



September 5, 2017

Sam Wade
Low Carbon Fuel Standard
California Air Resources Board
State of California

Subject: Comments to CARB's LCFS 2018 Amendments – Pre-Rulemaking

Dear Mr. Wade:

I am writing on behalf of Tesla to provide our recommendations to the California Air Resources Board (CARB) as a part of the stakeholder comment process for the 2018 Amendments to the Low Carbon Fuel Standard (LCFS). The LCFS program represents a significant opportunity to reduce carbon emissions in the state's transportation sector and promote sustainable technology development. If modifications are made to the electricity pathway, the program can greatly accelerate the adoption of Electric Vehicles (EVs), enhance the ownership experience for EV drivers and encourage the deployment of solar energy. As a company investing heavily in these areas, Tesla is well-positioned to advance the objectives of the LCFS program.

During the August 7, 2017 LCFS workshop, CARB requested comment on various programmatic improvements to the LCFS program, some of which are described in the Pre-Rulemaking Concept Paper published on July 24, 2017. As a company whose mission is to advance EV technology and accelerate the transition to sustainable energy, Tesla has two key recommendations for CARB to consider in its upcoming rulemaking:

1. Modify the current residential charging credit generation hierarchy to allow EV manufacturers to opt-in and generate credits based on recorded vehicle charging data, enabling automakers to offer compelling point-of-sale incentives to CA residents considering purchasing EVs.
2. Add a new Carbon Intensity (CI) value of 0 g/mi for transportation powered by solar energy generated in the state, which will support increased consumer incentives and the expansion of solar energy in California.

I. Automakers are best-positioned vis-à-vis other potential credit generators to offer consumers point-of-sale incentives, which are most effective for driving EV adoption.

The majority of prospective EV buyers are unaware of available LCFS rebates, as utilities are unable to reach these consumers at the point-of-sale. The customer experience would be improved if automakers could offer these rebates to consumers directly at the point-of-sale, which is broadly considered the most effective method of driving EV sales.¹

¹ "Cash at the time of purchase is by far the best financial incentive – over twice the value of a tax credit." *Evaluating Methods to Encourage Plug-in Electric Vehicle Adoption: A review of reports on PEV incentive effectiveness for California Utilities*, Plug In America for CaIETC, p.13 (October 2016). "Of all the options for returning LCFS revenue, a one-time rebate is likely the best means to encourage PEV adoption because it would be provided to all PEV buyers as an up-front amount off the purchase of the EV."

To administer this methodology, CARB would simply exclude the vehicles associated with a participating automaker’s fleet when calculating utility credits. This approach does not preclude utilities from continuing their own rebate programs, as they could provide incentives for vehicles that are not covered by EV manufacturers participating in the LCFS program.

II. Current programs provide the same rebate value to Plug-in Hybrid Electric Vehicles (PHEVs) as zero-emission Battery Electric Vehicles (BEVs), despite dramatically different electricity usage and emissions profiles.

Utility rebate programs do not incentivize consumers to purchase the lowest-emitting vehicles, as equal rebate values are given regardless of electric range or battery capacity. Table 9 from CARB’s Midterm Evaluation (see table on right) shows the stark differences in electric and zero-emission miles travelled for various types of PHEVs and BEVs.² Depending on the type and capability of the vehicle, the amount of electricity used varies dramatically. zVMT, which represents annual zero-emission vehicle miles travelled (i.e. trips where the engine is not used at all, resulting in no emissions), varies significantly between less capable PHEVs and BEVs (4% for a Prius vs. 100% for a Fit, Leaf or Tesla). Today, all of these vehicles receive the same financial incentives under the various utility programs. Furthermore, despite generating the majority of LCFS credits, owners of long-range BEVs do not receive benefits that are commensurate with their contribution. For example, a Tesla Model S generates five times more credits than the Toyota Plug-in Prius annually but still receives the same incentive value.³

Type of Vehicle	VMT – Annual Miles	eVMT – Annual Miles (% of VMT)	zVMT – Annual Miles (% of VMT)
Toyota Prius (PHEV)	15,283	2,304 (15%)	589 (4%)
Honda Accord (PHEV)	15,221	3,246 (21%)	1,471 (10%)
Ford C-Max Energi (PHEV)	13,920	4,574 (33%)	2,525 (18%)
Ford Fusion Energi (PHEV)	15,076	4,776 (32%)	2,368 (16%)
Chevrolet Volt (PHEV)	12,403	8,924 (72%)	7,313 (59%)
BMW i3 (BEVx)	9,063	8,387 (93%)	N/A
BMW i3 (BEV)	7,916	7,916 (100%)	7,916 (100%)
Ford Focus Electric (BEV)	9,741	9,741 (100%)	9,741 (100%)
Honda Fit (BEV)	9,789	9,789 (100%)	9,789 (100%)
Nissan Leaf (BEV)	10,294	10,294 (100%)	10,294 (100%)
Tesla Model S (BEV)	13,494	13,494 (100%)	13,494 (100%)

