

LOW CARBON FUEL STANDARD

FINAL REGULATION ORDER

Adopt new sections 95480, 95481, 95482, 95483, 95483.1, 95483.2, 95484, 95485, 95486, 95487, 95488, 95489, 95491, 95492, 95493, 95494, 95495, 95496, and 95497, title 17, California Code of Regulations, to read as follows:

Subchapter 10. Climate Change Article 4. Regulations to Achieve Greenhouse Gas Emission Reductions

Subarticle 7. Low Carbon Fuel Standard

(...)

§ 95481. Definitions and Acronyms.

- (a) *Definitions.* For the purposes of sections 95480 through 95497, the definitions in Health and Safety Code sections 39010 through 39060 shall apply, except as otherwise specified in this section or sections 95482 through 95497:

(...)

- (xx) “Alternative jet fuel” means fuel that complies with the relevant ASTM, military, or other appropriate specification for use on jet aircraft and that is of lower carbon intensity than conventional jet fuel.

(...)

§ 95482. Fuels Subject to Regulation.

- (a) (...)
- (b) *Credit Generation Opt-In Provision for Specific Alternative Fuels.* Each of the following alternative fuels (“opt-in fuels”) is presumed to have a full fuel cycle, carbon intensity that meets the compliance schedules set forth in sections 95484(b) and (c) through December 31, 2020. A fuel provider for an alternative fuel listed below may generate LCFS credits for that fuel only by electing to opt into the LCFS as a regulated party pursuant to section 95483.1 and meeting the requirements of this regulation:
- (1) Electricity;
 - (2) Hydrogen used in forklifts;
 - ~~(2)~~(3) Alternative jet fuel;
 - ~~(3)~~ A hydrogen blend;
 - ~~(4)~~(43) Fossil CNG derived from North American sources; ~~(5)~~(45) Bio-CNG;
 - ~~(6)~~(65) Bio-LNG; and
 - ~~(7)~~(67) Bio-L-CNG.
- (c) *Exemption for Specific Alternative Fuels.* The LCFS regulation does not apply to an alternative fuel that meets the criteria in either subsections (c)(1) or (2) below:
- (...)
- (d) *Exemption for Specific Applications.* The LCFS regulation does not apply to any transportation fuel used in the following applications:
- (1) Military tactical vehicles and tactical support equipment, as defined in title 13, CCR, section 1905(a) and CCR, title 17, section 93116.2(a)(36), respectively;

- (2) Locomotives not subject to the requirements specified in CCR, title 17, section 93117;
 - (3) Ocean-going vessels, as defined in CCR, title 17, section 93118.5(d). This exemption does not apply to recreational and commercial harbor craft, as defined in CCR, title 17, section 93118.5(d); and
 - (4) Aircraft, except that fuel providers of alternative jet fuel can generate credits in pursuant to § 95482(b) and generate credits by meeting the requirements of this regulation.
- (e) Nothing in this LCFS regulation (Cal. Code Regs., tit. 17, §§ 95480 et seq.) may be construed to amend, repeal, modify, or change in any way the California reformulated gasoline regulations (CaRFG, Cal.Code Regs., tit. 13, §§ 2260 et seq.), the California diesel fuel regulations (Cal.Code Regs., tit. 13, §§ 2281-2285 and Cal. Code Regs., tit. 17, § 93114), or any other applicable State or federal requirements. A person, including the regulated party as that term is defined in the LCFS regulation, who is subject to the LCFS regulation or other State and federal regulations, shall be solely responsible for ensuring compliance with all applicable LCFS requirements and other State and federal requirements, including the CaRFG requirements and obtaining any necessary approvals, exemptions, or orders from either the State or federal government.

NOTE: Authority cited: Sections 38510, 38560, 38560.5, 38571, 38580, 39600, 39601, and 43018 Health and Safety Code; 42 U.S.C. section 7545, and *Western Oil and Gas Ass'n v. Orange County Air Pollution Control District*, 14 Cal.3d 411, 121 Cal.Rptr. 249 (1975). Reference: Sections 38501, 38510, 39515, 39516, 38571, 38580, 39000, 39001, 39002, 39003, 39515, 39516, and 43000, Health and Safety Code; Section 25000.5, Public Resources Code; and *Western Oil and Gas Ass'n v. Orange County Air Pollution Control District*, 14 Cal.3d 411, 121 Cal.Rptr. 249 (1975).

§ 95483. Regulated Parties.

Except as provided in this section, the LCFS applies to any person who, as a regulated party defined in section 95481 and specified in section 95483(a), is responsible for a transportation fuel in a calendar year. The purpose of this part is to establish the criteria by which regulated party status is determined. The regulated party is initially established for each type of transportation fuel, but this part provides for the transfer of regulated party status and the associated compliance obligations by agreement, notification, or other means, as specified below.

(...)

