



February 20, 2024

California Air Resources Board  
1001 I Street  
Sacramento, CA 95814

RE: FuSE Comments on 2024 Rulemaking Proposed LCFS Amendments

Energy Mission Control, Inc. dba FuSE Carbon Technologies (FuSE) appreciates the opportunity to comment on the proposed Low Carbon Fuel Standard (LCFS) changes to the program. FuSE is a Sacramento-based technology company that helps facilitate participation in the LCFS, as well as in Oregon's Clean Fuels Program, Washington's Clean Fuel Standard, British Columbia's Low Carbon Fuel Standard, and the Canadian Clean Fuels Regulation for many hundreds of small, medium, and enterprise level businesses operating tens of thousands of electric vehicles and equipment in every qualified electricity reporting category. Building upon decades of clean-transportation industry and public funding experience, FuSE has developed a comprehensive and streamlined software platform that eliminates many of the administrative roadblocks that traditionally preclude small fleets from opting into clean fuel programs and allows them to take clear, affirmative, and immediate steps to reinvest in electrification efforts of their business operations.

We offer support, additional background on typical industry practice, information on the current state of affairs on electric off-road vehicle and equipment fleet participation, and a series of suggested alternatives or improvements on the current regulation language and amendment proposals:

**FuSE strongly supports the concept of the AAM, however, believes single-year or intra-year adjustments are technologically feasible and digestible to the market.** As currently proposed, and as the market has clearly identified via trading trends, the proposed updates to CI targets and infrequency of AAM triggering is not stringent enough.

**FuSE supports the amended text reflecting the transition of  $E_{XD}$  Displaced calculated values not applying to forklifts, and similarly should be expanded to fixed guideways.** Original intent and discussion of a model year threshold in both applications was tied to the implementation date of the LCFS program<sup>1</sup>, the equipment's already deployed status, and not to the physical difference in equipment efficiencies across those model year threshold dates. The elimination of any model year association with technology deployments, especially as the LCFS program ages, makes less and less sense with newer technologies being deployed and streamlines the administrative work with submitting and reviewing applications greatly. There is no meaningful purpose for pre-2011 or post-2010 designations in these categories, or any others moving forward should new transportation equipment types be introduced in the future.

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<sup>1</sup> [https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/lcfs\\_meetings/12022016discussionpaper\\_electricity.pdf](https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/lcfs_meetings/12022016discussionpaper_electricity.pdf)



**e-Mission Control strongly opposes the EER reduction for forklifts under 12,000lb lift capacity, for three important reasons:**

- 1) This will **heavily undermine the success of the Zero-Emission Forklift Rule**, which uses the LCFS program funds, as currently calculated, to show a beneficial ROI. Reducing the EER by half increases the ROI by 50% or more, directly impacting small and medium-sized businesses that will be required to purchase new lifts and equipment to comply.
- 2) The **EER is not the place to account for market penetration effects of the LCFS program**. The purpose of the EER, the *Energy Economy Ratio*, is to define how much more energy efficient an alternative-fueled vehicle or equipment is relative to an internal combustion baseline. Making miscellaneous adjustments to the EER value implies that the same may happen to other vehicle or equipment categories as market penetration is increased, even if that is not the agency's current intent. **There already exists high market penetration of renewable diesel, electrified eOGVs/shore-power for container operations, and several other LCFS-qualified equipment segments. Cavalier EER adjustments set a bad precedent for future rulemaking, both in and outside of California.** If market penetration is a concern of LCFS staff, then a credit calculation variable should be introduced. Please be aware that **implementation of metering in the eMHE category will already reduce eMHE credit generation by 90%+ (most fleets will not see an ROI on submetering and Book-and-Claim ROI is not likely in the near term, meaning the reduced EER is impactful in the credit calculation equation twice).**
- 3) **Any tactic taken to reduce credit generation should only come from adjusting the compliance curve**. CARB has an unprecedented opportunity to move more and more capital from regulated entities to fleet electrification, with relatively very little argument from such regulated entities, and we believe any rollback of opportunity is simply a delaying of the overall GHG reduction opportunity in the transportation sector.

