staff has concluded that the actual energy consumption and specified material inputs at Duonix's facility are not likely to exceed the energy or material inputs consumption levels specified in Duonix's Method 2B prospective (provisional) application.
- Staff will confirm Duonix's pathway CIs during the prospective (provisional) period of the pathways as outlined in this summary and the regulation.

Based on these findings, staff recommends that Duonix's application be approved with a provisional pathway CI.