



LOW CARBON FUEL STANDARD METHODOLOGY DOCUMENT

Methodology for Electric Forklift Charging Claimed by Electrical Distribution Utilities

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Introduction

The California Air Resources Board's (CARB) Low Carbon Fuel Standard (LCFS) regulation (regulation), which appears at sections 95480 to 95503 of title 17, California Code of Regulations, is designed to reduce greenhouse gas emissions associated with the life cycle of transportation fuels used in California. CARB staff has prepared this document to provide further detail on the calculation methodology. Unlike the regulation itself, this document does not have the force of law. This document is not intended to, and cannot, establish requirements beyond those that are already in the regulation, nor can it supplant, replace, or amend any of the legal requirements of the regulation. Conversely, any omission or truncation of regulatory requirements as recited in this discussion does not relieve entities of their legal obligation to fully comply with all requirements of the regulation.

Methodology

An Electrical Distribution Utility (EDU) can generate credits for electricity supplied to the electric forklift fleet in its service territory during a reporting period if not claimed by another eligible entity.¹ CARB calculates the amount of electricity used to charge electric forklifts in an EDU's service territory that has opted-in to the LCFS on a quarterly basis. The quantity of unclaimed electricity supplied to forklift fleets in an EDU's territory is the difference between the estimated total electric forklift fleet usage within a service territory and the quantity of electricity reported for forklift fleet fueling in the same service territory for a given reporting period.

CARB determines the quantity of electricity supplied to forklift fleets within a given EDU service territory to determine the quantity of electricity allocated under section 95483(c)(4)(B) paragraph 3:

$$E_{EDU}^{Forklift} = (N^{Forklift} \times E^{Forklift} \times f_{EDU}) - \sum_i^{RP} E_i^{Forklift} \quad \text{Equation 1}$$

¹ See section 95483(c)(4)(B) paragraph 3. of the regulation.

Where:

$E_{EDU}^{Forklift}$ is the total electricity (kWh) for forklifts estimated for an individual EDU for a given quarter;

$N^{Forklift}$ is the number of electric forklifts operating in California, as estimated from the SSRC CARB LSI study;²

$E^{Forklift}$ is the quarterly average electricity use (kWh/forklift-quarter) of a typical electric forklift, as estimated by Electric Power Research Institute (EPRI);³

f_{EDU} is a dimensionless value representing the relative fraction of the forklift fleet attributable to an EDU approximated from non-residential (commercial and industrial) electricity consumption provided by California Energy Commission's "Electric Consumption By Utility Dataset;"⁴ and

$\sum_i^{RP} E_i^{Forklift}$ is the sum of all reported electricity for electric forklifts (kWh) claimed by reporting entities in each EDU territory for a given quarter.

CARB calculates and issues the credits claimed by EDUs on a quarterly basis after close of the quarterly reporting deadline.⁵ The LCFS provides for two types of forklift vehicle fuel applications differentiated by model year as described in Table 5 of the regulation; post-2010 and pre-2011.⁶ Starting for the Q2 2021 reporting period, CARB will use the previous four quarters data to calculate the average forklift vehicle application as reported per 95491(d)(3)(E) paragraphs 1-2 and applies that average forklift application to the EDU forklift credits. For example, Q2 2021 EDU forklift credits will use an average proportion between the two forklift applications from Q2 2020 through Q1 2021 reported data.

² SSRC CARB LSI study https://ww2.arb.ca.gov/sites/default/files/2020-08/ssrc_2017.pdf. CARB staff estimates the size of the total electric forklift fleet from Table 75 (page 118). Through 2020, CARB staff utilized the "Population lower bound" estimate for estimating forklift population. Starting from Q1 2021, CARB utilizes the "Population upper bound" estimate. This value was changed to better reflect the total forklift electricity load as reported electricity in the LCFS exceeded the previous estimate.

³ EPRI forklift usage report

https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/electricity/epri_2015.pdf. CARB staff uses the low estimate for electricity usage per forklift.

⁴ CEC Electric Consumption By Utility Dataset <http://www.ecdms.energy.ca.gov/elecbyutil.aspx>. CARB staff uses "Commercial Building", "Commercial Other", and "Industry" categories for the estimation.

⁵ Per section 95491(d)(3)(E) paragraph 3. credits issued to EDUs for unclaimed electricity supplied for forklift fueling are exempt from quarterly reporting deadlines set forth in section 95491(b).

⁶ The credit calculation and Table 5 can be found in section 95486.1(a) of the regulation. Prior to Q2 2021, CARB estimated the population for EDU forklifts credits to be pre-2011.

CONTACT

For additional information concerning the methodology described in this document or the LCFS program, please visit the LCFS contacts webpage at <https://www.arb.ca.gov/fuels/lcfs/contact.htm>.