September 2025

CALIFORNIA LOW CARBON FUEL STANDARD (LCFS) AT A GLANCE

	Compliance mechanism
Years in operation	Since 2011
Carbon intensity trajectory	CI reduction target: 30% below 2010 baseline by 2030 and 90% reduction by 2045. Annual benchmark reductions apply to gasoline and diesel substitutes. Updates include a one-time 9% adjustment on July 1st, 2025.
Regulated fuels	Gasoline, diesel, and their substitutes (renewable diesel, biodiesel, ethanol, electricity, RNG, hydrogen). Mandatory for compliance.
Opt-in fuels	Jet fuel (alternative aviation fuel), propane, and other low-CI fuels are not required under the program but are eligible to generate credits.
Exempt fuels	Fuels used in aviation (conventional), ocean-going vessels, military vehicles, locomotives, and small producers under specific thresholds.
Covered entities (2024)	The LCFS regulation does not apply to: (1) alternative fuels that are not biomass-based and supplied in quantities less than 420 million MJ annually; (2) fossil jet fuel; (3) deficit-generating fuels for military tactical vehicles; (4) credit-generating fossil CNG or propane dispensed at stations with throughput of 150,000 gasoline-gallon equivalents or less. There are 598 unique regulated entities registered in the LCFS Reporting Tool as of July 2024.
Annual report deadline	Reporting opens: April 1 each year; Submission deadline: April 30 each year Prerequisites: All previous quarterly and annual reports must be submitted
Penalties and program funding	If companies subject to California LCFS fail to meet their required carbon intensity targets, they must purchase credits to cover any shortfall; if they do not do so, they face civil penalties, along with potential forfeiture of credits and fines, making accurate reporting and prompt compliance critical to avoid significant financial consequences.
Credits, deficits and bank	37.16 million credits were generated in 2024, with 23.48 million deficits incurred. The market is in surplus with a positive credit bank of 40.22 million MT by the end of Q1 2025.
Credit clearance market	Price cap: $200/credit (inflation-adjusted).

MAJOR DEVELOPMENTS

The California Low Carbon Fuel Standard market experienced regulatory uncertainty in the first half of 2025, with the Office of Administrative Law (OAL) disapproving program amendments (proposed by the California Air Resources Board, CARB) in February 2025. On June 27th, the OAL approved the final version of amendments to the Low Carbon Fuel Standard (LCFS) submitted by CARB, with the regulation taking effect on July 1, 2025. This approval concluded a multi-year rulemaking process led by CARB to strengthen the regulation and accelerate California's transition to cleaner fuels.

The new rules are expected to address the oversupply of credits, with the credit bank standing at over 40 million credits at the end of Q1 2025. Some of the key amendments that have taken effect in Q3 2025 include:

1. A goal of reducing carbon intensity to 30% below a 2010 baseline, by 2030 (from 20% earlier) and to 90% below the baseline by 2045. The reduction also has a one-time 9% step-down in Carbon Intensity in Q3 2025. The immediate Q3 2025 CI benchmark drops include gasoline from 85.77 to 76.60gCO_2e/MJ and diesel from 86.64 to 81.70gCO_2e/MJ, raising deficit generation for the second half of 2025.
2. Introduction of an Automatic Acceleration Mechanism (AAM) to reduce the CI if a credit surplus persists. An AAM is triggered when 2 criteria are met:
    a. Credit Bank to Average Quarterly Deficit Ratio exceeds 3
    b. Credit Generation exceeds Deficit Generation for the trailing 4 quarters

    Additionally, the AAM can be triggered only if it was not triggered in the immediately prior four quarters. And the last condition is that the earliest it can be triggered is on May 15th, 2027, with the CI benchmark being accelerated from 2028.

