

# Neste Oil Pte Ltd

## CA-GREET Model (for South East Asia Fish Oil)

The applicant has conducted its analysis of direct effects on carbon intensity for this pathway using CA-GREET, v.1.8b (Dec. 2009) (See [http://www.arb.ca.gov/fuels/lcfs/ca\\_greet1.8b\\_dec09.xls](http://www.arb.ca.gov/fuels/lcfs/ca_greet1.8b_dec09.xls)). The standard inputs and parameters specified in CA-GREET remain unchanged except as noted in the input table below. The input table below specifies the spreadsheet location of the CA-GREET inputs and other parameters that were claimed as confidential business information or trade secret by the applicant, but it does not disclose the actual value of such inputs and parameters because they are claimed to be confidential business information or trade secret.

Neste Oil Input data table (Locations of cells containing Confidential Business Information are shown, but the actual values of such confidential information are not disclosed):

CA-GREET for residual fish oil extraction and transport:

Parameters	Cell Locations	Original GREET values	Company values	Note
Electricity mix	C351 - Inputs	1	4	
Renewable diesel properties	C32- Fuel_Specs	122 887	Confidential	
Renewable diesel properties	E32 - Fuel_Specs	2 948	Confidential	
Fish oil transport distance	IF93 - T&D	1400	Confidential	
Tanker payload	AG5 - T&D	0	Confidential	

Tanker power requirement	AG12 - T&D	0	Confidential	
Fish oil transport	IF108 - T&D	370	Confidential	
Fish oil transport	IF109 - T&D	0	Confidential	
Fish oil transport	IF95 - T&D	100	Confidential	
Fish oil transport	IF96 - T&D	0	Confidential	
Fish oil transport	IE93 - T&D	10	Confidential	
Rendering energy consumption	B11 - Tallow RD	3 623	Confidential	
RD yield	B21 - Tallow RD	1,17	Confidential	
Co-product allocation	C42 - Tallow RD	0,059	Confidential	
Rendering Energy	B172 - Tallow RD	88,3	Confidential	
Rendering Energy	B175 - Tallow RD	11,7	Confidential	
Region for Analysis	C2 - Regional_LT	U.S. Average	Southeast Asia	
Electricity mix	C83 - Regional_LT	2,7	3	
Electricity mix	C84 - Regional_LT	18,9	79	
Electricity mix	C85 - Regional_LT	50,7	18	
Electricity mix	C86 - Regional_LT	18,7	0	
Electricity mix	C87 - Regional_LT	1,3	0	
Electricity mix	C88 - Regional_LT	0	0	
Fish oil transport	IF111 - T&D	602 444	Confidential	
Fish oil transport	IF112 - T&D	600 894	Confidential	
Fish oil transport	IF113 - T&D	14 919	Confidential	
Fish oil transport	IF115 - T&D	28 859	Confidential	
Fish oil transport	IF117 - T&D	35,197	Confidential	
Fish oil transport	IF118 - T&D	120,488	Confidential	
Fish oil transport	IF119 - T&D	945,082	Confidential	
Fish oil transport	IF120 - T&D	25,076	Confidential	
Fish oil transport	IF121 - T&D	20,493	Confidential	
Fish oil transport	IF122 - T&D	6,551	Confidential	
Fish oil transport	IF123 - T&D	52,851	Confidential	
Fish oil transport	IF124 - T&D	1,112	Confidential	
Fish oil transport	IF125 - T&D	47097	Confidential	
Fish oil transport	IF127 - T&D	0,633	Confidential	

Fish oil transport	IF128 - T&D	0,323	Confidential	
Fish oil transport	IF129 - T&D	0,980	Confidential	
Fish oil transport	IF130 - T&D	0,020	Confidential	
Fish oil transport	IF131 - T&D	0,018	Confidential	
Fish oil transport	IF132 - T&D	0,029	Confidential	

CA-GREET for RD processing and transport:

Parameters	Cell Locations	Original GREET values	Company values	Note
Hydrogen source	C128 - Inputs	1	2	
Electricity mix	C351 - Inputs	1	4	
Renewable diesel properties	C32- Fuel_Specs	122 887	Confidential	
Renewable diesel properties	E32 - Fuel_Specs	2 948	Confidential	
Renewable diesel transport distance	GH93 - T&D	520	Confidential	
Renewable diesel transport distance	GI93 - T&D	400	Confidential	
Renewable diesel transport distance	GJ93 - T&D	1400	Confidential	
Product tanker size	W5 - T&D	0	Confidential	
Product tanker power requirement	U12 - T&D	0	Confidential	
Renewable diesel transport	GH108 - T&D	403	Confidential	
Renewable diesel transport	GH109 - T&D	307	Confidential	
Renewable diesel transport	CN138 - T&D	0	Confidential	
Renewable diesel process energy consumption	B14 - Tallow RD	2 175	Confidential	
RD yield	B21 - Tallow RD	1,17	Confidential	

