

State of California
Air Resources Board

Staff Discussion Paper

Electricity as a Transportation Fuel

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TABLE OF CONTENTS

PURPOSE.....	1
INTRODUCTION AND GENERAL PROGRAM BACKGROUND	1
1. LCFS FUEL PATHWAY EVALUATION PROCESS FOR ELECTRICITY	2
Current Pathway Application Process	2
Potential Changes for Consideration	3
2. REPORTING REQUIREMENTS	5
Existing Reporting Requirements	5
Potential Non-Regulatory Changes for Enhanced Reporting	7
Potential Regulatory Amendments to Reporting Requirements	8
3. VERIFICATION	10
Existing Verification Provisions.....	11
Potential Amendments to Verification.....	11
Considerations for the Verification of Electricity.....	13
APPENDIX A.....	A-1
APPENDIX B.....	B-1

PURPOSE

This discussion paper provides an overview of how electricity used as a transportation fuel is currently treated in the Low Carbon Fuel Standard¹ (LCFS) program and opens the dialogue with stakeholders about initiatives to improve program administration as well as potential future regulatory changes for this fuel type. It is a working document and is expected to evolve over time based on input from stakeholders.

INTRODUCTION AND GENERAL PROGRAM BACKGROUND

The LCFS is a performance standard that requires reductions in the carbon intensity of California's transportation fuels over time. Each fuel's carbon intensity (CI) is calculated based on greenhouse gas (GHG) emissions per unit of fuel energy over the fuel's lifecycle—from raw material or feedstock production through end use.² Lower-CI fuels produce fewer GHGs per energy unit. Higher-CI fuels, such as traditional petroleum-based fossil fuels, produce more GHGs per energy unit.

In order to reduce GHG emissions, LCFS requires a yearly declining average CI for the pool of California's transportation fuels. Fuels that exceed the mandated average CI generate deficits and those that have CIs below the mandated average CI generate credits. The quantity of credits or deficits generated by each fuel is determined by its fuel-specific CI score relative to the declining CI standard and the quantity of the fuel used for transportation in California. Deficits created by fuels that exceed the mandated CI must be offset with credits generated by lower CI fuels.

Electricity is one of the lower-carbon fuels currently used in California. Providers of electricity for transportation purposes, if they choose not to participate in the program, have no obligations under the LCFS. However, the LCFS allows electricity fuel providers to "opt in" to the program, and generate LCFS credits that they can sell and trade in the California LCFS market.

Current Parties Eligible to Generate Credits for Electricity

¹ California Code of Regulations (CCR), title 17, section 95480 et seq.

² A fuel's lifecycle emissions intensity is also referred to as its "pathway" or "carbon intensity score" in LCFS documentation. These values are usually expressed in units of grams carbon dioxide equivalent per megajoule (gCO₂e/MJ).

For electricity used as a transportation fuel, the following table shows entities that are currently eligible to generate LCFS credits and the number of those entities in each category:

LCFS Electricity Credit Generators	Current Number of Participants
Electric Vehicle Service Providers (EVSP)	7
Electric Vehicle (EV) fleet operators	8
Battery switch station owners	0
Site hosts of private access EV charging equipment at a business or workplace	0
Transit agencies operating a fixed guideway system or electric buses	5
Electric forklift fleet operators	1
Electrical Distribution Utilities (EDUs) for residential charging, and for all of the non-residential categories above if no other parties opt-in and generate credits for a particular charging location.	9

1. LCFS FUEL PATHWAY EVALUATION PROCESS FOR ELECTRICITY

Current Pathway Application Process

When one of the parties listed above wishes to generate LCFS credits for electricity, the first step they must take is to apply for the use of the appropriate carbon intensity score (or “pathway”).³ Currently, all electricity used for EV charging has been assigned a pathway known as “ELC002_1” sometimes informally called the “2010 California grid average” electricity pathway.⁴ The CI for this pathway is derived from the average

³ ARB staff currently validates all requests for a pathway. The staff validation can range from cursory, for “Lookup Table Pathways” such as electricity, to extensive for the most complex “Tier 2” pathways. ARB is now considering supplementing the work of staff with an upfront third-party validation to provide assurance for the ARB certified CI. For more information on application requirements and pathway classifications, see *Guidance Document for LCFS New Pathway Applications*. Nov 5, 2015. Available from: <https://www.arb.ca.gov/fuels/lcfs/fuelpathways/newpathway-11052015.pdf>.

