



September 19, 2022

Sent via email to [LCFSworkshop@arb.ca.gov](mailto:LCFSworkshop@arb.ca.gov)

**Re: August 18 Workshop on Low Carbon Fuel Standard (LCFS) Amendments**

Dear Ms. Laskowski:

CalEtc appreciates this opportunity to comment on the Low Carbon Fuel Standard (LCFS) workshop held on the August 18. CalEtc supports and advocates for the transition to a zero-emission transportation future to spur economic growth, fuel diversity and energy independence, ensure clean air, and combat climate change. CalEtc is a non-profit association committed to the successful introduction and large-scale deployment of all forms of electric transportation including plug-in electric vehicles (EVs) of all weight classes, transit buses, port electrification, off-road EVs and equipment, and rail.

**Estimation of base residential credits:** CalEtc proposes updating the estimation methodology as was intended and is appropriate given the improved data CARB now has. We support a methodology using CARB's Emission FACTor (EMFAC) data and do not support the other options shown at the workshop as they are not as accurate. Please refer to the [slides presented at the Aug18 workshop](#) for our comments below.

- **Slide 42:** We agree with CARB staff's assessment that the status quo is not a feasible or sustainable option for the reasons staff provided.
- **Slide 43** We do not recommend selecting time-of-use (TOU) whole house metering for the following reasons. We do not believe it is feasible or sustainable method to extract EV kWh data from whole house meter data. We agree that this would be overly burdensome for the utilities and additionally, this method is inaccurate. While there has been some use of a version of this methodology for home energy audits, it is only directionally predictive of the type of appliance that could be in the home. This method can't effectively separate out the EV from similar loads (such as a hot tub) and can't provide a year or more of kWh usage data. In addition, separate metering kWh for EVs that CARB has from the utilities for over a decade shows dramatically different kWh per year compared to the results in the two studies shown on this slide. As a result, we believe this method would need some type of investigation into its validity before it can be considered.
- **Slide 44:** We agree with CARB staff that telematics as a data source has an availability concern because reporting for incremental credits will likely be limited or eliminated as the grid average electricity carbon intensity (CI) declines to nearly zero. We are concerned about the transparency of telematics data, if telematics data is to be used for estimation it would need to be aggregated to ensure equity and it must be accessible to stakeholders. Without aggregation and transparency telematics data use could result in an incentive to drive more or larger incentives for less efficient vehicles if linked to the make and model. Moreover, because there are so many makes and models of EVs this method is relatively complex compared to having estimates for large categories of plug-in hybrid EVs (PHEVs) and battery electric vehicles (BEVs) (e.g., class 1 and class 2).

- **Slide 45 We support using a modified version of the EMFAC data set as the best available data.** We describe our proposal below and with more detail in Appendix A to this letter.
  - We propose CARB continue to use EV population data from the Department of Motor Vehicles (DMV) for BEVs and PHEVs but separate this data into class 1 and class 2 vehicles as these vehicles drive different miles per year according to EMFAC and have different kWh per year as result.
  - We agree with staff's assessment that using EMFAC data would eliminate the need for reporting, and meets criteria of being publicly available, well documented, and transparent. We also note that some type of independent assessment would not be needed.
  - We disagree that using EMFAC data would require extensive modifications to estimate residential charging kWh. A reasonable assumption can be used to separate out away-from-home charging from the total kWh and this can be modified over time if better data becomes available. We recommend a baseline assumption of 90 percent home charging.<sup>i</sup> Overall using EMFAC data is simple, and we already have a model on kWh by model year and vehicle class that is easily updated annually as the BEV and PHEV population gets older.
  - We have compared and reviewed a number of methodologies to calculate kWh per year in EMFAC. Based on discussions with CARB staff and our review, we no longer propose using the gasoline use and converting it to kWh for PHEVs and BEVs. Instead, we propose using the PHEV and BEV kWh per mile data in EMFAC which varies depending on the age of the vehicle as older vehicles drive less. Further, we propose separating the class 1 and class 2 vehicles using PHEVs and BEV kWh. We note, however, that for class 2 BEV and PHEV kWh using this method likely underrepresents the carbon reduction benefits from class 2 zero-emission vehicles. This underrepresentation is because EMFAC current data suggests class 2 zero-emission vehicles use 40 percent less energy, relative to their gasoline or diesel counterparts. While this may be true for the first-generation class 2 zero-emission battery electric vehicles, it is likely to underrepresent the energy uses over time as class 2 zero-emission vehicles more fully replace gasoline or diesel class 2 vehicles.
  - The kWh per year results from the above method matches data that one of our members has received from a charging provider for home charging of BEVs and PHEVs. It is also matches data from pre-pandemic charging at residences with separately metered EV charging. CARB has two of the best data sources in its EMFAC emissions inventory, and other manufacturer data that is accessible only to CARB. CARB can easily verify our proposal.
  - At a high level we think it is important to keep our proposed methodology simple and use data for the whole fleet or large classes of passenger cars and trucks. While we do not support different credits calculations for individual manufacturers or individual owners of EVs, we do support differentiating between class 1 and class 2 vehicles, PHEVs and BEVs, and by year as cars drive more miles when new than they do as they age.
  - We support the current flexibility in the regulation which allows the Executive Officer to make guidance document updates to the estimation methodology, as is done for all other fuel pathways.