As has long been established, the LCFS is meant to incentivize the adoption and use of low-, zero-, and negative-carbon fuels, and any policy within the program that facilitates this goal should be supported. FuSE currently represents many hundreds of small and medium-sized fleets, all of whom are operating some mix of equipment and vehicle types. For example, a small company may operate a few forklifts and a number of light-duty cars as part of their general operation. Simultaneously, a large company may operate hundreds of forklifts, thousands of refrigeration units, dozens of light and heavy-duty vehicles, several off-road pieces of equipment (i.e. yard trucks or rail car movers), and a host of other transportation technologies. In our experience, **none** are entirely zero-emission across their operation. The LCFS program should holistically support fleets of all types, mixes, and sizes, and, as there is no prohibition on spending funds generated from one technology (i.e. forklifts) on another (i.e. converting TRU's to hybrid eTRU's), CARB should continue incentivizing zero-emission technologies until **entire fleets, not specific technologies**, are entirely zero-emission.



Additionally, considering specific technologies for a reduced EER value simply based on the commercialization readiness or market penetration becomes an extremely slippery slope. In addition to forklifts, total cost of ownership analysis for light-duty vehicles<sup>2</sup>, shore power<sup>3</sup>, hybrid eTRUs<sup>4</sup>, natural gas Class 8 trucks, and soon, heavy-duty vehicles<sup>5</sup>, all regularly show a net benefit, even without incentive from the LCFS, and many will reach a significant market penetration well within the time bounds of the LCFS. The shore-power market penetration of container vessels subject to the At-Berth Regulation is over 90%, but eOGV is still an eligible category in the LCFS, as it should remain, so ports and port tenants can continue reinvesting in other technologies and other shore power verticals needing upgrades. This trend will continue as manufacturing becomes more effective, supplies become more readily available, and efficiencies and storage capacities increase substantially over the next five to ten years. We believe that the argument for reduced credit generation potential, if based on the concept of additionality (whereby a key decision maker would have made the decision to electrify a certain piece of equipment anyway, even without the LCFS), should be **fleet-focused**, and not equipment-focused. As mentioned above, being equipment-focused is a short-sighted perspective considering the volume and mix of equipment at any one company, and is entirely juxtaposed with the intention of the LCFS. For example, the question should not be, “Will a fleet operator purchase a forklift even without the LCFS value?” but instead should be, “Without the funds that an electric forklift would generate from the LCFS, would that fleet operator have upgraded vehicles or equipment on site that does not have a beneficial TCO?” If “No” is the response to the second question, then no equipment, regardless of commercialization, TCO, or market penetration should be excluded from the LCFS.

Also, while it is not in CARB’s jurisdiction to consider other states or geographies developing clean fuel programs/standards, CARB should note that much of California’s LCFS regulatory language is often heavily utilized in the deployment of other programs (i.e WA and OR both use much of the FSE definition, EER table values, and much more). In the same way that the localized emission reductions from out-of-state renewable fuels imported into the state are seen outside of California, CARB should consider the implications of regulatory change influencing other agencies considering the adoption or amendment of similar programs. Excluding technologies now will set a bad precedent, intentional or otherwise, for states that need to lean on the CARB LCFS regulatory language for success, and worse, heavily influence greenhouse gas emission reduction in areas that do not have wide adoption of electrified vehicles and equipment.

**Metering requirements for forklifts need to be phased in.** There is widespread agreement that metering for forklifts is a preferred method of reporting for credit generation, as it more closely aligns with other

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<sup>2</sup> [https://ww2.arb.ca.gov/sites/default/files/2020-06/190225tco\\_ADA.pdf](https://ww2.arb.ca.gov/sites/default/files/2020-06/190225tco_ADA.pdf)

<sup>3</sup> [https://theicct.org/sites/default/files/publications/ICCT-WCtr\\_ShorePower\\_201512a.pdf](https://theicct.org/sites/default/files/publications/ICCT-WCtr_ShorePower_201512a.pdf)

<sup>4</sup> <https://www.safeconnectsystems.com/the-ultimate-user-guide-to-etru/six-steps-to-convert-to-etru/> & <https://www.mass.gov/doc/etru-grant-brochure/download>

<sup>5</sup> [https://ww2.arb.ca.gov/sites/default/files/2020-06/190225tco\\_ADA.pdf](https://ww2.arb.ca.gov/sites/default/files/2020-06/190225tco_ADA.pdf)



reporting categories, is more accurate, and would eliminate an administrative burden related to registering and tracking equipment locations. However, as is also widely agreed, **the electric forklift technology evolution status is still very rudimentary**, with almost all deployed charging systems not having any integrated metering. To date, telematic deployments are still largely cost-prohibitive on a per-unit/battery level to be installed just for purposes of LCFS participation, have difficulty with data access and transfer within confined warehouse operations, and may not be appropriate across mixed OEM fleets. As “smarter” technologies are made more available by OEM’s to give energy consumption insight to fleet operators, we believe a **phase-in schedule similar to the ZE Forklift Rule** is appropriate to accommodate for naturally-occurring turnover to new systems.

