

Handout 3

Electricity and Hydrogen

DRAFT

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

Subarticle 7. Low Carbon Fuel Standard

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§ 95481. Definitions and Acronyms. [from 95481, page 10]

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(27-1) “Fixed guideway transportation” means a system of public transit electric vehicles that can operate only on its own guideway constructed specifically for that purpose, such as light rail or heavy rail, exclusive right-of-way bus operations, and trolley coaches.

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(59) “Transaction Type” means the nature of a fuel-based transaction, as defined below:

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(J) “EV Charging” means providing electricity to recharge plug-in electric vehicles, including battery electric vehicles and plug-in hybrid electric vehicles.

(K) “Fixed Guideway Charging” means fueling light rail or heavy rail, exclusive right-of-way bus operations, or trolley coaches with electricity.

(L) “Forklift Charging” means providing electricity to recharge electric forklifts.

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§ 95483. Regulated Parties. [from 95484(a) Identification of Regulated Parties, page 22]

Except as provided in this section, the California Low Carbon Fuel Standard regulation, title 17, California Code of Regulations (CCR), sections 95480 through _____ (collectively referred to as the “LCFS”) applies to any person who, as a regulated party defined in section _____ and specified in section [95484(a)], is responsible for a transportation fuel in a calendar year. The purpose of this part is to establish the criteria

by which a regulated party 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.

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(6e) *Regulated Parties for Electricity.* [from 95484(a)(6), page 35] For electricity used as a transportation fuel, the party who is eligible to ~~opt-in as a regulated party~~ generate credits is determined as specified below:

(A1) For on-road transportation fuel supplied through electric vehicle (EV) charging ~~equipment~~ in a single or multi-family residence, the Electrical Distribution Utility is eligible to ~~opt-in as the regulated party~~ generate credits in their service territory. To receive credit for electricity supplied as a transportation fuel under any provision in this section, the Electrical Distribution Utility must:

~~1.(A)~~ Use all credit proceeds ~~as direct to~~ benefits for current or future EV customers.

~~2.(B)~~ Educate the public on the benefits of EV transportation (including environmental benefits and costs of EV charging, or total cost of ownership, as compared to gasoline). These efforts may include, but are not limited to:

- ~~1a.~~ public meetings
- ~~2b.~~ EV dealership flyers
- ~~3c.~~ utility customer bill inserts
- ~~4d.~~ radio and/or television advertisements ~~advertising~~
- ~~5e.~~ webpage content

~~3.(C)~~ Provide rate options that encourage off-peak charging and minimize adverse impacts to the electrical grid.

~~4.(D)~~ Include in annual compliance reporting the following supplemental information: an itemized summary of efforts to meet requirements (A)4 through (C)3 above; and costs associated with meeting the requirements; ~~an accounting of credits generated, sold, and banked; and an accounting of the number of EVs known to be operating in the service territory.~~ ARB will post the annual compliance reports supplemental information for public review by May 31st of each year.

(B2) For on-road transportation fuel supplied through public access EV charging ~~equipment~~, the third-party non-utility Electric Vehicle Service Provider (EVSP) or Electrical Distribution Utility that has installed the

equipment, or had an agent install the equipment, and who has a contract with the property owner or lessee where the equipment is located to maintain or otherwise service the charging equipment, is eligible to ~~opt-in as the regulated party~~ generate credits. If the EVSP is not ~~the regulated party~~ reporting for a specific volume of fuel, or has not fully complied with the requirements of this subarticle, the Electrical Distribution Utility is eligible to ~~opt-in as the regulated party~~ generate credits for the electricity with Executive Officer approval. To receive credit for transportation fuel supplied through public access EV charging equipment, the ~~regulated party must~~ following requirements apply:

~~1.(A)~~ Use all credit proceeds as direct ~~to~~ benefits for current or future EV customers.