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*Advantages of our proposal:* compared to CARB's current method of separately metered utility data, CalETC's EMFAC proposal:

- Uses a much larger sample – including both older and newer PHEVs and BEVs that drive very different annual miles. Includes reduction for PHEV's annual kWh and for away-from-home charging.
- Is conservative compared to using EMFAC gasoline use data and converting it to kWh.

Other sources and methods presented at the workshop produce results that either (1) require more work for CARB or for the utilities, (2) require an independent assessment to examine the data, and/or (3) are not sustainable.

**Third-party verification for electricity:** If CARB believes third-party verification for metered non-residential electricity credits is necessary, CalETC recommends working closely with credit generators to avoid substantially increasing the cost of compliance unnecessarily. Metered electricity fuel credit generators are widely distributed, unlike other fuel providers that generate LCFS credits. Electricity is also economically regulated, unlike other transportation fuels. Thousands of entities, varying greatly in size, own metered electricity fueling charging stations, whereas infrastructure for other fuels tends to be centrally held by a smaller number of large companies. Complying with LCFS credit generating requirements for electricity fuel is already challenging for entities like small fleets. Adding a requirement for third-party verification for data that is already metered and regulated may cause smaller fleets to forego participating in LCFS which would be detrimental to the LCFS program.

With this in mind, CalETC supports a verification exemption for entities earning fewer than 6,000 credits per year per pathway. This keeps LCFS participation affordable for entities such as schools and small businesses. CalETC also recommends that site visits not be required for EV supply equipment (EVSE) that meets a standard or certification for telematics reporting accuracy. A large percentage of non-residential EVSE consists of a small number of standard EVSE models with revenue-grade meters. Once a particular model has been verified and added to an approved list, a verifier can be reasonably certain of the accuracy of the data and can continue with a desktop review, as a site visit will be costly and provide little additional value especially given that meter accuracy is already regulated. Finally, we do not see a need for verification of base residential credits.

**Streamlining of processes:** CalETC supports the inclusion of other zero-emission fuels and applications into the LCFS. CalETC has long been concerned that natural gas and biofuels can earn LCFS credits in some end uses when electricity cannot earn credits in these end uses due to a lack of an energy economy ratio (EER). CalETC continues to recommend adding the following options for any ZEV end uses: 1) similar to the development of new pathways, CARB's executive officer would approve new EERs submitted by proponents or industries, and 2) a conservative default EER should be established in the regulation that can be used for any remaining end uses that do not have an EER (possible examples include electric airport ground support equipment, truck stop electrification, electric recreational boats, electric agricultural and mining equipment, electric sweepers/scrubbers, electric tow tractors, electric planes, electric locomotives and other electric off-road or marine equipment). ZEV fuels are the only type of credit-generating fuel in

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the LCFS where some end uses of the ZEV fuel are not eligible to earn credits. This oversight should be rectified.

Thank you for your consideration. CalETC looks forward to working with staff on this important regulation.

Regards,

A handwritten signature in black ink, appearing to be 'LR', with a long horizontal line extending to the right.