⁴ This pathway has a carbon intensity score of 105.16 gCO₂e/MJ, prior to recognition of EV on-vehicle efficiency benefits which varies by EV type. After adjusting for light-duty EV powertrain efficiency the value is 30.93 gCO₂e/MJ of gasoline displaced. (The second value is the appropriate value to use when comparing electricity’s carbon intensity to that of fossil fuels.)

resource mix reported for the California sub-region in the U.S. EPA's Emissions and Generation Resource Integrated Database (eGRID) for 2010.⁵

Qualifying Renewable Energy for Electricity Production

Under the current regulation, renewable electricity supplied directly to an EV charging station would qualify for a lower CI value than ELC002_1. For example, a transit agency using co-located solar panels to supply power to its EV-bus station could be approved to report the quantity of solar power supplied to EV charging with a CI equal to zero. Conditions for this pathway would include ARB approval (and ongoing review) of the metering methodology and any utility or other contracts to ensure that the power supplied to the EV station does not also generate Renewable Energy Certificates (RECs) or other renewable attributes in any other program, with the sole exception of the federal Renewable Fuels Standard (RFS2).

However, we have not yet seen any applications for such lower CI values associated with renewable electricity used in EVs—despite the fact that there are some projects in California with co-located renewable generation. This may be due to the perceived complexity of such applications or it may be due to the fact that it is challenging to co-locate renewable electricity generation at scale with the location of vehicle charging.⁶ We've also heard informally from stakeholders that rule language prohibiting "indirect accounting" could be clarified to better explain the rules regarding co-location, co-ownership, behind-the-meter arrangements, etc.

Potential Changes for Consideration

Revised Lookup Table Pathway for Grid Electricity

We propose to update ELC002_1 based on new information to reflect the changes in California's electric mix driven by the Renewable Portfolio Standard and other factors. On an annual basis, we propose to update and post the ELC002_1 pathway CI value using the most recently available electricity data from the California Energy Commission (CEC) Quarterly Fuel and Energy Report (QFER)⁷ or other appropriate data source suggested by stakeholders.

- Staff is seeking stakeholder feedback on the appropriate data set and source to use for California's electric mix.

⁵ *Detailed California-Modified GREET Pathway for California Average and Marginal Electricity*, December 15, 2014, available at <https://www.arb.ca.gov/fuels/lcfs/121514electricity.pdf> and *Emissions and Generation Resource Integrated Database*; Ninth Edition, Version 1.0: 2010.

⁶ The rule specifies that "indirect accounting" mechanisms may not be used to reduce the electricity's CI value. Title 17, California Code of Regulations (CCR), section 95488(b)(2)(F)1.

⁷ Derived from QFER CEC-1304 Power Plant Owner Reporting Form, total electricity system power data available at: http://www.energy.ca.gov/almanac/electricity_data/total_system_power.html.

Addition of a Lookup Table Value for 100% Solar or Wind

We are also proposing the addition of a new electricity pathway, “ELCR100.” ELCR100 will be a Lookup Table pathway representing electricity produced completely using wind or solar generation resources. Applicants who produce electricity from other renewable sources (such as biomass generation) that is not adequately represented by the previously discussed pathways would still need to apply for an individual (non-lookup-table) pathway.⁸

Consideration of Flexibility for Non-co-located Renewable Power

We believe that the current rule terminology which describes the use of “dedicated (non-grid)” low-CI energy sources, and prohibiting “indirect accounting” can be improved. As part of potential rule amendments, staff proposes to provide two clear options to recognize a reduced CI for renewable power supplied to EV charging stations. As presented at two LCFS public workshops,⁹ our current thinking is that renewable electricity would be eligible for an improved carbon intensity score if it:

- (1) is obtained through a program with eligibility requirements that match or are more stringent than the Green Tariff Shared Renewables (GTSR) Program¹⁰ under California Public Utilities Code Section 2831¹¹ or
- (2) meets all of the following criteria:
 - generated on land owned by the charging station operator and located within the same EDU territory as the charging station;
 - the renewable generation system is developed expressly for supplying the station’s power demand, meaning the project is developed concurrently or after the station is installed, as existing resources may not be shuffled to meet the station’s demand;
 - meets the renewable eligibility requirements in the California Energy Commission (CEC) Renewables Portfolio Standard Eligibility Guidebook (RPS Guidebook);¹²
 - does not produce RECs or other attributes recognized under any program except RFS2.

