



State of Oregon Department of Environmental Quality








# CFP 2018 Proposed Housekeeping Changes

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## GREET 3.0

DEQ will update the adopted model to OR-GREET 3.0, which will be a lightly modified version of [CA-GREET 3.0](#). The modifications will reflect clear localized differences between California and Oregon, such as the carbon intensity of its electricity. DEQ does not plan to reconsider the technical underpinnings of the model itself. The models will be available before the next advisory committee meeting. DEQ plans to adopt the full GREET model for Tier 2 applications along with the simplified calculators created by CARB including:

- [Tier 1 Simplified CI Calculator for Starch and Corn-Fiber Ethanol](#)  - [Instruction Manual](#) 
- [Tier 1 Simplified CI Calculator for Sugarcane-derived Ethanol](#)  - [Instruction Manual](#) 
- [Tier 1 Simplified CI Calculator for Biodiesel and Renewable Diesel](#)  - [Instruction Manual](#) 
- [Tier 1 Simplified CI Calculator for LNG and L-CNG from North American Natural Gas](#)  - [Instruction Manual](#) 
- [Tier 1 Simplified CI Calculator for Biomethane from North American Landfills](#)  - [Instruction Manual](#) 
- [Tier 1 Simplified CI Calculator for Biomethane from Anaerobic Digestion of Wastewater Sludge](#)  - [Instruction Manual](#) 
- [Tier 1 Simplified CI Calculator for Biomethane from Food, Green and Other Organic Wastes](#)  - [Instruction Manual](#) 
- [Tier 1 Simplified CI Calculator for Biomethane from AD of Dairy and Swine Manure](#)  - [Instruction Manual](#) 

## OPGEE 2.0

DEQ is also updating its assumptions around the petroleum fuels included in the state's baseline. The original rulemaking used data taken from a consultant's study for Washington State as it explored adopting a similar low carbon fuel standard. DEQ is now updating the carbon intensities of the petroleum fuels to OPGEE 2.0 and the sources of crude oils into the various refineries that supply fuel to Oregon.

DEQ has reviewed a number of sources of publically-available data on the source of crude oils and have chosen to use data from EIA's company-level imports<sup>1</sup> product for imported crude oils and the Washington Research Council's 2015 report<sup>2</sup> on the economic contribution of the refining sector, which is based on survey data it receives from the refiners.

Based on that review, the agency is proposing to use the crude slate into Washington refineries to calculate the upstream emissions. Other sources of refined products, such as Utah and Canada, make up less than 10% of the state's consumption and public data on their crude slates is either unavailable or has significant gaps.

<sup>1</sup> <https://www.eia.gov/petroleum/imports/companylevel/>

<sup>2</sup> Table A3 from the appendix of: [http://researchcouncil.org/wp-content/uploads/2016\\_refinery\\_report\\_010417.pdf](http://researchcouncil.org/wp-content/uploads/2016_refinery_report_010417.pdf)

In order to determine the carbon intensity of the crude slate, DEQ created straight averages for the jurisdiction based on the carbon intensities for the crude fields in that jurisdiction. For Canadian crudes we established averages for conventional production and oil sands production.

|                              | <b>Crude Oil consumption<br/>(1,000 barrels)</b> | <b>Average jurisdictional<br/>crude CI (gCO<sub>2</sub>e/MJ)</b> |
|------------------------------|--|--|
| <b>Alaska</b>                | 73,365   | 15.91  |
| <b>Conventional Canadian</b> | 46,136   | 8.40   |
| <b>Oil Sands Canadian</b>    | 22,411   | 23.88  |
| <b>Bakken</b>                | 51,465   | 9.73   |
| <b>Argentina</b>             | 2,696  | 9.72   |
| <b>Brazil</b>                | 1,062  | 5.87   |
| <b>Ecuador</b>               | 745  | 9.19   |
| <b>Russia</b>                | 162  | 11.36  |
| <b>Saudi Arabia</b>          | 3,508  | 9.24   |
| <b>Unknown crude source</b>  | 4,858  | N/A  |
| <b>Average CI</b>            |  | 13.22  |

The unknown crude source line above refers to the number of barrels whose source could not be established between the two data sources. For this analysis we calculated the carbon intensity of Washington’s crude slate using only the named jurisdictions.