    If the AAM is triggered then the defined average CI benchmarks for each future year will be advanced by one year (and hence accelerating the CI reduction, as the name indicates)
3. A 20% cap is imposed on biomass-based diesel derived from soybean, canola, and sunflower oils per producer.
4. Land-use change and deforestation certification requirements starting 2026
5. Eliminates LCFS credit generation for hydrogen produced from fossil gas by January 1, 2035.
6. Enhanced credits for electricity used in charging light-duty, medium-duty, and heavy-duty ZEVs
7. Phases out biomethane credits for combustion engines, redirecting focus to renewable hydrogen production

MARKET PERFORMANCE AND PRICING

	Q1-Q4 2024	**Q1 2025**
Credits Generated	37.16 million MT	8.547 million MT
Deficits Generated	23.48 million MT	5.67 million MT
Historic Price Range	Since March 2021, the highest average spot price witnessed was $196.5/MT on 19th March 2021 and lowest price was $39.5/MT on 16th May 2024.	On 6th January 2025, the average spot price stood at $75.25, the highest for Q1 2025. The lowest price was observed on 10th June at $40.25/MT.

	Q1-Q4 2024	Q1 2025
	In 2024, the highest average spot price was seen on 15th November at $78.25/MT.	
Credit Generation by Pathway in % of Total (Q1 2025)	Renewable Diesel 39% Electricity 24% Biomethane 20% Ethanol 9% Biodiesel 5% Other (Hydrogen, Renewable Naphtha, Propane, Innovative Crude & Low Complexity / Low Energy Use Refining, etc.) 1%	Renewable Diesel 36% Electricity 29% Biomethane 18% Ethanol 9% Biodiesel 4% Other (Hydrogen, Renewable Naphtha, Propane, Innovative Crude & Low Complexity / Low Energy Use Refining, etc.) 1%

MARKET COMMENTARY

The LCFS credit market experienced significant price drops from February to June 2025, primarily driven by market uncertainty and OAL's initial rejection of regulatory changes. Spot prices hit a low of $40.25 on June 10 as traders reacted to regulatory uncertainty and ongoing credit surpluses. However, after the OAL approved the amended regulation on June 27, 2025, the market quickly reversed course: spot prices rose to $50 for the first time since late May. This rapid shift indicates a change in market sentiment from pessimism and excess supply to optimism about future credit demand within the updated LCFS framework.

Some key programs that promote Zero-Emission Vehicle (ZEV) adoption in California, such as the Advanced Clean Cars II (ACCII), Advanced Clean Trucks (ACT), and Advanced Clean Fleet (ACF), face regulatory uncertainty as questions arise regarding the authority of the Clean Air Act (CAA) waivers granted to California. Political debates continue over LCFS's impact on gasoline and diesel prices, with some watchdogs and lawmakers expressing concerns about consumer effects, leading to legislative proposals that could ease LCFS compliance. The market's path in the latter half of 2025 will depend on the enforcement of new benchmarks, shifts in supply and demand, and the outcomes of ongoing legal and legislative discussions.

REFERENCES

California Air Resources Board. (2025, July 16). *Unofficial electronic version of the Low Carbon Fuel Standard regulation, OAL approved, July 2025*. California Air Resources Board. https://ww2.arb.ca.gov/sites/default/files/2025-07/2025_lcfs_fro_oal-approved_unofficial_07162025.pdf

California Air Resources Board. (n.d.). *LCFS reporting tool—Registered parties*. California Air Resources Board. https://ww2.arb.ca.gov/resources/documents/lcfs-reporting-tool-registered-parties

California Air Resources Board. (n.d.). *Low Carbon Fuel Standard reporting tool Quarterly summaries*. California Air Resources Board. https://ww2.arb.ca.gov/resources/documents/low-carbon-fuel-standard-reporting-tool-quarterly-summaries

Ccarbon.info. (2025, June). *CARB powers through: Amended LCFS regulations set to kick off in July 2025 (cCarbon analysis)*. Ccarbon.info. https://www.ccarbon.info/article/carb-powers-through-amended-lcfs-regulations-set-to-kick-off-in-july-2025-ccarbon-analysis/

AUTHORS

Joey Hoekstra
Analyst, IETA

NikhilAgarwal
Director, cKinetics
nagarwal@ckinetics.com

Point of contact

Adarsh Srinivasan
Policy Analyst Assistant, IETA
srinivasan@ieta.org

Aakanksha Srisha
Associate, cKinetics
asrisha@ckinetics.com