Co-product allocation	C42 - Tallow RD	0,059	Confidential	
RD process Energy	J172 - Tallow RD	3,8	Confidential	
RD process Energy	J175 - Tallow RD	6,1	Confidential	
RD process Energy	J181 - Tallow RD	90,1	Confidential	
Region for analysis	C2 - Regional_LT	U.S. Average	Southeast Asia	
Electricity mix	C83 - Regional_LT	2,7	18,4	
Electricity mix	C84 - Regional_LT	18,9	78	
Electricity mix	C85 - Regional_LT	50,7	0	
Electricity mix	C86 - Regional_LT	18,7	0	
Electricity mix	C87 - Regional_LT	1,3	0	
Electricity mix	C88 - Regional_LT	7,7	3,6	
Natural gas processing	J73 -NG	0	Confidential	
Natural gas processing	J75 -NG	0	Confidential	
Natural gas processing	J79 - NG	0	Confidential	
Natural gas processing	J80 - NG	0	Confidential	
Renewable diesel transport	CN144 - T&D	2 960	Confidential	
Renewable diesel transport	CN145 - T&D	2 953	Confidential	
Renewable diesel transport	CN146 - T&D	73	Confidential	
Renewable diesel transport	CN147 - T&D	142	Confidential	
Renewable diesel transport	CN148 - T&D	2 738	Confidential	
Renewable diesel transport	CN150 - T&D	0,097	Confidential	
Renewable diesel transport	CN151 - T&D	0,434	Confidential	
Renewable diesel transport	CN152 - T&D	1,243	Confidential	
Renewable	CN153 - T&D	0,043	Confidential	

diesel transport				
Renewable diesel transport	CN154 - T&D	0,029	Confidential	
Renewable diesel transport	CN155 - T&D	0,045	Confidential	
Renewable diesel transport	CN156 - T&D	0,254	Confidential	
Renewable diesel transport	CN157 - T&D	0,006	Confidential	
Renewable diesel transport	CN158 - T&D	232	Confidential	
Renewable diesel transport	CN160 - T&D	0,003	Confidential	
Renewable diesel transport	CN161 - T&D	0,002	Confidential	
Renewable diesel transport	CN162 - T&D	0,005	Confidential	
Renewable diesel transport	CN163 - T&D	0,000	Confidential	
Renewable diesel transport	CN164 - T&D	0,000	Confidential	
Renewable diesel transport	CN165 - T&D	0,000	Confidential	
Renewable diesel transport	GH117 - T&D	0,466	Confidential	
Renewable diesel transport	GH118 - T&D	1,304	Confidential	
Renewable diesel transport	GH119 - T&D	10,602	Confidential	
Renewable diesel transport	GH120 - T&D	0,316	Confidential	
Renewable diesel transport	GH121 - T&D	0,156	Confidential	
Renewable diesel transport	GH122 - T&D	2,732	Confidential	
Renewable diesel transport	GH123 - T&D	0,947	Confidential	
Renewable diesel transport	GH124 - T&D	0,021	Confidential	
Renewable diesel transport	GH125 - T&D	919	Confidential	
Renewable diesel transport	GH127 - T&D	0,000	Confidential	
Renewable diesel transport	GH128 - T&D	0,000	Confidential	
Renewable diesel transport	GH129 - T&D	0,001	Confidential	

Renewable diesel transport	GH130 - T&D	0,000	Confidential	
Renewable diesel transport	GH131 - T&D	0,000	Confidential	
Renewable diesel transport	GH132 - T&D	0,000	Confidential	
NG to hydrogen	B90 - Hydrogen	428 695	Confidential	
NG to hydrogen	B91 - Hydrogen	428 215	Confidential	
NG to hydrogen	B92 - Hydrogen	2 372	Confidential	
NG to hydrogen	B94 - Hydrogen	424 054	Confidential	
NG to hydrogen	B96 - Hydrogen	2,969	Confidential	
NG to hydrogen	B97 - Hydrogen	8,866	Confidential	
NG to hydrogen	B98 - Hydrogen	11,732	Confidential	
NG to hydrogen	B99 - Hydrogen	1,370	Confidential	
NG to hydrogen	B100 - Hydrogen	1,046	Confidential	
NG to hydrogen	B101 - Hydrogen	4,338	Confidential	
NG to hydrogen	B102 - Hydrogen	51,924	Confidential	
NG to hydrogen	B103 - Hydrogen	0,104	Confidential	
NG to hydrogen	B104 - Hydrogen	16 129	Confidential	
NG to hydrogen	B109 - Hydrogen	0,146	Confidential	
NG to hydrogen	B110 - Hydrogen	1,099	Confidential	
NG to hydrogen	B111 - Hydrogen	0,891	Confidential	
NG to hydrogen	B112 - Hydrogen	0,198	Confidential	
NG to hydrogen	B113 - Hydrogen	0,198	Confidential	
NG to hydrogen	B114 - Hydrogen	0,001	Confidential	
NG to hydrogen	B121 - Hydrogen	72 395	Confidential	
NG to hydrogen	B122 -	71 856	Confidential	

	Hydrogen			
NG to hydrogen	B123 - Hydrogen	2 695	Confidential	
NG to hydrogen	B124 - Hydrogen	64 886	Confidential	
NG to hydrogen	B125 - Hydrogen	4 276	Confidential	
NG to hydrogen	B126 - Hydrogen	6,495	Confidential	
NG to hydrogen	B127 - Hydrogen	12,103	Confidential	
NG to hydrogen	B128 - Hydrogen	23,312	Confidential	
NG to hydrogen	B129 - Hydrogen	0,938	Confidential	
NG to hydrogen	B130 - Hydrogen	0,555	Confidential	
NG to hydrogen	B131 - Hydrogen	10,868	Confidential	
NG to hydrogen	B132 - Hydrogen	129,433	Confidential	
NG to hydrogen	B133 - Hydrogen	0,070	Confidential	
NG to hydrogen	B134 - Hydrogen	5 386	Confidential	
NG to hydrogen	B137 - Hydrogen	0,133	Confidential	
NG to hydrogen	B138 - Hydrogen	0,300	Confidential	
NG to hydrogen	B139 - Hydrogen	0,790	Confidential	
NG to hydrogen	B140 - Hydrogen	0,017	Confidential	
NG to hydrogen	B141 - Hydrogen	0,017	Confidential	
NG to hydrogen	B142 - Hydrogen	0,001	Confidential	