Method 2A Application
Trenton Agri Products, LLC
Sorghum Ethanol (ETHG010 and ETHG011)

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Pathway Summary

Trenton Agri Products, LLC (TAP) produces ethanol from corn and sorghum at a dry mill plant in Trenton, Nebraska. The TAP plant has a nameplate capacity of 40 million gallons per year of denatured ethanol. According to the Air Quality Construction Permit issued by the Nebraska Department of Environmental Quality, the plant can produce up to 50 million gallons of denatured ethanol per rolling twelve-month period. The plant is a natural gas-fired facility producing both wet and dry distiller's grains with solubles (DGS). The applicant reports that the majority of the DGS it produces is wet DGS (requiring no drying, i.e., no natural gas and electricity consumption by the dryer), while the remainder is dry DGS, depending on market demand.

TAP is applying for two Method 2A sorghum-based ethanol fuel pathways—a 100 percent wet and a 100 percent dry DGS pathway. Dry DGS has a moisture content of approximately 12 percent while wet DGS contains approximately 65 percent moisture.

In February of 2012, TAP applied for two Method 2A corn ethanol fuel pathways under the California Low Carbon Fuel Standard (LCFS). In October of 2012, staff assigned TAP's pathways LCFS identification codes of ETHC070 and ETHC071, and recommended them for certification at carbon intensities (CIs) of 88.39 and 79.99 gCO_2e/MJ for dry and wet DGS, respectively. TAP is also registered under two corn and two sorghum ethanol pathways from the LCFS Lookup Table. [1] TAP intends its two new sorghum pathways, summarized herein, to augment rather than replace the six existing corn and sorghum ethanol fuel pathways under which it is now registered.

Carbon Intensity of Ethanol Produced

As shown in Table 1, the applicant has calculated the CIs of its two sorghum ethanol pathways to be 87.26 and 78.87 gCO_2e/MJ. The higher of these CIs is associated with dry DGS, while the lower is associated with wet DGS. 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 CO_2e/MJ CI improvement over that pathway.[2] The reference pathways for TAP's sorghum

[1] In addition to the existing Method 2A corn pathways ETHC070 and ETHC071, Trenton Agri Products is also registered under corn ethanol pathways ETH004 (CI=98.40) and ETH008 (CI=90.10) as well as sorghum ethanol pathways ETHG001 (CI=96.24) and ETHG002 (CI=85.81). All pathways are Midwest, dry mill, natural gas pathways.
[2] In the LCFS regulation, this 5 gCO_2e/MJ threshold is referred to as the "substantiality requirement."

pathways are ETHG001 and ETHG002 (Midwest dry mill, natural gas, dry and wet DGS sorghum pathways, respectively). Both TAP sorghum ethanol pathways improve upon their reference pathway CIs by more than the requisite five grams of CO_2e/MJ.

Table 1: Proposed Lookup Table Entries

Fuel	Pathway Identifier	Pathway Description	Carbon Intensity in gCO_2e/MJ (Including Indirect Effects)		
			Direct Emission	Land Use or Other Indirect Effect	Total
Ethanol from Sorghum	ETHG010	2A Application: (Specific Conditions Apply) Midwest Sorghum; Dry Mill; Wet DGS; NG	48.87	30	78.87
Ethanol from Sorghum	ETHG011	2A Application: (Specific Conditions Apply) Midwest Sorghum; Dry Mill; Dry DGS; NG	57.26	30	87.26

Operating Conditions–Trenton Agri Products, LLC (Trenton, NE)

Certification of the two pathways described herein will be subject to the following operating conditions:

- 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. An example of such a reallocation would be associating California-bound gallons with the consumption of biogas and non-California-bound gallons with the consumption of natural gas. In the case of this application, all gallons produced under the dry DGS pathway will inherit the same process energy CI, while all gallons produced under the wet DGS pathway will likewise inherit the same process energy CI. These two CIs will be different because no natural gas is used under the wet DGS pathway. No segregation of gallons based on process energy consumption shall occur *within* either pathway, however.
- TAP's pathway CIs are based on ethanol production yield and DGS yield that are different from the default yield value on which the LCFS reference pathways are based.[3] These yields must be maintained such that the pathway CI remains at or below the CI certified under these pathways. Yields may be calculated using any accounting period up to and including one year, and may exclude periods of abnormal operations, such as planned maintenance or unpredictable, unavoidable,

[3] TAP's ethanol and DGS yields values are classified as confidential business information and not reported herein.

and uncontrollable *force majeure* events. Should one or both of these yields change significantly, TAP shall not sell the volumes associated with those changed yields in California under the pathways described in this Staff summary.

- Total pathway-specific thermal or electrical energy use values, as reported in the TAP Method 2A application, may only be exceeded only if the actual production CI remains at or below the LCFS-certified CI. These process energy consumption values are classified by the applicant as confidential business information. Pathway-specific energy use values may be calculated using any accounting period up to and including one year.
- The 100 percent wet DGS pathway CI shall only be applied to ethanol volumes produced when no DGS drying occurs. The quantities of wet and dry DGS the plant produces are classified as confidential business information by the applicant.
- All ethanol gallons associated with DGS that is partially or fully dried must be sold at the higher pathway CI of 87.26 gCO2e/MJ.

In order for TAP to sell ethanol in California under the CIs appearing in Table 1, these five conditions must be met for every gallon sold.

Staff Analysis and Recommendation

Staff has reviewed the TAP application and has replicated, using the CA-GREET spreadsheet, the carbon intensity values calculated by TAP. TAP has provided documentation verifying the plant's thermal and electrical energy use. The operational information provided by the applicant indicates that the plant is capable of reliably producing ethanol at or below the CIs appearing in Table 1. Therefore, staff recommends that the TAP application for two Method 2A sorghum ethanol pathways be approved, subject to the operating conditions established in this Staff summary.