

# Using Fuel Standards and Carbon Credits to Accelerate Transportation Electrification

# Introduction to Transportation Electrification

To reduce transportation sector greenhouse gas (GHG) emissions,<sup>1</sup> the United States and other countries are implementing a wide range of regulatory and incentive programs.<sup>2</sup> Transportation fuel standards use various mechanisms to accelerate the deployment of less GHG-intensive transportation fuels and support electrification of transportation. Two of the most prominent types of transportation fuel standards are alternative fuel standards and low-carbon fuel standards. This paper focuses on low-carbon fuel standards because they provide revenue-generating opportunities to owners of electric vehicle charging equipment.

» **Alternative fuel standards (AFS):** Alternative fuel standards require specified percentages of fuel volume to be from renewable sources. At the United States federal level, the Renewable Fuel Standard (RFS)<sup>3</sup> is aimed at refiners and importers of gasoline or diesel fuel, and requires annually increasing volumes of renewable fuel to replace or reduce the quantity of petroleum-based transportation fuel, heating oil, or jet fuel. The federal RFS allows program participants to buy and sell credits toward meeting the annual volume requirements. This credit trading creates a revenue-generating opportunity for fuel suppliers that are able to exceed their current requirements for volumes of applicable fuels. Various states have also developed their own alternative fuel standards, and this trend may continue.<sup>4</sup>

» **Low-carbon fuel standards (LCFS),** in contrast to fuel volume-based standards, are based on GHG emissions. LCFS require the reduction of transportation fuel carbon intensity (CI). CI accounts for the GHG emissions resulting from all stages of a fuel's lifecycle, from production through combustion. While AFS only apply to fuel suppliers, LCFS offer revenue-generating opportunities to fleet owners; those that own electric vehicle (EV) charging equipment can voluntarily participate and generate credits to sell to other LCFS program participants.

## Other GHG Emissions Reduction Programs

In November 2019, the City of Los Angeles announced a partnership with 8minute Solar Energy, LLC, the largest In addition to AFS and LCFS programs, other fuel GHG emissions reduction programs are being implemented in the United States. For example, a multi-state collaboration among various east coast states, the Transportation and Climate Initiative Program (TCI-P), will establish a cap-and-invest program to reduce GHG emissions from transportation fuels. Program proceeds will be invested in regionally beneficial projects that further reduce transportation sector GHG emissions.\* The TCI-P will require fuel suppliers to meet annual declining limits of GHG emissions from combustion of their fuels. The fuel suppliers are required to purchase allowances for their applicable GHG emissions. Notably, TCI-P only accounts for the GHG emissions from the combustion stage of a fuel's lifecycle, whereas LCFS accounts for the full lifecycle. TCI-P will be implemented beginning with GHG emissions reporting in 2022.

\* Massachusetts, Connecticut, Rhode Island, D.C. are First to Launch Groundbreaking Program to Cut Transportation Pollution, Invest in Communities. *Transportation and Climate Initiative*. Available at: <https://www.transportationandclimate.org/final-mou-122020>.

<sup>1</sup> The United States Environmental Protection Agency's Draft Inventory of Greenhouse Gas Emissions and Sinks, 1990 to 2019, shows that emissions from the transportation sector accounted for the largest portion of GHG emissions in the United States in 2019:

<https://www.epa.gov/sites/production/files/2021-02/documents/us-ghg-inventory-2021-main-text.pdf>

<sup>2</sup> <https://afdc.energy.gov/laws>

<sup>3</sup> <https://www.epa.gov/renewable-fuel-standard-program>

<sup>4</sup> A summary of current federal and state programs can be found at:

<https://afdc.energy.gov/laws/state> and [https://afdc.energy.gov/laws/matrix?sort\\_by=user](https://afdc.energy.gov/laws/matrix?sort_by=user)

## Low Carbon Fuel Standards

LCFS requirements are aimed at fuel producers and importers, and require fossil fuel providers to reduce the average lifecycle CI of their transportation fuels over time. Some of those fuel providers need to purchase credits in order to meet their annual CI targets. These credits can be purchased from other LCFS program participants who are able to exceed annual CI benchmarks. Becoming a credit generator through an LCFS program can help a fleet owner fund the transition to EVs and the necessary EV charging stations.