At only a 50% market adoption of electric forklifts, there is still a significant amount of equipment that needs to be transitioned to a zero-emission fuel source, especially considering that the overall electric market share has not changed in recent years. As mentioned in the paragraphs above, many of the companies we represent have mixed fleets and rely on the funds from their LCFS participation to expedite the continued conversion of their forklifts and to work towards full conversion of their on- and off-road fleets. FuSE supports the continued use of the Calculated Methodology used for forklift energy consumption, though technical revisions could be considered to ensure data accuracy and integrity.

**Regarding Third-Party Verification for the electricity provisions, FuSE supports extra visibility into data submissions as long as it avoids generating prohibitive burdens for small generators.** According to FSE-level registration data, aggregation service providers represent approximately 94% of electricity-provision-related FSEs participating in the LCFS, which we suspect is due largely to the burden of reporting and transaction activities. Specifically, the verification process should not be so burdensome as to prevent small generators from participating in the program, with or without an aggregator. FuSE encourages the ARB to further clarify the process of EV charging verification. In regards to site visits, program participants would benefit from understanding what information other than meter data would need to be verified. If the addition of verification increases participation costs, small fleets and/or aggregators may be prevented from helping small groups participate in the LCFS program. If verification is expanded to include EV Charging transaction types (eTRU, eCHE, and eOGV Fueling, etc), FuSE would support an exemption for aggregators representing small volume generators, as there is no meaningful mechanical difference between an exempted small generator participating independently and a designator representing such a generator. The designator is simply facilitating the administration of the program and is likely to reduce the chance of reporting error.

**FuSE supports the inclusion of other equipment types, though we suggest CARB establish EER values for GSE and agriculture equipment.** During the July 7 workshop, CARB mentioned that staff is considering the inclusion or addition of zero-emission applications for rail, agricultural equipment, commercial harbor craft and airport GSE under the Tier 2 EER-adjusted CI pathway application process. We highlight that these application opportunities are already present under the current regulation and any pathway applicant may submit an EER-adjusted Tier 2 pathway application. Using other studies, such



as the CAC's EER RFP<sup>6</sup>, CARB should consider the additions of these equipment types to Table 5, significantly improving the likelihood of LCFS participation of these new technologies and would route badly needed funding toward fleets considering deployment.

**As proposed, modifications to the eMHE and eTRU credit ownership will NOT correct existing administrative issues.** Staff's intent is to award credit ownership to the fleet operator<sup>7</sup>, however, as proposed, the credit ownership is awarded to the "FSE owner," with FSE defined as the "facility or location" and if, "there are multiple FSEs capable of measuring the electricity dispensed at the facility or location, then it is optional to provide serial number assigned to each equipment by the OEM and the name of OEM." This implies that if there are meters installed on site (which is regularly required in eMHE, eTRU, eOGV, and eCHE categories), then the meter owner becomes the credit generator. It is extremely common in leasing and renting arrangements that the charger ownership (and thereby the individualized meter, if available) be withheld by the lessor, and thereby the opportunity to assert ownership of credit generation remains, and worse, that double-counting occurs due to the lack of incentive of the meter owner to notify the FSE operator that credit generation is occurring. The electricity categories are fundamentally different from the liquid and gaseous fuel categories, and FuSE strongly suggests that CARB clarify that the FSE operator be the eligible credit generator in all electrification categories.

**"Private MHD-FCI charging site" is defined in the amendments, but no subsequent regulatory language is proposed.** The ISOR is clear that there is intent of supporting private MHD infrastructure, but no language is proposed. FuSE supports clarifying language identifying the opportunity for Private MHD-FCI crediting.

FuSE thanks CARB for the opportunity to comment and participate in the amendment process and looks forward to working with the LCFS team on future improvements that facilitate the transition of California's transportation fuel pool toward a more sustainable and decarbonized future.

Sincerely,

Energy Mission Control, Inc. dba FuSE Carbon Technologies

CC: Todd Trauman, CEO  
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<sup>6</sup> <https://www.oregon.gov/deq/rulemaking/Documents/CFP2022EWcacStudy.pdf>

<sup>7</sup> [https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2024/lcfs2024/lcfs\\_appe.pdf](https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2024/lcfs2024/lcfs_appe.pdf)