⁸ ARB is likely to treat these applications as Tier 2 pathways.

⁹ See staff presentations from June 2, 2016 and July 29, 2016 public workshops at: https://www.arb.ca.gov/fuels/lcfs/lcfs_meetings/lcfs_meetings.htm.

¹⁰ See Green Tariff/Shared Renewables Program (GTSR) website at: <http://www.cpuc.ca.gov/General.aspx?id=12181>

¹¹ Public Utilities Code (PUC) Regulation of Public Utilities, Chapter 7.6, Section 2831, available at: https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=PUC§ionNum=2831.

¹² California Energy Commission, *Renewables Portfolio Standard Eligibility*, Eighth Edition, Commission Guidebook, CEC-300-2015-001-ED8-CMF.

Pathway application and CI compliance requirements would include ARB approval and ongoing review of the metering methodology and any utility or other contracts to ensure that the renewable power does not also generate any RECs or other renewable attributes in any other program.

- Staff is seeking stakeholder discussion and feedback on the potential methods for recognizing renewable electricity used in electric vehicles.

2. REPORTING REQUIREMENTS

After an entity has been approved to use an LCFS pathway to generate credits for electricity as a transportation fuel, they must report the quantity of fuel dispensed to begin to receive credits.

Existing Reporting Requirements

As described above, opting into the LCFS program for electricity credits is voluntary and involves registering with ARB in the LCFS Reporting and Credit Bank & Transfer System (LRT-CBTS) to establish a reporting account. This process is simple and primarily includes providing the organization name, organization address, organization federal employer identification number (FEIN), and account administrator information.

Electricity providers that opt into the LCFS program are subject to the reporting requirements set forth in section 95491(a), and the recordkeeping requirements set forth in section 95491(b) through (e) of the LCFS regulation.

In order to generate credits, the electricity provider must submit quarterly and annual reports.¹³ The primary parameters reported quarterly are the electricity dispensed (kWh), CI value (fuel pathway code), and the vehicle type charged (e.g. light duty/medium duty, heavy duty, fixed guideway, forklift, etc.) which determines the Energy Economy Ratio¹⁴ used for credit calculation.¹⁵

¹³ Entities may not report and generate credits based on transactions that precede the quarter in which they opt in.

¹⁴ Energy Economy Ratio means the dimensionless value that represents the efficiency of a fuel as used in a powertrain as compared to a reference fuel. EERs are often a comparison of miles per gasoline gallon equivalent (mpge) between two fuels. EERs for fixed guideway systems are based on MJ/number of passenger-miles.

¹⁵ Note that even if no fuel was provided, a quarterly report with zero amounts must be submitted to remain in good standing in the system.

There are few exceptions to the typical reporting requirements as discussed in the following sections.

Residential EV Charging

The Electrical Distribution Utilities (EDUs) are eligible to generate credits for residential EV charging based on the electricity used as a transportation fuel in their service territory. To generate credits, the EDU must report on a quarterly basis the sum of electricity (kWh) dispensed to EVs at residences with dedicated meters. In addition, the utilities each calculate the daily average electricity use per metered vehicle and the number of separately-metered EVs for the four quarters of the prior year and submit this information to ARB annually by January 31st.

Electricity used for non-metered residential charging is then calculated by ARB staff annually based on the number of non-metered Electric Vehicles (EVs) in the utility's service territory and calculation of the daily average use per vehicle.¹⁶ The daily average per-vehicle non-metered EV electricity use is assumed to equal the use for separately-metered vehicles in the same utility service territory. The number of non-metered EVs in each utility service territory is calculated by ARB staff based on information from the California Vehicle Rebate Project (CVRP) database and California Department of Motor Vehicles (DMV) registration data. EDUs are required to include supplemental information in their annual compliance report as set forth in section 95483(e)(1)(D).