~~2.(B)~~ Educate the public on the benefits of EV transportation (including environmental benefits and costs of EV charging, or total cost of ownership, as compared to gasoline). These efforts may include, but are not limited to:

- 1a. public meetings
- 2b. EV dealership flyers
- 3e. utility customer bill inserts
- 4d. ~~radio and/or television advertisements~~ advertising
- 5e. webpage content

~~3.(C)~~ Provide rate options that encourage off-peak charging and minimize adverse impacts to the electrical grid.

~~4.(D)~~ Include in annual compliance reporting the following supplemental information: an itemized summary of efforts to meet requirements (A)4 through (C)3 above; and costs associated with meeting the requirements; an accounting of credits generated, sold, and banked; and an accounting of the number of operating EV charging stations and the number of charging incidents. ARB will post the supplemental information ~~annual compliance reports~~ for public review by May 31st of each year.

(C.43) EV Fleets

~~1.(A)~~ For on-road transportation fuel supplied to a fleet of three or more EVs, a person operating a fleet (fleet operator) is eligible to be a regulated party ~~generate credits~~ generating credits for a specific volume of fuel, or has not otherwise fully complied with the requirements of this subarticle, the Electrical Distribution Utility is eligible to ~~opt-in as the regulated party~~ generate credits for the electricity with Executive

Officer approval. For transportation fuel supplied to a fleet of less than three EVs, the Electrical Distribution Utility is eligible to be the regulated party. To receive credit for transportation fuel supplied to an EV fleet, an accounting of the number of EVs in the fleet the regulated party must be included as supplemental information in annual compliance reporting ~~an accounting of the number of EVs in the fleet.~~

~~(C.2)~~ (B) For on-road transportation fuel supplied to a fleet through the use of a battery switch station, the station owner is eligible to be a regulated party generate credits. If the station owner is not the regulated party generating credits for a specific amount of fuel, or has not otherwise fully complied with the requirements of this subarticle, the Electrical Distribution Utility is eligible to ~~opt in as the regulated party~~ generate credits for the electricity with Executive Officer approval.

~~(4D)~~ For on-road transportation fuel supplied through private access EV charging equipment at a business or workplace, the business owner is eligible to be a regulated party generate credits. If the business owner is not the regulated party generating credits for a specific volume of fuel, or has not fully complied with the requirements of this subarticle, the Electrical Distribution Utility is eligible to ~~opt in as the regulated party~~ generate credits for the electricity with Executive Officer approval. To receive credit for transportation fuel supplied through private access EV charging equipment at a business or workplace, the regulated party ~~must~~ following requirements apply:

~~1.~~ (A) Educate employees on the benefits of EV transportation (including environmental benefits and costs of EV charging, or total cost of ownership, as compared to gasoline) through outreach efforts that may include, but are not limited to:

- ~~1~~a. employee meetings
- ~~2~~b. public meetings
- ~~3~~e. EV dealership flyers
- ~~4~~d. employee flyers
- ~~5~~e. webpage content
- ~~6~~.F. preferred parking

~~2.~~ (B) Include in annual compliance reporting the following supplemental information: a summary of efforts to meet requirement 1, ~~as well as~~, and an accounting of the number of EVs known to be charging at the business.

