



# LCFS Guidance



## Low Carbon Fuel Standard (LCFS) Guidance 20-04 Requesting EER-Adjusted Carbon Intensity Using a Tier 2 Pathway Application

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### INTRODUCTION

The 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

Table 5 of the LCFS regulation<sup>1</sup> (see Appendix A) provides Energy Economy Ratio (EER) values for several fuel-vehicle combinations, which are used for calculating credits or deficits as per section 95486.1(a). If a fuel-vehicle combination is not represented by an EER value in Table 5, and both the fuel and vehicle type are eligible pursuant to section 95482 of the LCFS regulation, then the reporting entity may request an EER-adjusted carbon intensity (CI). An EER-adjusted CI is determined using a Tier 2 pathway application pursuant to section 95488.7(a)(3) of the LCFS regulation.

This guidance document is designed to summarize and describe the process and requirements of a Tier 2 pathway application for requesting an EER-adjusted CI.

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<sup>1</sup> All citations to the LCFS regulation are to title 17 of the California Code of Regulations (CCR) sections 95480-95503.

## ELIGIBILITY AND APPLICABILITY

The following conditions must be met before a Tier 2 pathway application for an EER-adjusted CI is submitted:

1. The fuel must be eligible and the vehicle type must not be exempt as per section 95482 of the LCFS regulation.
2. The fuel-vehicle combination is not represented by an EER value provided in Table 5 of the LCFS regulation.
3. Only a fuel reporting entity, as per section 95483 of the LCFS regulation, can apply for an EER adjusted CI through a Tier 2 pathway application. If an EER-adjusted CI is certified, it will be specific to the fuel reporting entity and no other entity can use it for reporting and credit generating purposes, even if they demonstrate the same fuel-vehicle combination. Any other reporting entity may apply for a separate EER-adjusted CI for their specific use case.



Note: If a fuel-vehicle combination is represented by an existing EER value in Table 5 of the LCFS regulation, an EER-adjusted CI value cannot be requested. For example, a battery electric bus fleet owner cannot request an EER-adjusted CI value specific for their fleet, even if they believe their battery electric bus fleet would achieve a different EER than the existing value for heavy-duty battery electric bus provided in Table 5. EER values provided in the LCFS regulation can be updated through a rulemaking process.

## APPLICATION PROCESS AND REQUIREMENTS

Pursuant to section 95488.7(a)(3) of the LCFS regulation, an applicant must submit a Tier 2 pathway application for requesting an EER-adjusted CI. Applications must be submitted using the Alternative Fuel Portal (AFP)<sup>2</sup> and include the following:

1. Letter of Intent. The applicant must provide a letter of intent to request an EER-adjusted CI for their specific use case along with a justification that EER values provided in Table 5 of the LCFS regulation do not apply to the fuel-vehicle combination under consideration.
2. Methodology. The applicant must provide a detailed description of the methodology used, all assumptions made, and provide all data and references used for calculation of the proposed EER-adjusted CI value. The methodology used must compare the useful output from the alternative fuel-vehicle technology under consideration to that of comparable conventional fuel-vehicle technology.

<sup>2</sup> <https://ssl.arb.ca.gov/lcfsrt/Login.aspx>

The following content is recommended to be included as part of the methodology to help facilitate an informed review of the application:

- a. *Description of Fuel-Vehicle Technology.* The applicant may include a description of the fuel-vehicle technology, a preliminary estimate of the EER and the EER-adjusted CI for their specific use case, and a description of how the proposed unique and innovative transportation application could help support LCFS goals of reducing the carbon intensity of transportation fuel in California, including the potential magnitude of credit generation.
- b. *Displacement Baseline.* This refers to the conventional fuel-vehicle application that the proposed alternative fuel-vehicle combination will be displacing. Incorrectly identifying the displacement baseline may result in overestimation or underestimation of the useful output the alternative fuel-vehicle combination is displacing. Therefore, to accurately assess the EER value, it is critical to correctly identify the displacement baseline. In some cases, the displacement baseline may be a combination of multiple transport applications rather than a one-to-one replacement of a particular application. For example, a new high-speed train project may be shown to displace passenger vehicles, air transport, and bus transport.

