LCFS Guidance

Revised: June 2019

Low Carbon Fuel Standard (LCFS) Guidance 19-03

Reporting for Incremental Credits for Residential EV Charging

INTRODUCTION

California Air Resources Board's (CARB) Low Carbon Fuel Standard 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 guidance document to describe the regulatory requirements in a user-friendly format. Unlike the regulation itself, this document does not have the force of law. It is not intended to and cannot establish new mandatory requirements beyond those that are already in the LCFS Regulation, nor can it supplant, replace or amend any of the legal requirements of the regulation. Conversely, any omission or truncation of regulatory requirements does not relieve entities of their legal obligation to fully comply with all requirements of the regulation.

BACKGROUND

This guidance document is designed to summarize and clarify LCFS Regulation[1] requirements for reporting EV charging data for residential incremental credits.

Any equipment that is capable of measuring electricity used for residential EV charging, and for tracking and recording the amount of electricity dispensed to that vehicle over a specific time period, may be registered in the LCFS Reporting Tool (LRT) as a piece of Fueling Supply Equipment (FSE).[2] The residential EV charging data for generating incremental credits can be measured using off-vehicle meters or on-vehicle telemetry.

To register off-vehicle meters as FSE for residential EV charging, the following must be provided:

1. The name of the Original Equipment Manufacturer (OEM)
2. The serial number assigned to the FSE by the OEM
3. The Vehicle Identification Number (VIN) for the EV expected to be charged at the location.

[1] All citations to the LCFS Regulation are found in Title 17, California Code of Regulations (CCR), sections 95480-95503.

[2] Regulation section 95483.2(b)(8)(B)4. defines an FSE as "a piece of equipment or on-vehicle telematics capable of measuring the electricity dispensed for EV charging."

To register on-vehicle telemetry as the FSE for residential EV charging, the following must be provided:

1. The Vehicle Identification Number (VIN) for the EV expected to be charged at the location.

This guidance document provides information on acceptable methods for collecting EV charging data to be reported for residential incremental credits.

METHOD 1: Measuring Charging using Off-vehicle Residential EV Charging Equipment

If the FSE is capable of measuring and logging electricity supplied solely for the purpose of charging a specific EV associated with a VIN, then the measured quantity of electricity dispensed during a quarter can be reported directly for claiming incremental credits. The reporting entity must maintain detailed records of EV charging associated with each VIN as required under section 95491.1(a)(1)(H) of the LCFS Regulation.

For reporting electricity with Smart Charging and Smart Electrolysis pathways, quantity of electricity used must be reported for each hourly window, aggregated for a reporting period, as per Table 7-2 in section 95488.5(f) of the LCFS Regulation. The reporting entity must be able to provide detailed records of electricity quantities used during a reporting period for each hour, upon request by the CARB Executive Officer.

METHOD 2: Measuring Residential EV Charging Using Vehicle Telematics and Geofencing

On-vehicle telemetry can be used for reporting residential charging for vehicles registered as an FSE. Telematics must be capable of measuring and logging electricity supplied solely for the purpose of residential EV charging. In order to avoid misreporting by double counting, the quantity of electricity used for residential and non-residential EV charging must be disaggregated for each VIN.[3]

For EV charging that occurs at a non-residential location (like a public charging station), the reporting entity registering the non-residential FSE may claim credits for the electricity used by any electric vehicle charging through that FSE. To use telematics for reporting residential EV charging, the following options have been identified.

Option 1: Geofencing Non-residential FSE

To prevent double counting, vehicle location information alongside telematics data may be utilized to identify and exclude charging sessions that may have occurred at public charging stations. CARB staff has determined that a minimum Geofencing Radius

[3] Per section 95491.1, reporting entities must maintain records to support compliance and valid credit generation.

(GFR) of 220 meters would be reasonable to support geofencing of the public charging stations for reporting using on-vehicle telematics.[4]

Any charging session recorded using telematics that occurs within the GFR of a non-residential charging station that is registered under the LCFS must be subtracted from the total charging measured by the vehicle telematics prior to reporting for residential incremental charging.

Option 2: Geofencing Residential FSE

The reporting entity may geofence the residential location, where the EV charging will take place, with a maximum GFR of 110 meters. EV charging recorded within the permitted radius could be reported as residential EV charging.

DEMONSTRATION

The reporting entity planning to use vehicle telematics with geofencing for reporting in the LCFS are encouraged to provide a sample of charging data and accounting methods, based on geofencing, to demonstrate that the methodology sufficiently addresses and prevents double counting of non-residential charging. CARB staff will work with reporting entities during FSE registration to confirm whether the geofencing methodology is anticipated to meet LCFS reporting eligibility requirements.

NON-RESIDENTIAL FSE LOCATIONS

At the end of each quarter, CARB will publish on the LCFS website a list of all FSEs registered for non-residential EV charging in the LCFS program along with the address, and latitude and longitude coordinates for each FSE.[5] Reporting entities planning to use Option 1 under Method 2 above may use this list to identify the set of locations relevant for using geofencing methodologies to report EV charging.

REPORTING

Reporting entities must provide residential EV charging data per FSE with a certified fuel pathway code in their quarterly report submissions.

[4] See Appendix A for rationale explaining recommended minimum and maximum geofencing radius.

[5] The list of FSE registered for non-residential EV charging is available on the LCFS Guidance and FAQs webpage. https://www.arb.ca.gov/fuels/lcfs/guidance/guidance.htm#guidance

RECORDKEEPING AND AUDITING

The reporting entity using vehicle telematics for reporting residential EV charging must be able to provide records to the Executive Officer, upon request, demonstrating that the quantity of electricity reported for residential EV charging corresponds to residential EV charging only. All data and calculations submitted by a reporting entity for generating incremental credits are subject to inspection by the Executive Officer and must be made available within 20 days upon request of the Executive Officer.