To address this imbalance, a robust incentive program should differentiate between the electricity usages of various plug-in vehicles, provide rewards that are commensurate with consumers’ actual contribution to the program and incentivize consumers to use more electricity for transportation. If there is no correlation between the reward that consumers receive through this program and the amount of actual charging, then consumers are even less likely to tie their behavior (investing in an EV, installing a charger, etc.) to their electricity consumption, which runs counter to many of the State’s outreach and education efforts.

If automakers receive the credits generated by their fleet, they will be able to provide benefits to consumers of their EV products directly and will face fewer administrative challenges in designing more nuanced rebate programs. In contrast, utilities expect to incur significant administrative costs to implement and run their programs. Pacific Gas & Electric (PG&E)

California Public Utility Commission Decision to adopt the LCFS Revenue Allocation Methodology, p. 30 (December 2014)

² California’s Advanced Clean Cars Midterm Review, Table 9, page ES-36

³ Credit generation estimates based on the battery capacities and ranges of the 2017 Toyota Prius Prime and Model S 75 and their respective eVMT from the table

estimated it would cost \$1.3 million annually for rebate processing expenses.⁴ Southern California Edison (SCE) estimated \$1 million in the first year for upfront and administrative costs.⁵ San Diego Gas & Electric (SDG&E) estimated \$0.4 million to create an online form for participating customers to fill out and projects \$0.5 million in annual administrative costs.⁶ These costs, which include advertising the rebate program to the utility's customer base, are expected to amount to millions of dollars annually.

III. Automakers can offer a statewide benefit to EV consumers regardless of their utility's participation status or location.

Under the current regulations, utilities receive credits for estimated residential EV charging that takes place in their service territories. After a lengthy regulatory and implementation process,⁷ California utilities have elected to use the revenue they receive from credit sales to provide vehicle rebates, on-bill electricity credits or rebates for home charger installation to consumers within their respective service territories.⁸ None of these programs features a point-of-sale incentive, and as described above, utilities are incurring significant marketing and administrative expenses advertising the programs to their customers.

Furthermore, as a result of the different options available to utilities, there are currently at least six different programs across the state.⁹ Consumers are only eligible for the program in their service territory, and prospective EV consumers residing outside of these utilities' service territories are not eligible for any benefit. Presently, someone who buys an EV in San Francisco receives \$500 from PG&E and someone who buys an EV in San Diego receives \$50-\$100 off on their SDG&E electricity bill, while someone else who lives outside any participating utility territory receives no benefit.

In addition to creating unnecessary boundaries to customer participation, this patchwork approach creates difficulties for EV manufacturers, dealers and advocacy groups who wish to educate consumers about available incentives. If automakers are able to participate, they can offer comprehensive, consistent statewide programs that are available to all California residents at the point-of-sale.

⁴ See State of California Public Utilities Commission, PG&E Advice Letter 3575-E/4604-G, p.19 (Aug. 7, 2015), available at http://www.pge.com/notes/rates/tariffs/tm2/pdf/ELEC_4604-E.pdf

⁵ See State of California Public Utilities Commission, SCE Advice Letter 3194-E, p.11-12 (Jul. 30, 2015), available at <https://www.sce.com/NR/sc3/tm2/pdf/3194-E.pdf>

⁶ See State of California Public Utilities Commission, SDG&E Advice Letter 2716-E, p.29 (Jul. 30, 2015), available at <http://regarchive.sdge.com/tm2/pdf/2716-E.pdf>

⁷ The LCFS program was established in 2011. SCE and PG&E took the position that they did not have authority to sell LCFS credits without further action by the California Public Utilities Commission (CPUC) explicitly authorizing such activity as California Public Utility Code § 851 generally requires California utilities to secure CPUC approval before selling property. After a 3+ year-long rulemaking proceeding, CPUC granted such authority but requested advice letters from the investor-owned utilities on how they would sell the credits and return value to consumers. The utilities submitted their proposals and after a public comment period and review by the CPUC, they received approval in 2015. However, the investor-owned utilities did not begin returning value to consumers until 2017.