Electric Forklift Charging

For electric forklift charging, the fleet operator is eligible to generate credits for the electricity. If the fleet operator does not opt into the LCFS program, the EDU that supplies electricity to the fleet operator can generate credits. To generate credits, the fleet operator or EDU must report the amount of electricity (kWh) as measured at charging on a quarterly basis. An accounting of the number of electric forklifts in the fleet must be included by the fleet operator as supplemental information in annual compliance reporting.

The electricity use not measured at charging is calculated by ARB staff annually. The number of electric forklifts used in California and the amount of electricity used by the fleet is calculated by ARB staff based on the national electric forklift shipment data, battery size, assumed annual operating hours and load factors. Each utility's share can be approximated based on their share of the state's non-residential (business/commercial) accounts.¹⁷

¹⁶ Details of this crediting methodology are available in "The Notice of Upcoming Low Carbon Fuel Standard Credits Release for Non-Metered Residential Electric Vehicle Charging" available at <https://www.arb.ca.gov/fuels/lcfs/workgroups/elect/020116notice.pdf>.

¹⁷ Details of the credit calculation methodology are available on page III-9 of the LCFS Staff Report available at <https://www.arb.ca.gov/regact/2015/lcfs2015/lcfs15isor.pdf>.

- Staff is seeking stakeholder discussion and feedback on the potential measurement methodologies for forklift charging.

Potential Non-Regulatory Changes for Enhanced Reporting

Staff is considering implementing the following non-regulatory changes for the Q1 2017 reporting cycle.

Register Each EV Fueling Station in the LRT-CBTS

With increased participation from public, private/workplace, and EV fleet charging, it has become important to enhance the registration requirements for EV fueling facilities to improve the data quality and prevent double counting from these subcategories. To facilitate this process, the registration of fueling facilities will be provided in the LRT-CBTS. Reporting Parties will be able to register all their EV fueling facilities in LRT-CBTS using a template shown in Appendix A. The list of fueling facilities should be updated quarterly, if there are any changes. Upon the fueling facility registration, the system will generate a unique LCFS fueling facility ID that will be used by Reporting Parties when reporting fuel transactions in LRT-CBTS.

EV Fueling Facility IDs

It is important to have a unique identifier for each registered fueling facility (EV charging station). Staff has learned, through communication with the EV service providers, that the meter used on the EV charging equipment should have a unique serial number assigned by the original equipment manufacturer (OEM). The serial number, along with the OEM information, could be used to assign a unique ID to identify each EV fueling facility. This unique ID could facilitate validation of each new registered EV fueling facility in LRT-CBTS and would allow staff or verification bodies to match utility records to specific fueling facilities. Staff believes that providing facility-specific information will improve data accuracy and avoid double-counting of fuel dispensed at individual fueling facilities, and ensures that the fuel for which credits were claimed is used for transportation in California.

Reporting Charging Data per Fueling Facility

Currently, kWh data aggregated at the entity level are reported by most firms in the electricity quarterly reporting. Staff proposes to shift the quarterly reporting to allow the fuel dispensed at individual fueling facilities to be uploaded to the system. An updated template for quarterly reporting of the fuel dispensed at individual fueling facilities for the upload to LRT will be provided in Q1 2017. Under this system fleets will not be able to claim LCFS credits if they do not control the charging equipment. For example, fleets charging only at public chargers should work with the charging station entity to report for LCFS credits rather than report charging of the fleet vehicles from stations they do not

control. Staff believes that this requirement will eliminate any potential double counting and improve data accuracy.

Potential Regulatory Amendments to Reporting Requirements

Staff is considering the following electricity quantity reporting amendments.

Third-Party Aggregator

The current LCFS regulation designates certain entities to be eligible to generate credits under electricity categories such as public, private/workplace, and EV fleet charging. Historically, many of these entities have not opted into the LCFS program to generate credits due to limited resources and low financial incentive for the small amount of electricity provided.

