

# Oregon Clean Fuels Program

## Renewable Hydrocarbon Diesel FAQ

### What is renewable hydrocarbon diesel?

Renewable hydrocarbon diesel (RHD) is produced by putting fats and oils through the same hydrotreatment process as in a petroleum refinery, resulting in a biofuel that meets the ASTM D975 standard for diesel. It can be used as a one-to-one replacement for diesel or can be mixed with diesel to produce a blended product. Since renewable hydrocarbon diesel and petroleum diesel are virtually indistinguishable, there are no restrictions regarding the amount that can be blended. In comparison, biodiesel is commonly limited at retail stations to blends of 5% or 20% (B5 or B20) with diesel, though higher blends are possible.

### What can RHD be made from?

RHD can be made from a variety of fats and oils from plant and animal sources, including: rendered tallow, fish waste, palm oil, used cooking oil, corn oil, soybean oil and others. A typical facility can switch between or run multiple different feedstocks.

### How do you calculate the carbon intensity of RHD?

Carbon intensity (CI) is the key metric of low carbon fuel standards programs like the Oregon Clean Fuels Program. A fuel's CI is calculated by accounting for greenhouse gases emitted over the lifecycle of a fuel. CI scores are calculated using the GREET model and approved by the California Air Resources Board for use in California's Low Carbon Fuel Standard or Oregon Department of Environmental Quality for use in Oregon's Clean Fuels Program. A lower CI score indicates a lower-carbon fuel, and the program values lower-carbon fuels more highly than higher-carbon ones.

In the case of RHD made from virgin oils, its lifecycle begins with how the feedstocks are grown and harvested, how it is refined, how it is transported to terminals and fueling stations in Oregon and combusted in a motor vehicle. In the case of RHD made from wastes, its lifecycle begins with how the wastes are collected and refined, how it is transported to terminals and fueling stations in Oregon and combusted in a motor vehicle.

There are currently four active biorefineries that can provide RHD to the Pacific Coast states and British Columbia:

Facility Name	Facility Location	Production Capacity	Feedstocks	CI (gCO <sub>2</sub> e/MJ)
Neste	Singapore	300 mmgy	Tallow	34.19 - 39.06
			Fish oil	33.08
			Corn oil	37.39
			Used cooking oil	25.61
			*Palm oil	N/A
			*Palm waste	N/A
REG	Geismar, Louisiana	75 mmgy	*Multiple	N/A
Diamond Green	St. Charles, Louisiana	150 mmgy	Soybean	53.86
			Corn oil	31.27
			Used cooking oil	20.28
			Tallow	30.00
AltAir Fuels	Paramount, California	37 mmgy	*Tallow	N/A

\*To date, these fuels have not been approved by either California's or Oregon's programs but are coming soon.



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Environmental  
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### Oregon Clean Fuels Program

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DEQ is a leader in restoring, maintaining and enhancing the quality of Oregon's air, land and water.

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## Why is there so much interest in RHD?

In the last few years, increasing amounts of RHD have been delivered to the west coast of North America, mostly in response to jurisdictions that are implementing low carbon fuel standards – California, British Columbia, and most recently Oregon. The Neste facility in Singapore, in particular, has supplied large volumes of RHD to the west coast.

Fleets that have substituted all or part of their diesel consumption to RHD have observed improved performance and a decrease in the amount of maintenance needed on their engines. RHD also reduces traditional tailpipe emissions (PM, NO<sub>x</sub>) and toxic air pollutants (diesel PM) along with greenhouse gases when compared with fossil diesel, according to an analysis by the California Air Resources Board<sup>1</sup>. Because many state, regional and local governments and private companies have enacted climate plans to reduce GHGs, many fleets are participating in projects to substitute RHD with petroleum diesel as a strategy to meet their climate goals.

## How is RHD treated under the Oregon Clean Fuels Program?

RHD is currently an opt-in fuel under the current regulation, meaning that the importer is not required to register the fuel with the program. If an importer wants to generate credits in the program, it must register the RHD. To date, credits have not been generated from RHD which means that the RHD being used in Oregon is most likely palm fatty acid distillate (PFAD), a by-product of the palm oil refining process. This product does not have an approved carbon intensity but is being allowed to use the carbon intensity of petroleum diesel on a temporary basis until one is approved.

DEQ intends to amend its rules in 2017 to change RHD to a regulated fuel which means that all RHD being imported into Oregon will need to apply for a carbon intensity value. DEQ also intends to allow the use of the petroleum diesel carbon intensity value to be used on a temporary basis for any RHD that comes to Oregon that does not currently have an approved carbon-intensity score by California or Oregon.

## How is RHD treated under the Oregon Renewable Fuel Standard?

The Oregon [Renewable Fuel Standard](#) does recognize RHD as a way to achieve the 5% biofuel blend requirement for diesel.

## How is RHD treated under the Portland Renewable Fuel Standard?

The Portland [Renewable Fuel Standard](#) does not recognize RHD as a way to achieve their renewable fuel standard.

## Accessibility

Documents can be provided upon request in an alternate format for individuals with disabilities or in a language other than English for people with limited English skills. To request a document in another format or language, call DEQ in Portland at 503-229-5696, or toll-free in Oregon at 1-800-452-4011, ext. 5696; or email [deqinfo@deq.state.or.us](mailto:deqinfo@deq.state.or.us)



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<sup>1</sup> [https://www.arb.ca.gov/fuels/diesel/altdiesel/20150521RD\\_StaffReport.pdf](https://www.arb.ca.gov/fuels/diesel/altdiesel/20150521RD_StaffReport.pdf)