

Implementation of California's Low Carbon Fuel Standard

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Conference**

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 **Air Resources Board**



Today's Agenda

- Low Carbon Fuel Standard Background
- Current ARB Views on LCFS Verification Program
- Next Steps
- Questions



Low Carbon Fuel Standard (LCFS) Background

- LCFS mandated by California legislature via Assembly Bill 32
- Original Board adoption in 2009, amended in 2011, readopted by Board in 2015
- Credit market based strategy to reduce carbon intensity of transportation fuel pool by at least 10% by 2020
- Expected benefits:
 - Complement other GHG actions
 - Transform and diversify fuel pool
 - Reduce petroleum dependency
 - Reduce emissions of other air pollutants



LCFS Regulation Standard Based on Fuel Carbon Intensity (CI)

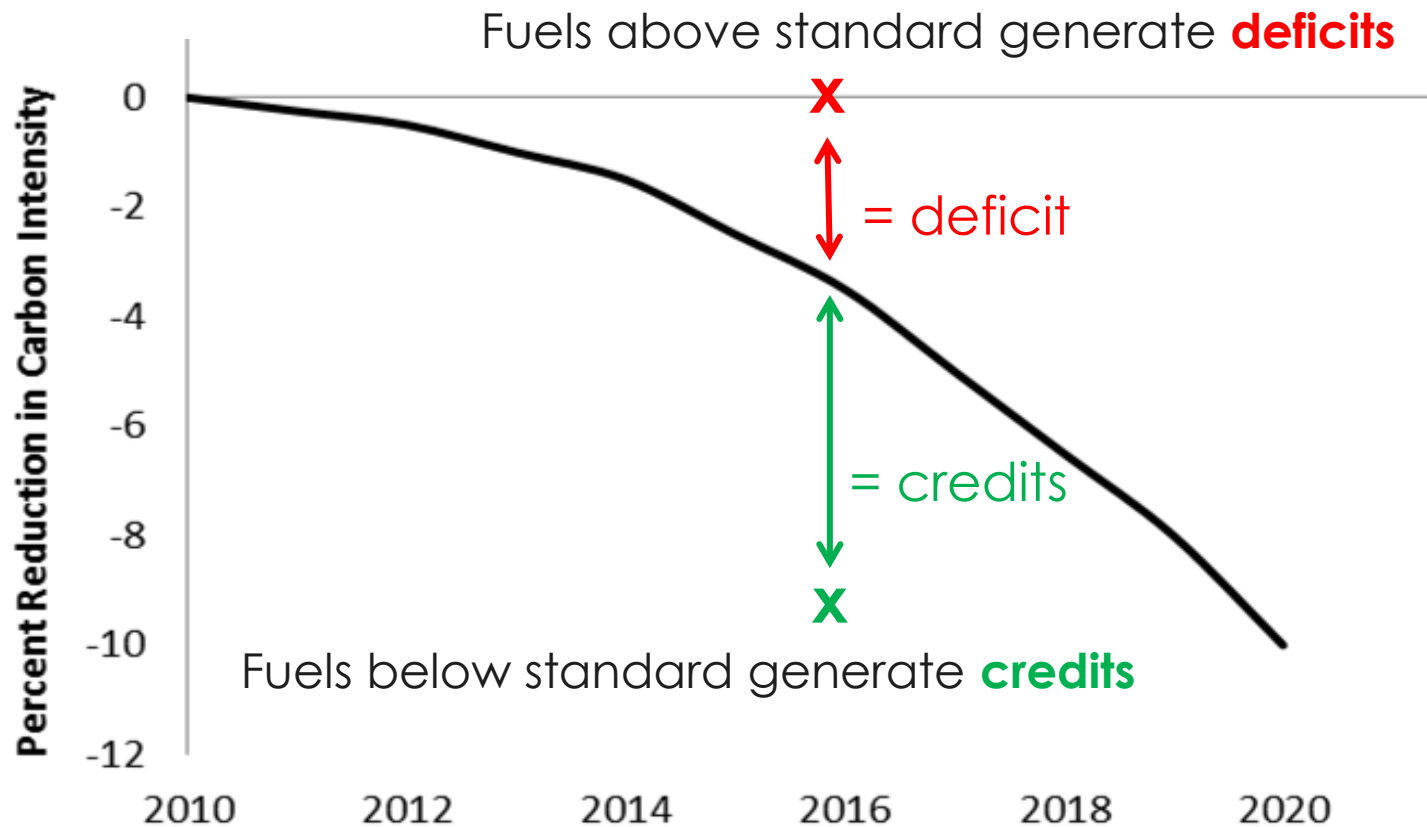
- Fuel CI derived from GHG lifecycle assessment of fuels expressed as gCO₂e/MJ
- ARB staff reviews fuel CI pathway code applications and certifies fuel pathway code CI values
- Fuel CI calculations based on the California Greenhouse Gas, Regulated Emissions, and Energy Use In Transportation model CA-GREET
- Amount of LCFS credits generated mainly determined from Fuel CI and reported fuel volume

Examples (as of 2/2/17):

