



## Low Carbon Fuel Standard Regulatory Guidance 16-07

### LCFS for Transit Agencies

#### What is the LCFS regulation, and who is subject to it?

The LCFS is a regulation designed to reduce greenhouse gas (GHG) emissions associated with the lifecycle of transportation fuels used in California. The lifecycle of a fuel includes the emissions associated with producing, transporting, distributing and using the fuel. The regulation reduces lifecycle GHG emissions by assessing a “carbon intensity” (CI) score to each transportation fuel based on its lifecycle assessment.

A fuel that has a CI that is below the target in a given compliance period generates credits. Conversely, a fuel with a CI above the target will generate a deficit. For a given annual compliance period, a regulated party’s overall credit balance is determined by adding up all the quarterly deficits and credits assessed to that party, and an overall negative balance at the end of the year results in a shortfall. Any shortfall can be covered by purchasing credits from other parties, surrendering credits that the regulated party already has in hand, or by any other means prescribed in the regulation.

The regulation primarily applies to producers and importers of finished fuels, as well as fuel blendstocks and substitutes. Fuels subject to the LCFS requirements include gasoline, diesel fuel, and their substitutes and blendstocks. Blendstocks are components that are either used alone or are blended with other component(s) to produce a finished fuel.

#### Who may opt into LCFS?

The LCFS specifically exempts a number of lower-carbon fuels because these fuels meet the CI targets through 2020. Such fuels include: Electricity, Hydrogen, and Natural Gas (Including CNG, LNG, L-CNG, and Biomethane).<sup>1</sup> Providers of these fuels, if they choose not to participate in the LCFS program, have no obligations under the LCFS. However, LCFS allows fuel providers of the above fuels to “opt in” to the program, and generate LCFS credits that they can sell and trade in the California LCFS market. Opting in is a voluntary decision, and it is accomplished simply by registering the fuel providers as a credit generator in the LCFS Reporting Tool (LRT).<sup>2</sup>

#### How may transit agencies take advantage of the LCFS program?

##### Electricity<sup>3</sup>

<sup>1</sup> LCFS Regulation (§) 95483.1, available at: <http://www.arb.ca.gov/regact/2015/lcfs2015/finalregorderlcfs.pdf>

<sup>2</sup> See the LCFS Reporting Tool at <http://www.arb.ca.gov/fuels/lcfs/reportingtool/reportingtool.htm>.

<sup>3</sup> LCFS Regulation Section 95483(e)(3).

Transit Agencies may opt into LCFS and generate credits, under the categories of electric vehicle (EV) fleet operators, battery switch station owners, and fixed guideway system operators:

- For on-road transportation fuel supplied to a fleet of EVs, the fleet operator is eligible to generate the credits for the electricity if the operator submits a written request to ARB to opt-in and generate credits associated with a specified fleet.
- For on-road transportation fuel supplied to a fleet through the use a battery switch station, the station owner is eligible to generate the credits for the electricity, if the owner submits a written request to ARB to opt-in and generate credits associated with a specific location or locations.
- For transportation fuel supplied to a fixed guideway system<sup>4</sup>, the transit agency operating the system is eligible to generate credits for electricity used to propel the system.
- The electrical utility is eligible to generate credits in its service territory for the electricity used as on-road transportation fuel under above categories, if no other parties opt-in and generate credits.

#### Hydrogen or hydrogen blend<sup>5</sup>

- For hydrogen transportation fuel, the credit generator is initially the entity who owns the finished hydrogen fuel. For example, if a transit agency operates fuel cell electric buses and generates its own hydrogen fuel through on-site electrolysis, the agency can opt into the LCFS program and generate credits.
- If the transit agency doesn't own the fuel as it is finished, they can still be the credit generator through a negotiated agreement with the fuel provider. The ability to generate credits can be transferred to another party (in this case the transit agency), if the two parties agree by written contract.

#### Natural Gas (Including CNG, LNG, L-CNG, and Biomethane)<sup>6</sup>

- For fuel consisting solely of fossil CNG or LNG, the credit generator is the entity that owns the natural gas fueling equipment at the facility at which the fuel is dispensed to motor vehicles for their transportation use. Under this category, the transit agencies may opt into the LCFS program to generate credits.
- With respect to the bio-CNG or bio-LNG, the credit generator is the producer or importer of the biomethane injected into the pipeline for delivery to the dispensing station. The ability to generate credits can be transferred to another party (in this case the transit agency), if the two parties agree by written contract.

There is an active market for LCFS credits and the price of the credits may fluctuate over time. For example, prices in December 2015 ranged from \$23 to \$120 per credit (in metric tons) with an average of \$96 per credit.<sup>7</sup> The estimated LCFS credit revenues for different fuel types at

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<sup>4</sup> Fixed Guideway System means a system of public transit electric vehicles that can operate only on its own guideway (directly operated, or DO) constructed specifically for that purpose, such as light rail, heavy rail, cable car, street car, and trolley bus.

<sup>5</sup> LCFS Regulation § 95483(f).

<sup>6</sup> LCFS Regulation § 95483(d).

<sup>7</sup> See ARB's LCFS credit trading activity reports at <http://www.arb.ca.gov/fuels/lcfs/lrtmonthlycreditreports.htm>.

different credit prices are shown in Table 1. The estimated credit revenue per mile and annual credit revenue for transit buses are presented in Table 2.