CONTACT

If you have questions regarding the above information, please visit the LCFS Contacts webpage: https://www.arb.ca.gov/fuels/lcfs/contact.htm.

APPENDIX A

Rationale for Minimum and Maximum Geofencing Radius

Most commercially available Global Positioning System (GPS) devices allow for accuracy readings within the 5 to 10 meter range when line-of-sight obstruction is minimal.[6] With this level of accuracy on GPS devices, the minimum acceptable Geofencing Radius (GFR) around non-residential FSE to prevent double counting could be around 20 meters (10 meter GFR for both the vehicle and the non-residential charging FSE). However, currently not all the registered non-residential FSEs provide location information with a precision of 10 meters or less (precision up to at least 5 decimal places on geo-coordinates).

Moreover, GPS devices on vehicles may not be able to provide precise vehicle location within 10 meters or less if a direct line-of-sight is not available (for example, inside a parking garage). In the event that a vehicle does not have clear line-of-sight with satellites, additional measures for determining precise location will be necessary, or a less precise estimate of location will be required. Cellphone and other location telemetry methods, which do not rely on line-of-sight, often have location-based capabilities in the 100 m to 1 km range, and are typically relied on as fallback options for determining location for consumer electronics.[7,8,9] Data reported in the LCFS for individual fueling stations is often provided at a site address level, with actual charging infrastructure typically falling within 100 meters from the provided site address.

Given the lack of precision for non-residential FSEs registered in the LCFS, as well as uncertainty affiliated with precise estimates for vehicles where satellite signals may be reflected or blocked, CARB is proposing a conservative estimate of 220 meters (a 110 meter radius determined by at least 4 decimal points of precision for GPS locations defined by 2 points) or greater for minimum-GFR to geofence non-residential charging locations. Similarly, staff is proposing a conservative estimate of 110 meters or less for the maximum GFR to geofence a residential charging location.

CARB staff is working with the registrants of non-residential FSEs to update their location with a higher precision (10 meters or less). Once CARB staff has significant confidence in the precision and accuracy of FSE locations, staff may consider re-evaluating the minimum and maximum GFR recommendations.

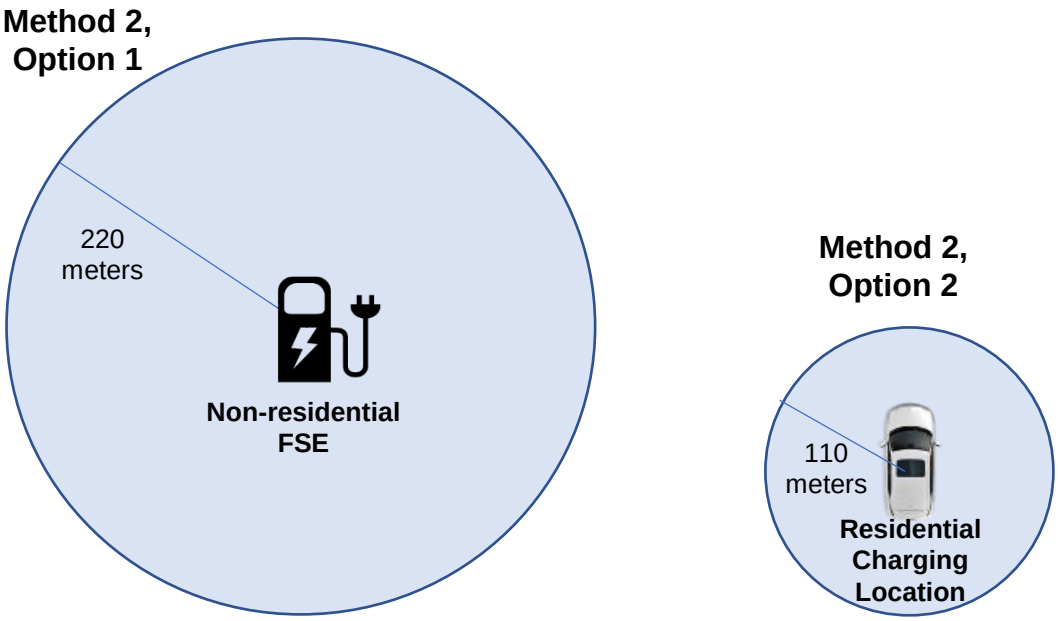
---

[6] Wing, M. G., Eklund, A., & Kellogg, L. D. (2005). Consumer-grade global positioning system (GPS) accuracy and reliability. *Journal of Forestry, 103*(4), 169-173. Retrieved from https://search.proquest.com/docview/220823497?accountid=26958

[7] Zandbergen, Paul A. "Accuracy of iPhone locations: A comparison of assisted GPS, WiFi and cellular positioning." *Transactions in GIS* 13 (2009): 5-25.

[8] Warrior, Jay, Eric McHenry, and Kenneth McGee. "They know where you are [location detection]." *IEEE Spectrum* 40.7 (2003): 20-25.

[9] Jayaraman, Sriram, Mati Wax, and Oliver A. Hilsenrath. "Calibration table generation for wireless location determination." U.S. Patent No. 6,101,390. 8 Aug. 2000.


Method 2,
Option 1
220
meters
Non-residential
FSE
Method 2,
Option 2
110
meters
Residential
Charging
Location