To enhance participation and provide flexibility, staff is considering providing greater clarity about how credit generators can, at their option, contractually designate a third party to manage LCFS credit generation for them. These third parties would be referred to as “aggregators.”

An entity that chooses to act as an aggregator would become a Regulated Party and could act on behalf of entities that are not yet registered in LCFS as well as entities that are already reporting parties in LCFS. In either case, the aggregators would likely need to have a written contract between both parties for each reported facility and these agreements would likely need to be provided to ARB. The enhanced registration requirement for individual facilities would also apply to aggregators.

Update EER Values and Add New Vehicle Categories

Determine a medium duty electric bus EER: The current EER for light/medium duty EVs is determined by the comparison of light-duty electric vehicles with their light-duty conventional counterparts. The medium duty EVs, such as shuttle buses, may have a different energy economy ratio than light duty EVs.

- Staff is seeking feedback from stakeholders to develop a specific EER for medium duty electric buses.

Add more specific class levels to heavy duty: The term heavy duty vehicle covers a wide spectrum of vehicle types and sizes, ranging from 8,501 lb to over 60,000 lb. Staff believes more specific EER values could improve the accuracy of credit calculation of heavy duty EV applications.

- Staff is seeking feedback from stakeholders to develop vehicle class-specific EER values to heavy duty EVs based on weight of vehicle classes used in ARB mobile emission inventory EMFAC2014.

Add EERs for Airport Electric Ground Support Equipment and Truck Stop Electrification:

Staff is considering airport electric Ground Support Equipment (GSE) and Truck Stop Electrification (TSE) as potential areas to encourage crediting. New Energy Economy Ratios (EERs) would need to be developed for these applications.

- Staff is seeking feedback from stakeholders to develop specific EERs for GSE and TSE.

Allow post-2010 Electric Forklifts to Use Regular Credit Calculation

Under the current regulation, the LCFS credit formulas for all electric forklifts and pre-2011 electric fixed guideways do not include enhanced credits due to the EER term, which substantially reduces the number of credits these electrical applications can generate. In contrast, the LCFS credit formula for new electric fixed guideway systems or expansions after 2010 includes an EER adjustment.

In order to make the credit calculations consistent among all the off-road electricity applications, staff proposes to allow electric forklifts that are introduced into the California market after the 2010 baseline year to earn LCFS credits using the regular credit formula that includes the EER term.

Consider Meter Accuracy Requirements

The California Department of Food and Agriculture Division of Measurement Standards (DMS) is conducting a rulemaking to amend the regulation for electric vehicle charging station requirements, which is expected to be completed by March 2017. The amended regulation will take effect on July 1, 2017.¹⁸

Staff will consider including the EV charging meter accuracy requirements set forth in the DMS EV charging station regulation into the LCFS.

Allow EDUs to Claim Credits for all Light- and Medium-duty EV Charging that are not Claimed by Other Stakeholders

For light- and medium- duty EVs, staff could consider a new credit calculation methodology that would start by crediting the EDU based on a quarterly estimate of the full electric use by vehicle type (rather than based on an estimate of residential charging that is employed currently). To avoid double counting, ARB would then subtract credits

¹⁸ Details of DMS rulemaking information can be accessed at: <https://www.cdfa.ca.gov/dms/regulations.html>

generated by separately metered residential, public, private/workplace, and fleet charging explicitly claimed by opt-in parties within the service territory of each EDU. This approach may accurately capture more electricity use and avoiding “stranded credits” from currently unreported public, workplace and fleet EV charging.

➤ Staff is seeking stakeholder discussion and feedback on this approach.

Combine the EV Fleet and Private Access Charging Categories, and Discontinue the Battery Switch Station Charging Category

Under the current LCFS regulation, the EV fleet charging and private/workplace charging are two separate categories. They were originally included in the regulation to maximize the participations from different electricity stakeholders. The amount of credits, however, are determined by the vehicle types (light, medium and heavy duty, etc.), and are the same for the two categories. To streamline the reporting, staff is considering combining the EV fleet charging with private access charging category. Under this approach, the EV fleet operators with control over the charging equipment will continue to generate credits under private access EV charging category.