**Table 1. Estimated 2016 credit revenue generated for transit buses (based upon average CI values)**

| Bus Fuel Type                           | LCFS Credit Value <sup>8</sup> |        |        |
|---|--------------------------------|--------|--------|
|   | \$25                           | \$57   | \$100  |
| Diesel (per DGE*)                       | \$0.00                         | \$0.00 | \$0.00 |
| Renewable Diesel (per DGE)              | \$0.23                         | \$0.52 | \$0.91 |
| Avg of conventional LNG & CNG (per DGE) | \$0.06                         | \$0.14 | \$0.24 |
| Renewable natural gas (per DGE)         | \$0.24                         | \$0.55 | \$0.97 |
| Electricity (per kWh)                   | \$0.03                         | \$0.06 | \$0.11 |
| Hydrogen (per kg)                       | \$0.33                         | \$0.75 | \$1.32 |

\*DGE stands for Diesel Gallon Equivalent

**Table 2. Estimated credit revenue per mile and annual credit revenue for transit buses**

| Bus Fuel Type                  | Fuel efficiency | Annual mileage | Credit revenue per mile |        |        | Annual credit revenue |         |         |
|--------------------------------|-----------------|----------------|-------------------------|--------|--------|-----------------------|---------|---------|
|                                |                 |                | LCFS Credit Value       |        |        | LCFS Credit Value     |         |         |
|                                |                 |                | \$25                    | \$57   | \$100  | \$25                  | \$57    | \$100   |
| Diesel                         | 3.8 mile/dge    | 35,000         | \$0.00                  | \$0.00 | \$0.00 | \$0                   | \$0     | \$0     |
| Renewable Diesel               | 3.8 mile/dge    | 35,000         | \$0.06                  | \$0.14 | \$0.24 | \$2,089               | \$4,763 | \$8,355 |
| Avg. of conventional LNG & CNG | 3.42 mile/dge   | 35,000         | \$0.02                  | \$0.04 | \$0.07 | \$621                 | \$1,417 | \$2,486 |
| Renewable natural gas          | 3.42 mile/dge   | 35,000         | \$0.07                  | \$0.16 | \$0.28 | \$2,482               | \$5,660 | \$9,929 |
| Electricity                    | 0.5 mile/kWh    | 35,000         | \$0.06                  | \$0.13 | \$0.23 | \$1,983               | \$4,521 | \$7,931 |
| Hydrogen                       | 6.5 mile/kg     | 35,000         | \$0.05                  | \$0.12 | \$0.20 | \$1,772               | \$4,041 | \$7,090 |

The estimated LCFS credit revenues for different fixed guideway systems are shown in Table 3. Please note that a fixed guideway system installed during or before 2010 receives less credit than a system installed or expanded after this year. Therefore, the credit revenues for existing and new fixed guideway systems are demonstrated separately.

**Table 3. Estimated 2016 credit revenue for fixed guideway systems**

| Fixed Guideway System Type                  | LCFS Credit Value(per kWh) |       |        |
|---|----------------------------|-------|--------|
|   | \$25                       | \$57  | \$100  |
| Existing Heavy Rail                         | ¢0.69                      | ¢1.58 | ¢2.78  |
| Existing Light Rail                         | ¢0.61                      | ¢1.40 | ¢2.45  |
| Existing Trolley Bus, Cable Car, Street Car | ¢0.59                      | ¢1.36 | ¢2.38  |
| New Heavy Rail                              | ¢3.19                      | ¢7.28 | ¢12.77 |
| New Light Rail                              | ¢2.02                      | ¢4.61 | ¢8.09  |
| New Trolley Bus, Cable Car, Street Car      | ¢1.84                      | ¢4.20 | ¢7.37  |

<sup>8</sup> Staff analyzed three cases, based on historical low credit price of \$25, historical 2012-2013 average prices of \$57, and an assumed price of \$100.

## **How does an agency opt into the LCFS program?**

Opting into the LCFS program is a simple process. An agency simply needs to register as a credit generator in the LCFS Reporting Tool (LRT), by providing the organization name, organization address, organization federal employer identification number, primary contact name, telephone number, and email address. For more information about opting into the program and registering an organization in the LRT system, please visit (LRT-CBTS) ([www.arb.ca.gov/lcfsrt](http://www.arb.ca.gov/lcfsrt)).

## **How would an agency report under the LCFS program?**

Transit agencies that opt-in to LCFS 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.

After opting in, the transit agencies must submit quarterly and annual reports. The data for the quarterly reports must be initially uploaded to the LRT-CBTS within the first 45 days after the end of each quarter. The uploaded draft reports can be revised and edited. Final quarterly reports must be submitted in the LRT-CBTS by the deadlines shown below:

- June 30th – for the first calendar quarter covering January through March;
- September 30th – for the second calendar quarter covering April through June;
- December 31st – for the third calendar quarter covering July through September; and
- March 31st – for the fourth calendar quarter covering October through December.

An annual compliance report for the prior calendar year must be submitted in the LRT-CBTS by April 30th of each year.

The primary parameter reported are the amount of fuels (in kWh for electricity) dispensed per compliance period to motor vehicles for transportation use. It is important to note that even if no fuel was produced and no transactions were made, a quarterly report with zero amounts must be submitted to remain in good standing in the system.

In addition, the transit agencies are required to include an accounting of the number of EVs in the fleet as supplemental information in annual compliance reporting.

Once quarterly report is submitted, the LRT will calculate credits and put them into the regulated party's LRT-CBTS account. The regulated party then can bank or trade these credits within the LRT-CBTS system.

### **Contact:**

If you have questions regarding the above information, please contact Manisha Singh at (916) 327-1501 or [Manisha.singh@arb.ca.gov](mailto:Manisha.singh@arb.ca.gov) for general questions related to LCFS, and Jing Yuan at (916) 322-8875 or [jyuan@arb.ca.gov](mailto:jyuan@arb.ca.gov) for questions related to LCFS Electricity Program.