The applicant may clearly identify the displacement baseline and provide a justification along with all the data and references relied upon to make the determination. The applicant may rely on academic and market research, study, reports, surveys, etc. to make the determination.



Note: Proper identification of the units of measurement used to measure and compare useful output is necessary for accurately quantifying the EER value. The units used to measure useful output may differ on a case-by-case basis. For example, while comparing a battery-electric light-duty vehicle to an internal combustion light-duty vehicle, the useful output can be measured in miles travelled by the vehicle per unit of energy of fuel (miles/MJ); but for comparing a light-rail transit system displacing light-duty passenger cars the useful output can be measured in passenger miles traveled per unit of energy of fuel (passenger-miles-traveled/MJ).

- c. *Determining System Boundary and CI Impacts.* Proper identification of the system boundary is necessary to accurately determine all energy inputs and useful outputs, and to account for any impact on the life cycle emissions associated with the fuel consumption for the proposed fuel-

vehicle combination use case. For example, e-bicycles or e-scooters may be refueled at a designated central location, but may be deployed elsewhere throughout a city. In this case, any resulting energy consumption and emissions associated with the transportation of these e-bicycles or e-scooters would need to be accounted for in the system boundary to assess the useful output and effective CI of the fuel.

3. CA-GREET Model and Life Cycle Analysis Report: Unless the proposed fuel would qualify for a Lookup Table pathway, the applicant must provide a copy of the CA-GREET3.0 model and a life cycle analysis report as per sections 95488.7(a)(1) and (2) of the LCFS regulation. Please refer to section 95488.5 of the LCFS regulation to check Lookup Table pathway eligibility for the fuel. For example, the applicant is not required to submit a copy of the CA-GREET model and life cycle analysis report if they plan to report electricity which is eligible for California average grid electricity CI or Zero-CI through a Lookup Table pathway.

## **REPORTING REQUIREMENTS**

To establish eligibility as a fuel reporting entity pursuant to section 95483 of the LCFS regulation, the applicant must identify the name of dispensed fuel, describe the refueling infrastructure, and describe how dispensed fuel is measured. The fuel reporting entity must meet the registration requirements as per section 95483.2 of the LCFS regulation, reporting requirements as per section 95491 of the LCFS regulation, and recordkeeping and auditing requirements as per section 95491.1 of the LCFS regulation. Refueling practices and data collection methods may vary widely across different fuel-vehicle use cases; therefore, the applicant must provide a description of expected refueling practices and data collection methods employed in their use case to meet LCFS reporting requirements.

## **THIRD-PARTY VALIDATION AND VERIFICATION REQUIREMENTS**

CARB will review the application and identify any site-specific inputs during the certification process described in section 95488.7(d) of the LCFS regulation. If an application does not include site-specific inputs, the application is not subject to third-party validation requirements. Applications that include site-specific CI inputs are subject to third-party validation requirements pursuant to section 95500(a)(1)(A) of the LCFS regulation. Whether EER-adjusted CI pathway annual reports must be verified will be determined based on expected variability of CI parameters. Quarterly Fuel Transaction Reports must be verified only when they include transaction types listed in section 95500(c) of the LCFS regulation.

## **CONTACT**

If you have questions regarding the above information, please visit the [LCFS Contacts](#) webpage.

## APPENDIX A

**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>Aviation Applications (Fuels used as jet fuel 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>	<i>Fuel/Vehicle Combination</i>	<i>EER Values Relative to Conventional Jet</i>
Gasoline (incl. E6 and E10) Or E85 (and other ethanol blends)	1	Diesel fuel Or Biomass-based diesel blends	1	Alternative Jet Fuel	1
CNG/ICEV	1	CNG or LNG (Spark-Ignition Engines)  CNG or LNG (Compression-Ignition Engines)	0.9  1		
Electricity/BEV, or PHEV	3.4	Electricity/BEV or PHEV* Truck or Bus  Electricity/Fixed Guideway, Heavy Rail  Electricity/Fixed Guideway, Light Rail	5.0  4.6  3.3		
On-Road Electric Motorcycle	4.4	Electricity/Trolley Bus, Cable Car, Street Car  Electricity Forklifts  eTRU eCHE eOGV	3.1  3.8  3.4 2.7 2.6		