Staff is also considering discontinuing the battery switch station charging category because no entities have opted into the LCFS under this category over the past 6 years.

➤ Staff is seeking feedback from stakeholders to the combination of EV fleet charging with private access charging and the elimination of the battery switch category.

3. VERIFICATION

A successful GHG reduction program requires a system to monitor, report, and verify GHG emissions to aid implementation and tracking of the effectiveness of emission reduction strategies. Historically the LCFS has relied upon a robust reporting program built around ARB staff evaluation of fuel CI through the fuel pathway application process and conducting spot-checks on the reporting of quarterly fuel volumes.^{19,20}

ARB is now considering supplementing the work of ARB staff with a verification system conducted by independent third-parties engaged by entities reporting to ARB under the LCFS. Conceptually, these verifiers would perform GHG accounting checks in a role similar to the independent, objective evaluations of organizations’ financial reports by financial auditors. ARB has extensive experience with an analogous system under the

¹⁹ LCFS Fuel Pathways: <https://www.arb.ca.gov/fuels/lcfs/fuelpathways/fuelpathways.htm>

²⁰ LCFS Data Management System: <https://www.arb.ca.gov/fuels/lcfs/reporting%20tool/datamanagementsystem.htm%23lrcbts>

Mandatory Reporting (MRR) of Greenhouse Gas Emissions pursuant to the California Global Warming Solutions Act of 2006 (AB 32) and through the verification of GHG compliance offset projects under ARB's Cap-and-Trade Program.^{21,22}

Existing Verification Provisions

Existing verification provisions were added in the 2015 LCFS re-adoption. These provisions are currently being used to support ARB compliance audits and enforcements activities.

Verification under the current (2015) LCFS regulation includes the following provisions:

Section 95491(d) Verification of Pathway, CI, Report

“All data and calculations submitted by a regulated party for demonstrating compliance or claiming credit are subject to verification by the Executive Officer or a third party approved by the Executive Officer.”

Section 95491(e) Access to Records

“Pursuant to H&S section 41510, the Executive Officer has the right of entry to any premises used, leased, or controlled by a regulated party, a reporting party, a verifier, or an applicant, in order to inspect and copy records relevant to the determination of compliance. Scheduling of access shall be arranged in advance where feasible and must not unreasonably disturb normal operations, provided, however, that access shall not be unreasonably delayed.”

Potential Amendments to Verification

Staff's verification white paper²³ provides a framework for the development of an LCFS verification program and overarching considerations that will inform potential amendments to the LCFS regulation.

ARB staff is considering mandatory verification of various program aspects including, but not limited to:

- fuel pathway carbon intensities,
- reported fuel quantities (for both high and low carbon fuels), and

²¹ AB 32 explicitly supported verification calling for ARB to “adopt regulations to require the reporting and verification of statewide greenhouse gas emissions and to monitor and enforce compliance...” Health and Safety Code (H&SC) section 38530(a). Program information on MRR verification is available here: <https://www.arb.ca.gov/cc/reporting/ghg-ver/ghg-ver.htm>

²² Offset Verification Program: <https://www.arb.ca.gov/cc/capandtrade/offsets/verification/verification.htm>

²³ Staff White Paper: Framework for Development of a Low Carbon Fuel Standard Verification Program: https://www.arb.ca.gov/fuels/lcfs/lcfs_meetings/verification_whitepaper_102116.pdf

- chain-of-custody information (for some feedstocks and finished products).

The objective of the verification program is to ensure integrity in the LCFS credit market through assurance of GHG reduction claims in the LCFS. In pursuit of this objective, the guiding principles when designing a verification program must include:

- (1) ARB retention of sole authority over the LCFS program, including verification requirements, as bestowed through the State’s legislative and regulatory process;
- (2) Continual improvement in the detection, prevention, and correction of errors or fraud;
- (3) Identification and implementation of cost reducing strategies, while maintaining verification rigor;
- (4) Policy consistency with other ARB verification programs; and
- (5) Consideration of the unique attributes of fuel carbon intensities and fuels marketing structure.

