Staff Summary
Method 2B Application
Neste Oil Singapore Pte Ltd.
North American Tallow to Renewable Diesel Pathway
(RNWD005)

Deemed Complete Date: December 20, 2013
Posted for Comment Date: January 28, 2014
Certified Date: February 7, 2014

Pathway Summary

Neste Oil Singapore Pte Ltd. produces non-ester renewable diesel (RD) from multiple feedstocks at its plant in Singapore. The plant produces approximately 250 million gallons of RD annually. Neste's non-ester product is marketed under the NExBTL trademark.

Neste has applied for a Low Carbon Fuel Standard (LCFS) pathway covering the RD produced from North American tallow at its Singapore plant. This feedstock is rendered in North America and shipped by ocean tanker an estimated 7,741 nautical miles to the Neste plant. The energy consumption data for the rendering process was taken from the existing LCFS pathway for RD produced in California from U.S.-sourced tallow[1]. Once the rendered tallow has been converted to renewable diesel, the finished fuel is transported an estimated 7,677 nautical miles by ocean tanker to Los Angeles.

Neste's process generates a propane-rich off-gas as a co-product. The high pressure portion of this off-gas (both high- and low-pressure gas is generated) is conveyed via a dedicated pipeline to a hydrogen plant located on Jurong Island. There it displaces natural gas that would otherwise have been consumed as both a process fuel and a feedstock at the steam-methane reformer. The hydrogen supplied at the Jurong Island plant is piped back to the Neste plant where it is used for hydrotreatment. The low-pressure propane-rich off-gas is sent to a natural gas steam boiler that provides process heat to the RD plant.

Carbon Intensity of the Fuel Produced

The LCFS lookup table currently contains no pathway covering RD produced in Singapore from North American sourced tallow. Therefore, the Neste Oil pathway falls under the Method 2B provisions of the LCFS. Because Neste Oil'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_2e/MJ, and a minimum production volume of ten million gallons per year).

[1] Detailed California-Modified GREET Pathway for Co-Processed Renewable Diesel Produced from Tallow (U.S. Sourced) http://www.arb.ca.gov/fuels/lcfs/092309lcfs_tallow_rd.pdf

As shown in the following table, the applicant has calculated its pathway CI to be 49.69 gCO_2e/MJ. This CI includes a 3.09 gCO_2e/MJ credit for the natural gas displaced by the propane-rich off-gas from the RD plant. This proposed carbon intensity value includes feedstock rendering, transportation of the rendered feedstock to the refinery, renewable diesel production, finished fuel transportation to California, and vehicle tailpipe emissions.

Operating Conditions

Operations at the plant will be subject to the following condition designed to ensure that the CI of the of the Singapore plant will remain at or below the value appearing in the following table for all volumes of North American-tallow-based fuel sold in California:

1) Except for periods of abnormal operations, such as planned maintenance or unpredictable, unavoidable, and uncontrollable *force majeure* events, the total thermal and electrical energy use values specified in the Neste Oil application shall not be exceeded.

2) 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.

Proposed Lookup Table Entry

Fuel	Pathway Identifier	Pathway Description	Carbon Intensity in gCO_2e/MJ		
			Direct Emissions	Land Use or other Indirect Effects	Total
Renewable Diesel	RNWD005	2B Application*: North American Rendered Tallow to Renewable Diesel; Fuel Produced in Singapore (ship transport)	49.69	0	49.69

*Specific Conditions Apply

Staff Analysis and Recommendation

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

- Staff has replicated, using the CA-GREET spreadsheet, the carbon intensity values calculated by the applicant; and
- Staff has concluded that the plant's actual energy consumption is not likely to exceed the energy consumption levels specified in Neste Oil's Method 2B application.

On the basis of these findings, staff recommends that Neste Oil's application for a Method 2B pathway be approved.