

**Staff Summary:
Method 2B Tallow to Renewable Diesel Pathway
Neste Oil Singapore Pte Ltd.**

Plant 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 pathway covering the RD produced from Australian tallow at its Singapore plant. This feedstock is rendered in Australia and shipped by ocean tanker an estimated 4,548 nautical miles to the Neste plant. Because Neste purchases its feedstock from various Australian rendering plants, it calculated its pathway rendering emissions using data from a sampling of Australian rendering facilities. 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 biogenic co-product. The high pressure portion of this off-gas (both high- and low-pressure gas is generated) is supplied 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 by the 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 which provides process heat to the RD plant.

Carbon Intensity of the Fuel Produced

The Low Carbon Fuel Standard (LCFS) lookup table currently contains no non-North American tallow-to-renewable diesel pathways. 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 gCO₂e/MJ, and a minimum production volume of ten million gallons per year).

As shown in Table 1, the applicant has calculated its pathway CI to be 33.46 gCO₂e/MJ. This CI includes a 3.75 gCO₂e/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.

Operations at the plant will be subject to the following conditions designed to ensure that the CI of the of the Singapore plant will remain at or below the value appearing in Table 1 for all volumes of Australian-tallow-based fuel sold in California:

- 1) The total energy, electricity, and hydrogen use values specified in Neste's Method 2B application will become operating conditions upon approval by the Executive Officer of the proposed pathway carbon intensity. These values shall not exceed the values specified in the application.
- 2) When data on the electrical and thermal energy consumption at the specific rendering plants supplying Neste's plant becomes available, Neste will provide that data to staff in order to verify the carbon intensity of the feedstock rendering phase of Neste's Australian tallow pathway.

Table 1: Proposed Lookup Table Entry

Fuel	Pathway Identifier	Pathway Description	Carbon Intensity in gCO ₂ e/MJ (Including Indirect Effects)
Renewable Diesel	RNWD004	2B Application (Specific Conditions Apply): Australian Rendered Tallow to Renewable Diesel. Fuel Production in Singapore.	33.46

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.