- (5E) ~~In the event that there is measured on-road electricity as a transportation fuel that is not covered in paragraphs (B) through (D) above, the Electrical Distribution Utility is eligible to opt in as the regulated party generate credits for the electricity with Executive Officer approval. To receive credit for this transportation fuel, the Electrical Distribution Utility must meet all requirements set forth in section 95484(a)(6)(A).~~
- (6F) For transportation fuel supplied to a fixed guideway system, the transit agency operating the system is eligible to generate credits for electricity used to propel the system. If the transit agency is not generating credits for a specific volume of fuel, the Electrical Distribution Utility is eligible to report for the electricity with Executive Officer approval.
- (7G) For transportation fuel supplied to electric forklifts, the Electrical Distribution Utility is eligible to generate credits for the electricity.
- (7f) *Regulated Parties for Hydrogen Or A Hydrogen Blend. [from 95484(a)(7), page 37]*
- (1A) *Designation of Regulated Party at Time Finished Fuel is Created.* For a volume of finished fuel consisting of hydrogen or a blend of hydrogen and another fuel (“finished hydrogen fuel”), ~~the regulated party is initially the person who owns the finished hydrogen fuel~~ is eligible to generate credits. A hydrogen blend is considered to be a finished hydrogen fuel at completion of blending at the time the blendstocks are blended to make the finished hydrogen fuel.
- (B) ~~*Transfer of Ownership and Retaining Compliance Obligation.* Except as provided for in section 95484(a)(7)(C), when a person who is the regulated party transfers ownership of a finished hydrogen fuel to another person, the transferor remains the regulated party.~~
- (G2) *Conditions Under Which a Person Acquiring Ownership of Finished Hydrogen Fuel Becomes the Regulated Party Eligible to Generate Credits.* Section 95484(a)(7)(B) notwithstanding, ~~a~~ a person who acquires ownership of finished hydrogen fuel becomes the regulated party is eligible to generate credits for the fuel if, by the time ownership is transferred, the two parties (transferor and recipient) agree by written contract that the person acquiring ownership accepts the LCFS compliance obligation as the regulated party is eligible to generate credits. For the transfer of regulated party obligations eligibility to generate credits to be effective, the transferor must also provide the recipient a product transfer document that prominently states the information specified in section 95491(c)(1):
1. ~~the volume and average carbon intensity of the transferred finished hydrogen fuel; and~~

2. ~~that the recipient is now the regulated party eligible to generate credits for the acquired finished hydrogen fuel and accordingly is responsible for meeting the requirements of the LCFS regulation with respect to the acquired finished hydrogen fuel.~~

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§ 95486. Generating and Calculating Credits and Deficits. [from 95488(b), page 100 & 95485(a), page 48 & 95484(b), page 52]

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- (b) *Calculation of Credits and Deficits Generated.* **[Formerly 95485(a), page 48]** ~~A regulated party must calculate t~~The amount of credits and deficits generated in a compliance period for an LCFS fuel will be calculated within the LRT-CBTS using the methods specified below in section 95486(a)(1) through (3) [formerly 95485(a)(1) through (3)]. The total credits and deficits generated are used in determining the overall credit balance for a compliance period, pursuant to section 95486(a) [formerly 95485(a)]. All credits and deficits are denominated in units of metric tons (MT) of carbon dioxide equivalent.

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

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

where:

$\text{Credits}_i^{XD} / \text{Deficits}_i^{XD} (\text{MT})$ is either the amount of LCFS credits generated (a zero or positive value), or deficits incurred (a negative value), in metric tons, by a fuel or blendstock under the average carbon intensity requirement for gasoline ($XD = \text{"gasoline"}$) or diesel ($XD = \text{"diesel"}$);

$CI_{\text{standard}}^{XD}$ is the average carbon intensity requirement of either gasoline ($XD = \text{"gasoline"}$) or diesel fuel ($XD = \text{"diesel"}$) for a given year as provided in section 95482 (b) and (c), respectively;

$CI_{reported}^{XD}$ is the adjusted carbon intensity value of a fuel or blendstock, in gCO₂e/MJ, calculated pursuant to section 95485(a)(3)(B);

$E_{displaced}^{XD}$ is the total amount of gasoline (XD = “gasoline”) or diesel (XD = “diesel”) fuel energy displaced, in MJ, by the use of an alternative fuel, calculated pursuant to section 95485(a)(3)(C); and

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

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

(B) $CI_{reported}^{XD} = \frac{CI_i}{EER^{XD}}$

where:

CI_i is the carbon intensity of the fuel or blendstock, measured in gCO₂e/MJ, determined by a California-modified GREET pathway or a custom pathway and incorporates a land use modifier (if applicable); and

EER^{XD} is the dimensionless Energy Economy Ratio (EER) relative to gasoline (XD = “gasoline”) or diesel fuel (XD = “diesel”) as listed in Table 5. For a vehicle-fuel combination not listed in Table 5, $EER^{XD} = 1$ must be used.