⁸ See DEQ, Agenda Item F – Modifications to the Electricity Provisions, p.5 (Jan. 2017)

⁹ The six utilities referenced are PG&E, SCE, SDG&E, SMUD, LADWP and City of Anaheim

IV. EV manufacturers have the most comprehensive and accurate charging data available and can use this data to maximize the benefits of the electricity pathway.

The greater the quantity of data captured, the greater the number of credits that can be generated to advance the goals of the LCFS program. Today, approximately 80% of total EV charging occurs at home, largely during off-peak hours when there is excess capacity on the grid.¹⁰ This figure is even greater for long-range EVs, as owners benefit from sufficient range to cover their daily commutes and do not need to utilize public charging stations. As more automakers begin delivering next-generation, 200+ mile range EVs, the share of home and workplace charging will continue to increase vis-à-vis public charging. Home charging is very rarely recorded using a separate utility meter, and it would be both prohibitively expensive and environmentally unsustainable to attempt to do so.

EV manufacturers can accurately quantify the amount of electricity entering their vehicles during charging sessions using on-board vehicle telematics technology. Tesla has validated the accuracy of this information recorded by its vehicles and is able to access charging logs via Wi-Fi and cellular connections. Manufacturers can aggregate and anonymize this data before submitting it to CARB to ensure consumer privacy is fully protected. The charging data obtained by EV manufacturers represents the most accurate and real-time data available today. CARB should modify its regulation to give credit generation preference to the provider of the highest quality and most comprehensive charging data.¹¹

V. CARB can support renewable energy deployment and increase EV adoption by permitting credit generators to match solar energy generated in California with vehicle charging.

CARB can further accelerate renewable energy deployment by permitting credit generators to match solar energy generated in California with vehicle charging to earn credits based on a 0 g/mi CI value. CARB can implement this modification in the 2018 Rulemaking by adding an additional CI value to the program for transportation powered by solar energy. The solar installation will not always be co-located with the vehicle charging, but as long as it can be demonstrated that the renewable electricity can travel through the connected transmission system to the vehicle's location, this should be sufficient for matching.

There is precedent for this approach in the U.S. Environmental Protection Agency's Renewable Fuel Standard, where renewable electricity producers must only show that "renewable electricity was loaded onto and withdrawn from a physically connected transmission grid".¹² Likewise, renewable Compressed Natural Gas (CNG) producers must only demonstrate that CNG is injected into the U.S. interstate pipeline system and withdrawn from connected fueling stations in order to earn credits based on the fuel production.¹³

During the rulemaking process, CARB can work with stakeholders to find solutions to ensure that the renewable energy is not double-counted for LCFS and other state programs.

¹⁰ See EPA, Draft Technical Assessment Report: Midterm Evaluation of Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards for Model Years 2022-2025, p.9-20 (Jul. 2016)

¹¹ See OAR 340-253-0330

¹² See 40 CFR 80.1426(f)(11)(i)(D)

¹³ See 40 CFR 80.1426(f)(11)(ii)(B) and 40 CFR 80.1426(f)(11)(ii)(D)

One potential methodology is for solar companies to retire an equivalent amount of Renewable Energy Credits (RECs) to match the associated energy used for vehicle charging. In California, a REC is the standard certificate of proof associated with the generation of electricity from a renewable source.¹⁴ By adding this new CI value to California's regulation and permitting credit generators to match solar generation with vehicle charging, California will take an important step to encourage greater renewable deployment.

* * *

Based on the foregoing, we believe CARB should modify the current residential charging credit generation hierarchy and add a new CI value of 0 g/mi for transportation powered by solar energy in its 2018 Rulemaking. These changes could be implemented immediately upon conclusion of the rulemaking process, and the value generated from the sale of credits would directly benefit California consumers, accelerate the adoption of zero emission vehicles and increase renewable energy generation. With these changes, CARB will continue to evolve the LCFS program to ensure it yields the best possible results.

Tesla appreciates the opportunity to provide comments, and we believe in the potential of this program to dramatically accelerate California's transition to sustainable, zero-emission transport. We share CARB's vision for a sustainable future and look forward to continuing to collaborate with Staff to achieve the goals of the program. Thank you for your time and consideration in this matter.

Sincerely,



Ken Morgan

Director, Business Development & Government Affairs

Tesla, Inc.

¹⁴ See CAL. PUB. UTIL. CODE § 399.12(h)(1)