(g) Regulated Parties for Alternative Jet Fuel.

(1) For alternative jet fuel, the producer of the fuel is the party eligible to generate credits.

NOTE: Authority cited: Sections 38510, 38530, 38560, 38560.5, 38571, 38580, 39600, 39601, and 43018 Health and Safety Code; 42 U.S.C. section 7545, and *Western Oil and Gas Ass'n v. Orange County Air Pollution Control District*, 14 Cal.3d 411, 121 Cal.Rptr. 249 (1975). Reference: Sections 38501, 38510, 39515, 39516, 38571, 38580, 39000, 39001, 39002, 39003, 39515, 39516, and 43000, Health and Safety Code; Section 25000.5, Public Resources Code; and *Western Oil and Gas Ass'n v. Orange County Air Pollution Control District*, 14 Cal.3d 411, 121 Cal.Rptr. 249 (1975).

§ 95483.1. Opt-In Parties.

- (a) *Eligibility.* Only a person who meets one or more of the following criteria can elect to opt into the LCFS program, thereby becoming a credit generator subject to the requirements of a regulated party in the LCFS program for a specified volume of fuel or crude oil.
- (1) A person who provides a fuel specified in section 95482(b), and meets the requirements of section 95483(d), (e) ~~or~~, (f)(4) or (g)(1), whichever applies to that fuel;
- (...)

§ 95484. Average Carbon Intensity Requirements.

(A) (...)

(g) Carbon Intensity Requirements for Alternative Jet Fuel.

a. For an alternative jet fuel uplifted in California, an opt-in party must use:

(A) the carbon intensity reference value for conventional jet fuel of 90 gCO₂e/MJ.¹

(B)

NOTE: Authority cited: Sections 38510, 38530, 38560, 38560.5, 38571, 38580, 39600, 39601, and 43018 Health and Safety Code; 42 U.S.C. section 7545, and *Western Oil and Gas Ass'n v. Orange County Air Pollution Control District*, 14 Cal.3d 411, 121 Cal.Rptr. 249 (1975). Reference: Sections 38501, 38510, 39515, 39516, 38571, 38580, 39000, 39001, 39002, 39003, 39515, 39516 and 43000, Health and Safety Code; Section 25000.5, Public Resources Code; and *Western Oil and Gas Ass'n v. Orange County Air Pollution Control District*, 14 Cal.3d 411, 121 Cal.Rptr. 249 (1975).

¹ This is a placeholder value only; see corresponding comment letter for further discussion.

§95486. Generating and Calculating Credits and Deficits.

(a) Generation and Acquisition of Transferrable Credits.

(...)

(b) Calculation of Credits and Deficits Generated. (...)

- (1) All LCFS fuel quantities used for credit calculation must be in energy units of megajoules (MJ).

Fuel quantities denominated in other units, such as those shown in Table 3, must be converted to MJ in the LRT-CBTS by multiplying by the corresponding energy density¹:

Table 3. Energy Densities of LCFS Fuels and Blendstocks.

<i>Fuel (units)</i>	<i>Energy Density</i>
<i>Alternative jet fuel (gal)</i>	<i>133.79 (MJ/gal)</i>
CARBOB (gal)	119.53 (MJ/gal)
CaRFG (gal)	115.83 (MJ/gal)
Diesel fuel (gal)	134.47 (MJ/gal)

¹ Energy density factors are based on the lower heating values of fuels in CA-GREET 2.0 using BTU to MJ conversion of 1055.06 J/Btu.

Pure Methane (ft ³)	1.02 (MJ/ft ³)
Natural Gas (ft ³)(scf)	1.04 0.98 (MJ/ft ³ scf)
LNG (gal)	78.83 (MJ/gal)
Electricity (KWh)	3.60 (MJ/KWh)
Hydrogen (kg)	120.00 (MJ/kg)
Undenatured Anhydrous Ethanol	80.53 (MJ/gal)
Denatured Ethanol (gal)	81.51 (MJ/gal)
FAME Biodiesel (gal)	126.13 (MJ/gal)
Renewable Diesel (gal)	129.65 (MJ/gal)

- (2) (...)
- (3) LCFS credits or deficits for each fuel or blendstock supplied by a regulated party must be calculated according to the following equations:

(...)

(E) For alternative jet fuel:

$$\text{Credits}_i^{XD} / \text{Deficits}_i^{XD} (MT) = (CI_{standard}^{XD} - CI_{reported}^{XD}) \times E_{displaced}^{XD} \times C$$

where:

$Credits^{XD}_i / Deficits^{XD}_i (MT)$ is the amount of LCFS credits generated (a positive value), in metric tons, by the alternative jet fuel;

$CI_{standard}^{XD}$ is the carbon intensity reference value for calculating alternative jet fuel credits as provided in sections 95484(g);

$CI_{reported}^{XD}$ is the adjusted carbon intensity value of a fuel or blendstock, in gCO_{2e}/MJ, calculated pursuant to section 95486(b)(3)(B); and

$E_{displaced}^{XD}$ is the total amount of alternative jet fuel uplifted in California.