California's LCFS<sup>5</sup> was the first of its kind in the United States and has become the gold standard based on its success in significantly reducing consumption of transportation fossil fuels and the associated GHG emissions. Oregon's Clean Fuels Program followed, and other states have been considering LCFS programs. There are LCFS programs being developed internationally as well.

### California's LCFS

The LCFS regulation is a key element of California's multi-pronged program to reduce GHG emissions across all sectors of the state's economy and includes regulatory requirements as well as incentives. The purpose of California's LCFS is to increase the supply and use of less carbon-intensive transportation fuels, including electricity, throughout California. Credit trading (described below in "Fleet Owner Participation in Fuel Credit Markets") has been an important component of California's LCFS, growing from \$51.7 million in 2014 to \$4.3 trillion in 2019<sup>6</sup>

### Oregon's LCFS (Clean Fuels Program)

The Oregon Department of Environmental Quality (DEQ) Clean Fuels Program<sup>7</sup> is a newer LCFS program, and is largely harmonized with California's LCFS. The successful implementation of LCFS in California has already increased the availability of lower-carbon transportation fuels and electric vehicle infrastructure throughout the west coast states. Implementation of Oregon's Clean Fuels Program is furthering the shared western state goal of an integrated west coast low-carbon fuels market.

### International Programs

Similar programs to reduce transportation fuel CI also exist in the European Union as well as British Columbia, Canada. Further, Canada recently proposed regulations for a Clean Fuel Standard, which are intended to be finalized in 2021 and effective starting in December 2022.<sup>8</sup> This program will set CI requirements at a national level for Canada, and will include credit trading provisions similar to those of the California and Oregon state LCFS programs.

<sup>5</sup> <https://ww2.arb.ca.gov/our-work/programs/low-carbon-fuel-standard/lcfs-regulation>

<sup>6</sup> <https://ww3.arb.ca.gov/fuels/lcfs/credit/lrtmonthlycreditreports.htm>

<sup>7</sup> Oregon Clean Fuels Program website: <https://www.oregon.gov/deq/ghgp/cfp/Pages/default.aspx>

Current regulation: <https://secure.sos.state.or.us/oard/displayDivisionRules.action;?selectedDivision=1560>

<sup>8</sup> <https://www.canada.ca/en/environment-climate-change/services/managing-pollution/energy-production/fuel-regulations/clean-fuel-standard/about.html>

## Fleet Owner Participation in Fuel Credit Markets

While LCFS requirements are aimed at fuel producers and importers, an LCFS program incentivizes a transition to lower-carbon fuels. Vehicle fleet owners can benefit from an LCFS program by engaging in this transition through:

- » Obtaining lower-cost low-carbon fuels that have become available as fuel suppliers have taken advantage of the LCFS program incentives for providing those fuels in the region.<sup>9</sup>
- » Voluntarily entering an applicable LCFS program as a credit generator to derive revenue for owning EV charging equipment.

The discussion that follows focuses on how fleet owners can generate credits and derive revenue from an LCFS program. Because California's program is the most established to date, the details below are specific to the California LCFS. However, the same principles apply to other LCFS programs such as the Oregon Clean Fuels Program and the Clean Fuel Standard being developed in Canada.

## Obtaining LCFS Credits in California

An owner of non-residential EV charging equipment in California can opt to generate LCFS credits based on section § 95483(c)(2) of the California LCFS regulation, and sell those credits to fuel providers who need them in order to achieve LCFS compliance. In this way, the LCFS program helps to make using EVs financially advantageous.