Gasoline	100 gCO ₂ e/MJ
Diesel	102 gCO ₂ e/MJ
Biodiesel	9 to 62 gCO ₂ e/MJ
Ethanol	7 to 89 gCO ₂ e/MJ
Natural Gas	-273 to 90 gCO ₂ e/MJ



LCFS Carbon Accounting System

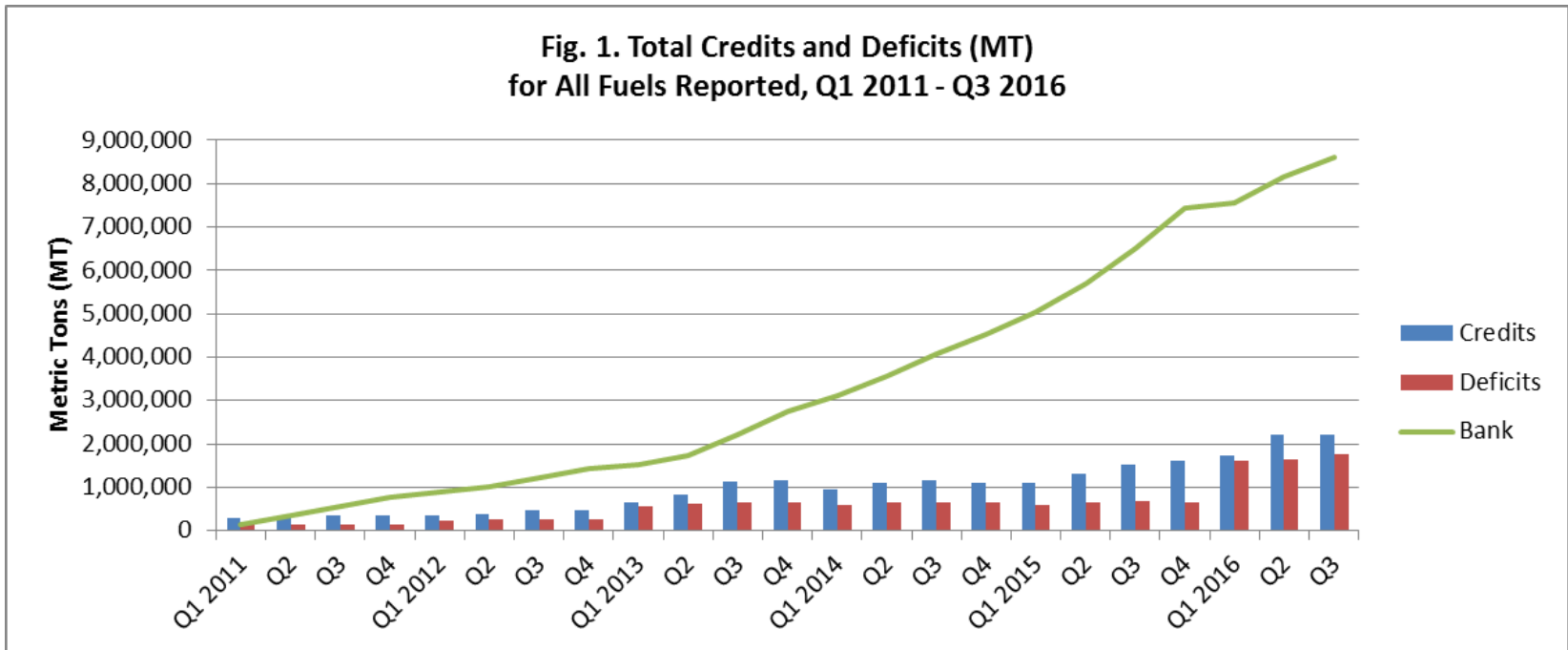


1 LCFS Credit=1 MT CO₂e



Growing LCFS Credit Market

**Fig. 1. Total Credits and Deficits (MT)
for All Fuels Reported, Q1 2011 - Q3 2016**



Source: <https://www.arb.ca.gov/fuels/lcfs/dashboard/dashboard.htm>

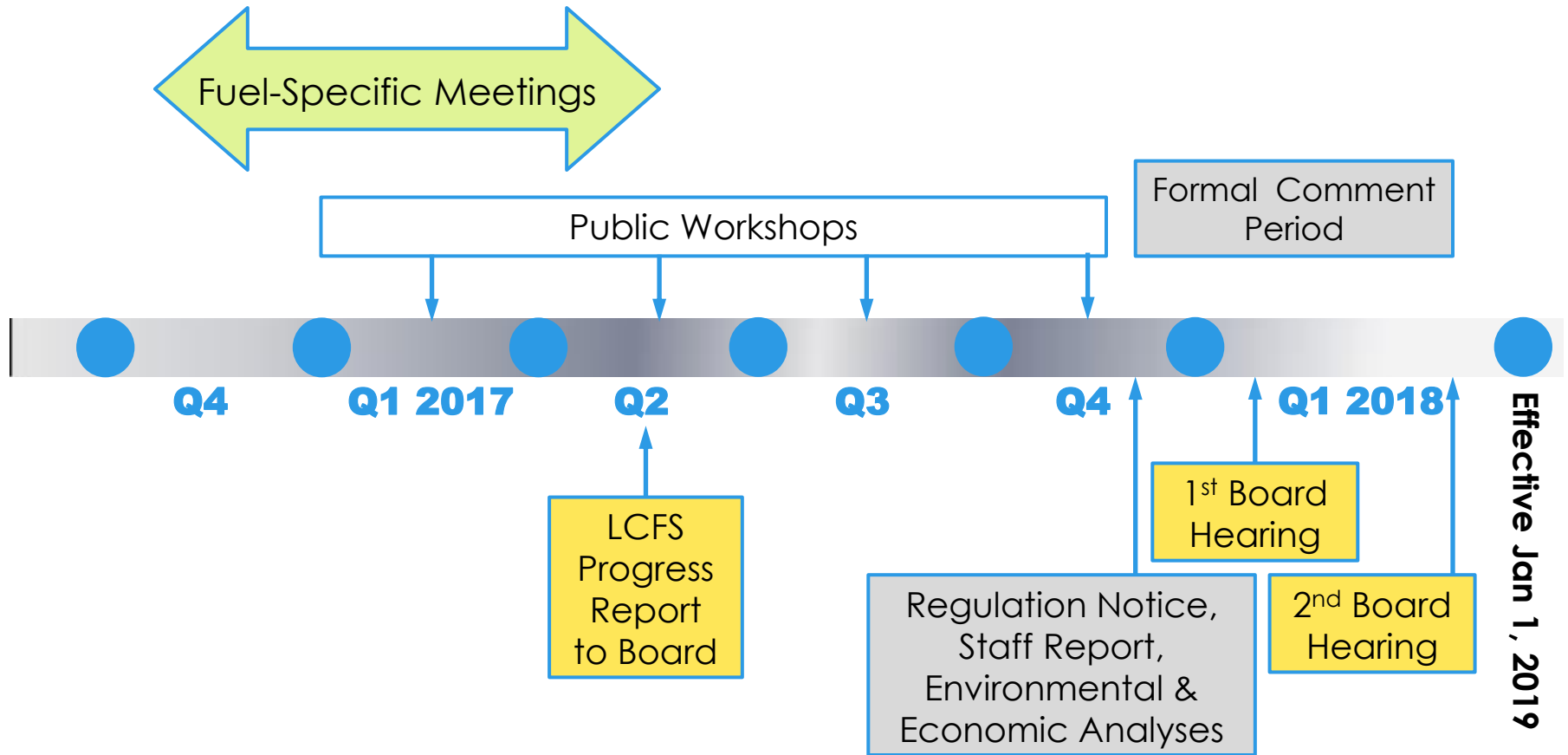


ARB Prioritizing Need for LCFS Verification Program

- Safeguard against fraud
- Improve pathway carbon accounting and reporting accuracy
- Strengthen buyer confidence with added integrity to the LCFS credit market
- Staff to present proposed LCFS regulation amendments to the Air Resources Board in early 2018



LCFS Rulemaking Timeline



Current ARB Views on LCFS Verification Program



Guiding Principles- LCFS Third-Party Verification Design

- ① ARB retention of sole authority over the LCFS program, including verification requirements;
- ② Continual improvement in the detection, prevention, and correction of errors or fraud;
- ③ Identification and implementation of cost reducing strategies, while maintaining verification rigor;
- ④ Policy consistency with other ARB verification programs; and
- ⑤ Consideration of the unique attributes of fuel carbon intensities and fuels marketing structure.