## New and Modified Lookup Table Values

The effect of the GREET 3.0 and OPGEE 2.0 updates for the carbon intensities for clear gasoline, diesel, and E10, B5, and B20 are as follows:

|             | <b>Existing CI</b> | <b>New CI</b> |
|-------------|--------------------|---------------|
| <b>CBOB</b> | 100.77             | 100.39        |
| <b>ULSD</b> | 101.65             | 102.07        |
| <b>E10</b>  | 98.64              | 98.29         |
| <b>B5</b>   | 99.61              | 100.01        |
| <b>B20</b>  | 93.41              | 93.75         |

The updated lookup table values for natural gas and liquefied petroleum gas are as follows:

| <b>Fuel Pathway Code</b> | <b>Pathway Description</b>   | <b>Existing CI</b> | <b>New CI</b> |
|--------------------------|--|--------------------|---------------|
| <b>ORCNG001</b>          | North American NG delivered via pipeline; compressed in OR                                       | 79.93              | 80.44         |
| <b>ORLNG001</b>          | North American NG delivered via pipeline; liquefied in OR using liquefaction with 80% efficiency | 94.46              | 86.97         |
| <b>ORLPG001</b>          | Liquefied petroleum gas  | 83.05              | 83.52         |

DEQ also plans to add the following lookup table values for hydrogen.

| Fuel Pathway Code | Pathway Description   | CI     |
|-------------------|---|--------|
| ORHYF             | Compressed H2 produced in Oregon from central steam methane reformation of North American fossil-based NG                                 | 122.67 |
| ORHYFL            | Liquefied H2 produced in Oregon from central steam methane reformation of North American fossil-based NG                                  | 169.21 |
| ORHYB             | Compressed H2 produced in Oregon from central steam methane reformation of biomethane (renewable feedstock) from North American landfills | 104.71 |
| ORHYBL            | Liquefied H2 produced in Oregon from central steam methane reformation of biomethane (renewable feedstock) from North American landfills  | 147.58 |
| ORHYEG            | Compressed H2 produced in Oregon from electrolysis using Oregon average grid electricity  | 322.27 |
| ORHYEB            | Compressed H2 produced in Oregon from electrolysis using BPA average grid electricity   | 29.90  |
| ORHYER            | Compressed H2 produced in Oregon from electrolysis using solar- or wind-generated electricity   | 10.47  |

## Effect on the Clean Fuels Standards

DEQ is proposing the following changes to the gasoline and diesel standards:

|                 | Reduction percentage | Existing Gasoline Standard | Revised Gasoline Standard | Change | Existing Diesel Standard | Revised Diesel Standard | Change |
|-----------------|----------------------|----------------------------|---------------------------|--------|--------------------------|-------------------------|--------|
| 2019            | 1.5%                 | 97.16                      | 96.82                     | -0.35  | 98.12                    | 98.51                   | 0.39   |
| 2020            | 2.5%                 | 96.18                      | 95.83                     | -0.34  | 97.12                    | 97.51                   | 0.39   |
| 2021            | 3.5%                 | 95.19                      | 94.85                     | -0.34  | 96.12                    | 96.51                   | 0.39   |
| 2022            | 5.0%                 | 93.71                      | 93.38                     | -0.34  | 94.63                    | 95.01                   | 0.38   |
| 2023            | 6.5%                 | 92.23                      | 91.90                     | -0.33  | 93.14                    | 93.51                   | 0.37   |
| 2024            | 8.0%                 | 90.75                      | 90.43                     | -0.33  | 91.64                    | 92.01                   | 0.37   |
| 2025 and beyond | 10.0%                | 88.78                      | 88.46                     | -0.32  | 89.65                    | 90.01                   | 0.36   |

## New and Updated Energy Economy Ratios

DEQ is planning to add or update the following Energy Economy Ratios (EER) based on the analysis carried out by CARB for their 2018 rulemaking.

| Fuel Application                | Existing EER | New EER |
|---------------------------------|--------------|---------|
| Alternative Jet                 | N/A          | 1       |
| On-Road Electric Motorcycle     | N/A          | 4.4     |
| Electric Forklift               | N/A          | 3.8     |
| Hydrogen Fuel Cell Forklift     | N/A          | 2.1     |
| Propane Forklift                | N/A          | 1       |
| Electric Transit Bus            | 4.2          | 5       |
| Electric Heavy Duty BEV or PHEV | 2.7          | 5       |

In the prior rulemaking, DEQ committed to reviewing the EER for the Aerial Tram based on additional reporting into the National Transit Database as it only had two years of data reported at the time of the last rulemaking. As such, DEQ will revise the aerial tram’s EER from 2.5 to 2.6.

| Fuel Application | Existing EER | New EER |
|------------------|--------------|---------|
| Aerial Tram      | 2.5          | 2.6     |

Separately, California has proposed in their [15 Day comment package](#)<sup>3</sup> that applicants with novel alternative fuels and drive train combinations can apply to CARB for a carbon intensity that has been adjusted by an EER for that specific combination that does not exist in their EER table. DEQ is considering allowing applicants that have certified such a combination through the CARB to apply to the agency to recognize that certification with any needed modifications for Oregon.

## New Temporary Fuel Pathway Codes

The Temporary Fuel Pathway Code table was created in last year’s rulemaking and is used for fuels whose production facility does not yet have a certified fuel pathway code or fuels whose origin is unknown.