(C) $E_{displaced}^{XD} = E_i \times EER^{XD}$

where:

E_i is the energy of the fuel or blendstock, in MJ, determined from the energy density conversion factors in Table 4, except as noted in section 95485(a)(3)(D).

(D) For Fixed Guideway Systems and Forklifts:

$$E_{displaced}^{XD} = E_i$$

where:

E_i is the energy of the fuel used to propel fixed guideway systems and electric forklifts. For fixed guideway system expansion beyond

2010, the formula for displaced energy in section 95485(a)(3)(C) may be used with Executive Officer approval.

Table 5. 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 or Biomass-based diesel blends	1.0
CNG / ICEV	1.0	CNG or LNG (Spark-Ignition Engines) CNG or LNG (Compression-Ignition Engines)	0.9 1.0
Electricity / BEV, or PHEV	3.4	Electricity / BEV, or PHEV* <u>Electricity / Fixed Guideway, heavy rail</u> <u>Electricity / Fixed Guideway, light rail and trolley</u> Electricity / Forklifts	2-73.8 4.6 3.3 3.1
H2 / FCV	2.5	H2 / FCV	1.9

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

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§ 95491. Reporting and Recordkeeping.

(a) *Reporting Requirements.* **[from 95484(b), page 38]**

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(3) *General and Specific Reporting Requirements for Quarterly Progress Reports.* For each of its transportation fuels, a regulated reporting party must submit a quarterly progress report that contains the information specified in Table 3 and meets the additional specific requirements set forth below:

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(GD) ~~Specific Quarterly Reporting Requirements Parameters for Electricity used as a Transportation Fuel.~~ For electricity used as a transportation fuel, a regulated party must also submit the following:

1. For residential charging stations, the total electricity dispensed (in kW-hr) to all vehicles at each residence, based on direct metering, which distinguishes electricity delivered for transportation use. Before January 1, 2015, “based on direct metering” means either Residential charging may be measured by:
 - a. the use of direct metering (either submetering or separate metering) to measure the electricity directly dispensed to all vehicles at each residential charging station residence; or
 - b. for households and residences only where direct metering has not been installed, the regulated reporting party may report the total electricity dispensed as a transportation fuel at each residential charging station residence using another method that the regulated reporting party demonstrates to the Executive Officer’s satisfaction is substantially similar to the use of direct metering under section 95484(b)(3)(C)1.a.

Effective January 1, 2015, “based on direct metering” means only the use of direct metering as specified in section 95484(b)(3)(C)1.a. above;
2. For each public access charging facility, the amount of electricity dispensed (in kWh);
3. For each fleet charging facility, the amount of electricity dispensed (in kWh).
4. For each workplace private access charging facility, the amount of electricity dispensed (in kWh).
5. The carbon intensity value of the electricity determined pursuant to section 95484 [formerly 95486].
6. For each fixed guideway system, the amount of electricity used for transit propulsion (in kWh).

7. For the electric forklifts located in each Electrical Distribution Utility service area, the amount of estimated electricity provided by Air Resources Board staff annually (in kWh).

(DE) ~~Specific Quarterly Reporting Requirements-Parameters for Hydrogen or a Hydrogen Blend. For hydrogen or a hydrogen blend used. Used as a transportation Transportation fuelFuel. a regulated party must also submit the following:~~

1. For each private access fueling facility, the amount of fuel dispensed (in kg) by vehicle weight category: LDV & MDV and HDV.
2. For each public access filling station, the amount of fuel dispensed (in kg) by vehicle weight category: LDV & MDV and HDV.
3. The carbon intensity value of the hydrogen or the blendstocks used to produce the hydrogen blend determined pursuant to section 95488 [formerly 95486].
4. Production company ID and facility ID