## Revenue from LCFS Credits

LCFS credits are traded in units of metric tons of carbon dioxide equivalent (MT CO<sub>2</sub>e) avoided through displacement of high-carbon fossil fuel consumption, and the associated lifecycle GHG emissions of those fuels.<sup>10</sup> Fleet owners can achieve substantial revenue by participating in the LCFS credit program (see example on next page).

The GHG emissions reduction and associated credit can be further enhanced by using renewable electricity to charge the vehicles, and maximizing the number of electric vehicles used by the fleet owner.

## Registering in California

California LCFS program participants need to register in the "Low Carbon Fuel Standard Reporting Tool and Credit Bank & Transfer System" (LRT-CBTS). The Opt-In Entities section of the LCFS regulation (§ 95483.1) outlines the required procedure for a fleet owner to opt into and out of the LCFS program.

The latest relevant LRT-CBTS registration guidance for a Fueling Supply Equipment (FSE) owner is on the LCFS guidance page, listed under User Guides, and titled FSE Registration (Appendix C) (June 2019).<sup>11</sup> This guidance applies to a fleet owner in possession of EV charging infrastructure, or natural gas, propane, or hydrogen FSE.

The **key steps** for an EV charging equipment owner to voluntarily participate in California's LCFS program are:

1. Establish an account in LRT-CBTS at <https://ssl.arb.ca.gov/lcfsrt/Login.aspx>.
2. Upload the completed FSE registration documentation with any necessary supporting documents into LRT-CBTS, following the steps outlined in the FSE Registration document.
3. Begin generating credits on a quarterly basis.
4. Once those generated credits are issued into the owner's LCFS LRT account, they can be sold to fuel providers to meet required annual CI targets in the LCFS.

<sup>9</sup> Examples of low-carbon fuel suppliers in California: <https://propelfuels.com/locations>, <https://pearsonfuels.com/stations/>

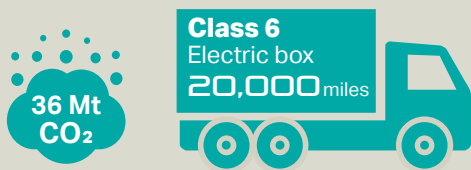
<sup>10</sup> Credit pricing trends can be observed in the weekly credit transfer activity reports at:

<https://ww3.arb.ca.gov/fuels/lcfs/credit/lrtweeklycreditreports.htm>

<sup>11</sup> LCFS Guidance Documents, User Guides, and FAQs are available at:

<https://ww2.arb.ca.gov/our-work/programs/low-carbon-fuel-standard/lcfs-guidance-documents-user-guides-and-faqs>

## Examples from Pacific Gas & Electric



**Credits = \$7,000**



**Credits = \$33,900**

This example uses 2019 average pricing of \$190 per MT CO<sub>2</sub>e.

Source: [https://www.pge.com/pge\\_global/common/pdfs/solar-and-vehicles/clean-vehicles/ev-fleet-program/PGE\\_EV-Fleet\\_Low-Carbon-Fuel-Standard.pdf](https://www.pge.com/pge_global/common/pdfs/solar-and-vehicles/clean-vehicles/ev-fleet-program/PGE_EV-Fleet_Low-Carbon-Fuel-Standard.pdf)

## Opportunities for Fleet Owner Revenue Generation

There are a range of programs in existence or in development to reduce GHG emissions from transportation fuels. These programs incorporate regulatory requirements as well as financial incentives for transitioning to renewable fuels or EVs. As regulatory requirements evolve, and as the transition toward lower-carbon modes of transportation progresses, some of the incentives may become obsolete. Fuel suppliers and fleet owners should take advantage of these revenue-generating opportunities while they are available.

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### About the author



**Rob Larkin** has a wide range of experience in environmental management and sustainability planning, with a focus on greenhouse gas (GHG) assessment, climate change mitigation strategy development, carbon markets, and integrated sustainable solutions. Rob's client support spans multiple sectors including energy, commercial development, public education, aviation, military, government agencies, agriculture, and transportation.