The degree of ARB oversight, verifier competency and training, and conflict of interest requirements are expected to be consistent with ARB’s Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (MRR) and Compliance Offset verification programs, while seeking to harmonize, where possible, with existing verification and certification programs, most notably U.S. EPA’s RFS Quality Assurance Program (QAP). Staff is coordinating with U.S. EPA as it seeks comment on its Proposed Renewables Enhancement and Growth Support (REGS) Rule,²⁴ which includes considerations for renewable electricity.

- Staff is not currently aware of grid electricity credit generators participating in existing verification or certification programs, other than the EDUs subject to verification under MRR, and seeks information from stakeholders.

Potential Verification Elements

The table in Appendix B provides an overview of the potential points of verification.

- Staff is seeking stakeholder discussion and feedback on the potential verification points listed in the last column of the table in Appendix B.
- Staff is seeking stakeholder discussion and feedback on required charging station site visit coverage and frequency. For example, if a provider of public access charging stations or an aggregator has more than X number of charging locations, then Y% of the locations should be visited in each year.

²⁴ Proposed Renewables Enhancement and Growth Support (REGS) Rule. 40 CFR Part 79, 80. More information on proposed rule is available here: <https://www.epa.gov/renewable-fuel-standard-program/proposed-renewables-enhancement-and-growth-support-regs-rule>.

Considerations for the Verification of Electricity

An electricity transportation fuel provider who opts into the LCFS program would become a Regulated Party and could be subject to initial validation and ongoing verifications. Staff is considering cost-reducing verification strategies for these parties while achieving reasonable assurance of credit validity.

For Regulated Parties using the California Average Grid Electricity pathway, staff proposes verification of electricity to be focused on ensuring accuracy of the electricity reported each year. Periodic site visits to a portion of charging stations could allow verifiers to confirm the geographical location and physical configuration of the station, to inspect meters, and to review any on-site data management. Because the CI of grid electricity is calculated based entirely on regional average data, entities reporting the Lookup Table Pathway for California Average Grid Electricity would not be responsible for inputs to determining this CI.

For charging stations that use renewable electricity either directly or through potential flexible mechanisms, verification could include assuring that the amount of renewable electricity purchased/generated meets or exceeds the amount of renewable electricity claimed as a transportation fuel. Verification would also assure that the renewable electricity is not credited in any other program, other than the Federal RFS, by reviewing conformance with flexible mechanisms.

Staff is considering exempting small providers of grid electricity as a transportation fuel from third-party verification by an ARB-accredited verification body. LCFS verification and all potential verification requirements could instead be conducted by ARB enforcement staff at no cost to the reporting entity beyond making information available to ARB.

- Staff is seeking stakeholder feedback on possibly exempting small grid electricity fuel providers and Reporting Parties from third-party verification. Would a threshold based on annual credit generation be preferable? Would an exemption for single location reporters be preferable?
- Should EDU's be required to have their LCFS data verified? Staff envision this could be accomplished by the EDU's MRR verification body with LCFS-specific ARB guidance or training. Would the proposal discussed above to credit the EDU based on an ARB-controlled quarterly estimate of the full electric use by vehicle type (rather than based on extrapolating from the small subset of metered residential charging) eliminate the need for this verification?
- Staff seeks to identify other solutions that can mitigate costs while still providing data quality assurance.

APPENDIX A

LRT FORM FOR FUELING FACILITY REGISTRATION

Listed below is the information to be provided to enhance the electricity Reporting Party registration in LRT-CBTS.

Company Name ⁽¹⁾	FEIN ⁽²⁾	Fueling Facility Name ⁽³⁾	Street Address ⁽⁴⁾	City ⁽⁴⁾	Zip Code ⁽⁴⁾	Meter # or OEM Serial # ⁽⁵⁾	Fuel Type ⁽⁶⁾	FPCs ⁽⁷⁾	Longitude ⁽⁸⁾	Latitude ⁽⁸⁾

Notes:

- (1) The organization name of the Reporting Party registered in LCFS
- (2) The Federal Employer Identification Number (FEIN) of the Reporting Party
- (3) The name of the EV charging station
- (4) The address of the fueling station, including street address, city and zip code.
- (5) The serial number of the charging station assigned by the original equipment manufacturer (OEM). Additional information such as Manufacturer Name, Model, and Year shall also be uploaded as supporting documents.
- (6) The Fuel Type should be electricity in this table
- (7) The Fuel Pathway Codes (FPCs) associated with this fueling facility (EV charging station).
- (8) Report Latitude and Longitude in units of Decimal Degrees, carried to a minimum of 6 decimal places after the decimal point. West Longitude and South Latitude should be written with a negative sign. Use either Google Earth or GPS meter to obtain the coordinates.

