2018 Proposed Amendments to the

Low Carbon Fuel Standard Regulation

and to the

Regulation on Commercialization of Alternative Diesel Fuels
Low Carbon Fuel Standard (LCFS) Background

California’s primary program to promote cleaner alternative fuel use in-line with 2030 greenhouse gas reduction goals.

Key Milestones: Original adoption in 2009, first compliance year in 2011, re-adopted in 2015 to address legal challenge

Goal: Reduce carbon intensity (CI) of transportation fuels

Benefits:
- Reduce greenhouse gases (GHGs)
- Transform and diversify fuel pool
- Reduce petroleum dependency
- Reduce emissions of criteria pollutants and toxics
2017 Scoping Plan Update and Low Carbon Fuel Standard

- Transportation accounts for ~50 percent of statewide GHG emissions
  - Increased 2 percent from 2015 to 2016
- Fuels are one of the three prongs for addressing GHG emissions in this sector
  - Cleaner Fuels
  - Vehicle Technology
  - Sustainable Land-Use
- 2017 Scoping Plan Update called for a more ambitious LCFS to achieve the 2030 goal of SB 32

2016 Total CA Emissions: 429.4 MMTCO2e
Major Milestones and Rule Timeline

Informal Pre-Rulemaking

- 2016 – 2017
  - 22 Workshops

- 2018
  - Executive Order B-48-18 calls for the LCFS to strengthen support for ZEV infrastructure (Jan 2018)
  - Board Adopts GHG Scoping Plan. Includes at least an 18% LCFS by 2030 (Dec 2017)
  - Regulation Notice, Staff Report, Environmental & Economic Analyses (Mar 2018)

Formal Rulemaking

- 2018
  - Two Workshops and 15-day Comment Periods

- 2019
  - 1st Board Hearing Called for Action on EV Rebates and Capacity Credits for ZEV Infrastructure (Apr 2018)
  - 2nd Board Hearing (Sept 2018)
  - Effective January 1, 2019

Staff Report, Environmental & Economic Analyses (Mar 2018)
Key Objectives of the 2018 Rulemaking

- Strengthen Targets through 2030
- Credit Alternative Jet Fuels
- Encourage ZEV Infrastructure
- Promote Innovation in Conventional Fuel Supply Chains
- Carbon Capture and Sequestration
- Third-Party Verification
- Address Court Direction
- Technical Updates and Process Improvements
20% Carbon Intensity Reduction by 2030

Current and Proposed Annual Carbon Intensity Benchmarks

Average CI Reduction Achieved in 2017

- Volume Weighted Average
- % CI Reduction
20% by 2030: Illustrative Scenario

Potential Credits in 2030
% Share of Total LCFS Credits by Source

- Hydrogen: 2%
- Electricity: 21%
- Renewable Diesel: 24%
- Biodiesel: 10%
- Cellulosic & Starch Ethanol: 5%
- Biomethane: 3%
- Alternative Jet: 10%
- Petroleum Projects: 15%
- ZEV Infrastructure: 8%
- 2017: 2%
Promote the expansion of zero-emission vehicle infrastructure as directed by Executive Order B-48-18 and Board Resolution 18-17
Zero Emission Vehicle Infrastructure

Promote the expansion of zero-emission vehicle infrastructure as directed by Executive Order B-48-18 and Board Resolution 18-17

- Credit hydrogen and DC fast charging fueling stations on the basis of capacity
  - Infrastructure credits decline as stations reach full utilization
- Crediting limitations include:
  - Applications will only be accepted until December 31, 2025
  - Limit each charging and fueling station’s crediting period
  - Limit overall capacity credit generation to 5% of program deficits
Explore with stakeholders the opportunities to increase the magnitude of ZEV vehicle rebates at the point of purchase funded by sale of LCFS credits

• Utilities and Automakers are developing a statewide point of purchase (POP) rebate program
• Minor changes to the LCFS regulation to accommodate the rebate program:
  • Require a minimum percentage contribution from each utility
  • Specify four tiers to determine the rebate amount based on EV battery capacity
• Staff will evaluate utility program design and report back to the Board
In response to a 2017 court order, CARB developed a supplemental environmental analysis that was included in the rulemaking package.

- Overall, increased use of biodiesel and renewable diesel due to the LCFS results in health benefits.
- Under the current ADF regulation, future off-road sector NOx increases possible.
- The ADF regulation imposes restrictions on certain biodiesels to prevent significant new NOx emissions; amendments avoid potential future off-road NOx impacts.

**Original proposal:** Amend ADF Biodiesel NOx Sunset Provisions

- Biodiesel NOx provision sunsets when both on and off-road sectors are predominantly (90%) New Technology Diesel Engines (NTDE).

**Modified proposal:** Bifurcate the sunset provisions

- On-road sunsets when on-road sector reaches 90% NTDE (likely 2023).
- Off-road sunsets when off-road sector reaches 90% NTDE (likely after 2030).
### Other Modifications to Original Proposal

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<td><strong>Alternative Jet Fuels CI Benchmark Schedule</strong></td>
<td>• Modified the benchmark to match the diesel substitutes schedule to improve parity with other fuels</td>
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| **Refinery Investment Credit Program**         | • Increased limit on use of credits to meet compliance obligation  
• Allowed 15 years of credit generation for refinery improvements  
• Removed “pilot program” designation                                                                 |
| **Pathway Application and CI Determination**   | • Improved CI modeling tools with stakeholder input  
• Developed Tier 1 Simplified CI Calculators for all biomethane pathways  
• Revised Temporary CI value for dairy manure biomethane to -150 g/MJ                                                     |
| **Small Station Exemptions**                   | • Exempted stations dispensing up to 150,000 gal/year of fossil CNG and LPG until fuel is deficit-generating                                |
| **Carbon Capture and Sequestration Protocol**  | • Made technical improvements and clarifications  
• Limited credit invalidation to 50 years post injection with an additional 5% contribution to the Buffer Account               |
| **Third-Party Verification**                   | • Modified conflict of interest requirements and expanded eligibility for deferred verification to address verifier availability concerns |
Environmental Analysis

Draft Environmental Analysis (EA) completed and released for public comment
• March 9, 2018 – April 23, 2018
• Potentially significant impacts found for some resource areas
• Amendments will drive 63 million MT additional GHG reductions beyond the current regulation

GHG Emission Reductions Attributable to LCFS

CARB prepared the Final EA and written responses to comments received on the Draft EA
• Released in September 2018
Staff Recommendation

Approve the proposed Resolution which includes:

• Approval of written responses to environmental comments, certification of the Final EA, adoption of the Final NOx Disclosure Discussion and required CEQA findings

• Approval of the Proposed Amendments
Next Steps

- Closely monitor LCFS implementation
- Work with partners to implement low carbon fuel standard policies in other jurisdictions
  - Brazil
  - Canada
  - Oregon
- Report to the Board in spring 2019
  - Clean Fuel Vehicles Reward
  - Other follow up as needed
THANK YOU!