DEQ plans to add the following fuel pathway codes for renewable natural gas:

| Fuel Pathway                   | Temporary CI |
|--------------------------------|--------------|
| Dairy biogas (CNG, LNG, L-CNG) | -150         |
| Municipal Wastewater CNG       | 50           |
| Municipal Wastewater LNG       | 65           |
| Municipal Wastewater L-CNG     | 70           |

## New Substitute Fuel Pathway Codes

DEQ plans to formalize the substitute fuel pathway codes by placing them in a new table in the regulation. Substitute fuel pathway codes are used for fuels being transferred without obligation in-state

<sup>3</sup> Section 6.1

where the seller of the fuel does not wish to pass along any carbon-intensity information. They are set conservatively low in order to make sure that if the gallons are exported or removed from the regulated transportation pool that a sufficient number of credits are retired against the credits that biofuel originally generated when it entered or was produced in Oregon. The current substitute fuel pathway codes in use are:

| <b>Fuel</b>             | <b>Substitute CI</b> |
|-------------------------|----------------------|
| <b>Biodiesel</b>        | 15                   |
| <b>Renewable Diesel</b> | 15                   |
| <b>Ethanol</b>          | 40                   |

DEQ is also considering the addition of substitute fuel pathway codes for finished fuels that are being removed from the regulated fuel pool through export or use in exempt fuel uses. There is currently a reluctance to pass carbon intensity information below the rack, creating confusion with fuel distributors on how to report exports or exempt uses of those fuels. These substitute fuel pathway codes would be required for reporting exports or exempt fuel use transactions of fuels purchased at the rack where the rack seller has not passed along the specific carbon intensity information for the finished fuels they are selling.

| <b>Fuel</b>       | <b>Substitute CI</b> |
|-------------------|----------------------|
| <b>E10</b>        | 96.23                |
| <b>B5 or R5</b>   | 97.97                |
| <b>B20 or R20</b> | 85.53                |

If the blend percentage is not in that table, the fuel distributor would report the fossil component in the ORULSD001 or ORGAS001 fuel pathway code, and the remainder of the volume in the applicable substitute fuel pathway code.

If the fuel distributor is unaware of the exact blend percentage of the fuel they are exporting—for example, if they purchased a B5 that was also labeled as containing up to 5% renewable diesel -- then DEQ is considering creating an annually updated default blend percentage that the exporter would be required to use. The default fuel blend percentage would be based on last year’s average blend of fuel across the fuel pool.

## **Potential Addition of Alternative Jet Fuel**

DEQ is considering adding alternative jet fuel as an opt-in fuel to the Clean Fuels Program. Alternative jet fuel is produced in a similar process to renewable diesel. The addition of alternative jet fuel in conjunction with California’s addition in its amendment package this year will help foster the commercialization of this fuel, which is often co-produced with renewable diesel. The addition of alternative jet fuel as an opt-in fuel in the Clean Fuels Program does not necessarily mean that DEQ is adding fossil jet fuel as a regulated fuel.

DEQ plans to mirror the implementation of California’s alternative jet fuel provisions. DEQ will set a carbon-intensity standard for fossil jet at the current jet CI, and then decline that carbon-intensity with the gasoline standards for the program. The fossil jet CI for Oregon is 90.97, which takes into account the

OPGEE results presented earlier and the northwest power pool electricity mix. Accordingly, credit generation for alternative jet fuel will be measured against the fossil jet CI until 2025, when the diesel standard will be lower at 90.01.

## **Potential Addition of Renewable Propane**

Explicitly add renewable propane to the list of opt-in fuels and clarify that an application for a renewable propane pathway is a Tier 2 GREET application.

## **Potential Addition of Forklifts and TRUs**

DEQ will add alternative fueled forklifts and truck refrigeration units (TRU) as eligible sources of credit generation under the program. The eligible credit generator will be the forklift fleet operator or the operator of the electric truck refrigeration unit.

Both eligible credit generators under this section will be allowed to designate an aggregator under the existing aggregator rules of the program. For example, the operator of propane forklifts could designate their propane fuel supplier as their aggregator, allowing the fuel supplier to report the propane delivered to the forklifts and generate the credits for them.

DEQ will also clarify in these rules that clear or dyed regulated fuels delivered for use in these applications are covered by the program and cannot be reported as being used not for transportation or as being used in an exempt fuel use.

## **Attestation for RNG**

Require that registered parties reporting RNG attest when filing quarterly reports that they own the environmental attributes associated with the RNG and that no other claim on that gas's attribute is being made in another voluntary or regulatory program. Attestations from parties upstream of the registered party filing the quarterly report must also be obtained, kept, and made available to DEQ upon request by the agency.

## **Standardized Temperature for Liquid Fuels**

This amendment would clarify that liquid fuels should be reported at a standardized temperature of 60 degrees Fahrenheit.