APPENDIX B

Reporting Requirements and Potential Verification Points by Entity

Type of Use	Party Eligible to Generate Credits	Reporting Requirements	Potential Verification Points and Data to be Verified
Residential EV charging	Electricity Distribution Utility (EDU)	Number of separately-metered EVs Electricity dispensed, measured by dedicated meters (kWh) Daily average electricity use per metered EV CI value (fuel pathway) Vehicle Type (fuel application)	<ul style="list-style-type: none"> • Electricity dispensed—Quarterly LRT reports, sampled meter records • Electricity used for non-metered residential charging and credit calculation—Annual data submitted to EO: <ul style="list-style-type: none"> ○ Daily average electricity use ○ Number of separately-metered EVs for all 4 quarters of prior year
Public access EV charging	1. Third-party non-utility EV Service Provider (EVSP) 2. EDU if EVSP does not opt in	Amount of electricity dispensed (kWh)—Metered Charging CI value (fuel pathway) Vehicle Type (fuel application)	<ul style="list-style-type: none"> • Amount of electricity dispensed—Quarterly LRT reports • Utility invoices, meter records
EV fleet	1. Fleet operator 2. EDU if fleet operator does not opt in	Amount of electricity dispensed (kWh)—Metered charging CI value (fuel pathway) Vehicle Type (fuel application)	<ul style="list-style-type: none"> • Amount of electricity dispensed—Quarterly LRT reports • Utility invoices, meter records • Number and types of vehicles
Battery switch station	1. Station owner 2. EDU if station owner does not opt in	Amount of electricity dispensed (kWh)—Metered Charging CI value (fuel pathway) Vehicle Type (fuel application)	<ul style="list-style-type: none"> • Amount of electricity dispensed—Quarterly LRT reports • Utility invoices, meter records • Battery switching records
Private access EV charging at business or workplace	1. Site host 2. EDU if site host does not opt in	Amount of electricity dispensed (kWh)—Metered Charging CI value (fuel pathway) Vehicle Type (fuel application)	<ul style="list-style-type: none"> • Amount of electricity dispensed—Quarterly LRT reports • Utility invoices, meter records

Type of Use	Party Eligible to Generate Credits	Reporting Requirements	Potential Verification Points and Data to be Verified
Fixed guideway systems	1. Transit agency 2. EDU if transit agency does not opt in	Amount of electricity used for transport propulsion (kWh) CI value (fuel pathway) Vehicle Type (fuel application)	<ul style="list-style-type: none"> • Amount of electricity dispensed— Quarterly LRT reports • Utility invoices (energy consumption for transport propulsion)
Electric forklift fleet	1. Fleet operator 2. EDU if fleet operator does not opt in	Annual electricity used (kWh) as measured at charging (if forklift operator claims credits) or estimated by ARB staff each year (if EDU claims credits) CI value (fuel pathway) Vehicle Type (fuel application)	<ul style="list-style-type: none"> • Amount of electricity dispensed— Quarterly LRT reports • Utility invoices, meter records, other records as appropriate • Annual data submitted for calculation of non-metered charging
Future on-road renewable electricity	1. Station operator 2. EDU if operator does not opt in	<p><i>Pending new renewable electricity pathway:</i></p> Pathway conditions must be approved by ARB	<ul style="list-style-type: none"> • Contracts and invoices to substantiate purchases via a Green Tariff program or other eligible source of renewable power and to ensure power supplied to EV station does not generate other renewable attributes in any other program except RFS2 • Other specific verification points to be determined during the development of applicant's monitoring plan