C is a factor used to convert credits to units of metric tons from gCO₂e and has the value of:

$$C = 1.0 \times 10^{-6} \frac{(MT)}{(gCO_2e)}$$

Table 4. EER Values for Fuels Used in Light- and Medium-Duty, and Heavy-Duty Applications.

<i>Light/Medium-Duty Applications (Fuels used as gasoline replacement)</i>		<i>Heavy-Duty/Off-Road Applications (Fuels used as diesel replacement)</i>	
<i>Fuel/Vehicle Combination</i>	<i>EER Values Relative to Gasoline</i>	<i>Fuel/Vehicle Combination</i>	<i>EER Values Relative to Diesel</i>
Gasoline (incl. E6 and E10) or E85 (and other ethanol blends)	1.0	Diesel fuel <u>Alternative jet fuel</u> , or Biomass-based diesel blends	1.0
CNG/ICEV	1.0	CNG or LNG (Spark-Ignition Engines)	0.9
		CNG or LNG (Compression-Ignition Engines)	1.0

Electricity/BEV, or PHEV	3.4	Electricity/BEV, or PHEV* Truck	2.7
		Electricity/BEV or PHEV* Bus	4.2
		Electricity/Fixed Guideway, Heavy Rail	4.6
		Electricity/Fixed Guideway, Light Rail	3.3
		Electricity/Trolley Bus, Cable Car, Street Car	3.1
		Electricity Forklifts	3.8
H2/FCV	2.5	H2/FCV	1.9
		H2 Fuel Cell Forklifts	2.1

*BEV = battery electric vehicle, PHEV= plug-in hybrid electric vehicle, FCV = fuel cell vehicle, ICEV = internal combustion engine vehicle.

- (c) *Credit Generation Frequency. Beginning 2011 and every year afterwards, a regulated party may generate credits quarterly after the quarterly report has been submitted in the LRT-CBTS. Regulated parties shall reconcile their data with their business partners before submission. Timeline may change subject to verification*

NOTE: Authority cited: Sections 38510, 38560, 38560.5, 38571, 38580, 39600, 39601, and 43018 Health and Safety Code; 42 U.S.C. section 7545, and *Western Oil and Gas Ass'n v. Orange County Air Pollution Control District*, 14 Cal.3d 411, 121 Cal.Rptr. 249 (1975). Reference: Sections 38501, 38510, 39515, 39516, 38571, 38580, 39000, 39001, 39002, 39003, 39515, 39516 and 43000, Health and Safety Code; Section 25000.5, Public Resources Code; and *Western Oil and Gas Ass'n v. Orange County Air Pollution Control District*, 14 Cal.3d 411, 121 Cal.Rptr. 249 (1975).

§ 95488. Obtaining and Using Fuel Pathways.

- (a) *Applicability.* (...)
- (b) *Primary Alternative Fuel Pathway Classifications.* For purposes of fuel pathway carbon intensity determination, proposed LCFS fuel pathways shall fall into one of two tiers, as described below.
- (1) *Tier 1.* Conventionally-produced alternative fuels of a type that has been in full commercial production, excluding start-up or ramp-up phase, for at least three years, and for which certified LCFS pathways have existed for at least three years shall be classified into Tier 1. The term “conventionally-produced” means that the fuel was produced using grid electricity, natural gas, and/or coal for process energy; and production processes that do not include the innovative methods described in subsection 95488(b)(2)(F). Tier 1 includes, but is not limited to, the following conventionally-produced fuels:
- (A) Starch- and sugar-based ethanol;
 - (B) Biodiesel produced from conventional feedstocks (including but not limited to plant oils, tallow and related animal wastes, and used cooking oil);
 - (C) Renewable Diesel produced from conventional feedstocks (including but not limited to plant oils, tallow and related animal wastes, and used cooking oil);
 - (D) Natural Gas; and
 - (E) Biomethane from landfill gas.
- (2) *Tier 2.* The Tier 2 classification includes all fuels not included in Tier 1. Tier 2 fuels include, but are not limited to:
- (A) Cellulosic alcohols;
 - (B) Biomethane from sources other than landfill gas;
 - (C) Hydrogen;
 - (D) Electricity, whether from the public grid or from dedicated, low-CI sources;
 - (E) Drop-in fuels (renewable hydrocarbons) except for renewable diesel produced from conventional feedstocks (including but not limited to plant oils, tallow and related animal wastes, and used

cooking oil);

- (F) Alternative jet fuels; and
- (G) Tier 1 fuels produced using one or more innovative production methods. Innovative production methods include, but are not limited to:
(...)