Laura Renger, Executive Director  
California Electric Transportation Coalition

cc: Rajinder Sahota  
Matthew Botill  
Jordan Ramalingam  
Rachel Conners  
Jacob Englander

## Appendix A: CalETC's proposed LCFS base credit estimation methodology utilizing EMFAC

CARB's Emission FACTor (EMFAC) model is a publicly available tool<sup>ii</sup> that estimates official inventories of onroad mobile sources in California. CalETC proposes to utilize the estimated energy consumption (kWh) for battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs) inside of EMFAC as a replacement for the separately metered EV data currently provided by a handful of the state's utilities. CalETC proposes this kWh data will be coupled with the same DMV vehicle registration data that CARB's LCFS Staff currently utilizes to determine the number of vehicles in operation (VIO) in each utility's territory for the purpose of distributing LCFS base credits. As will be shown below, this method has the advantage of extreme public transparency, accounts for the reality that older vehicles drive less and thus consume less energy than newer vehicles and avoids the need for creating new data streams or setting up additional monitoring and verification steps; CalETC proposes this method should *reduce* the time spent by LCFS staff on base credit estimation.

### Methodology

1. At the beginning of each year, LCFS Staff would access the latest EMFAC database and select Onroad Emissions at the statewide level for the calendar year in question. EMFAC has been updated the previous two years in April, which coincides with the submission of the annual utility LCFS reports, and CalETC proposes that Staff would update the underlying EMFAC data set each year beginning in Q2 when the new data become available.
  - a. For purposes of demonstration, CalETC accessed the EMFAC website tool<sup>iii</sup> on August 29<sup>th</sup>, 2022. We assume that LCFS Staff would have access to the dataset either through the website or through the back-end raw data.
2. The EMFAC data should be filtered on the following criteria:
  - a. For the vehicle model years for which there exists DMV data on BEV and PHEV registrations in the state (e.g., 2009-2022).
  - b. For EMFAC vehicle classes "LDA", "LDT1" would be used to create a Class 1 vehicle category and EMFAC vehicle classes "LTD2", and "MDV" would be used to create a class 2 vehicle category (aligns with residential vehicles in California).
  - c. For Fuel type "Electricity" and "Plug-in Hybrid"
3. The EMFAC data contains a significant number of columns, but the relevant ones for this methodology are "Vehicle Category", "Model Year", "Energy Consumption", and "Population." **Note** that "Population" is only being used to create a weighted average kWh/day per vehicle and is not used for base credit generation.
  - a. EMFAC provides "Energy Consumption" data in kWh per day per vehicle class and year. Dividing "Energy Consumption" by "Population" yields the estimated total kWh/day per vehicle for that model year.
4. The first calculated number needed for this method is the *Weighted Average kWh/day* for DMV Class 1 vehicles by model year. There are multiple ways to this in a spreadsheet; CalETC found the simplest way to be using a combination of "sumifs" functions to sort the data into EMFAC vehicle classification populations by year, and vehicle classification kWh/day by year. The weighted average of the DMV Class 1 vehicles for each model year can be determined via a "sumproduct" function of the populations and energy consumptions for "LDA", "LDT1", and "LDT2" EMFAC vehicle types. MDV energy

consumption for each model year becomes the DMV Class 2 daily energy consumption without further calculation.

- a. It will be observed once this step is performed that daily energy consumption decreases as the vehicle ages, up to 35-40% for 10+ year-old vehicles.
5. The end product of step 4 is a kWh/day for Class 1 and Class 2 vehicles for each vehicle model years in question (e.g., 2009-2022 or in the future 2009-2023 or 2009 to 2024)). These numbers are then multiplied across the DMV data that LCFS Staff currently uses in the base credit estimation process, which will include BEV and PHEV registration numbers by model year and by Class 1 or Class 2. The current base credit estimation method pulls new DMV data quarterly; CalETC proposes that this would not change.
- a. This will automatically account for older vehicles that leave the statewide fleet from sales, age, accidents, etc. in the same manner that LCFS Staff already accounts for these departures.
  - b. LCFS Staff already disaggregates DMV data to individual utility territories. This process would remain intact and would be used to assign base credits to each utility.
6. Separately metered residential charging reported by a utility will still be subtracted from the estimated kWh above in order to calculate the final estimated kWh for that utility.

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<sup>i</sup> March 9, 2022, letter to Washington Department of Ecology, page 1, from Audi, Ford, BMW, Tesla, Rivian, GM, Mitsubishi, and Bridge to Renewables, Available upon request

<sup>ii</sup> <https://arb.ca.gov/emfac/emissions-inventory/f2dfbfca9d8ff63d2f0493b4b76b2841c2bb41c6>

<sup>iii</sup> Ibid