LCFS Third-Party Verification Overview

- Governance structure to recognize ARB role as Accrediting Body
- ARB to accredit **Verifying Bodies** which will conduct verification audits (similar to Certifying Bodies under ISCC Certification Scheme)
- LCFS verification to address:
 - Initial validation of CA-GREET input data from fuel CI pathway applications
 - Assurance that the actual CI of biofuel CI sold in CA. \leq ARB approved fuel pathway CI value
 - Assurance of reported fuel quantity accuracy
- Biofuel producers to be subject to fuel CI lifecycle verification audits, including production and certain feedstock supply chains
- Efficacy of fuel CI lifecycle verification will depend on well devised audit plans



LCFS Verification Responsibilities

Responsible for
• Validation &
Ongoing CI
Verification

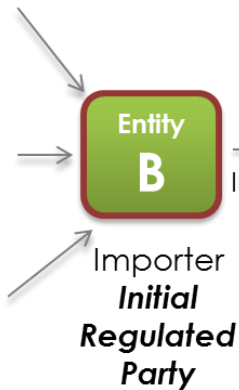
Responsible for
Fuel Volumes
Verification

No Verification Required

Responsible for
Fuel Volumes
Verification



Non-Opt-in
Production
Facilities



Imports



Marketer

→



Blender

→



Terminal

→



→



Exporter

CA



Fuel-Specific Stakeholder Meetings to Inform Audit Plans

- Providing staff with opportunity to engage with stakeholders to discuss unique attributes of their fuel's lifecycle, production processes, and distribution attributes
- Fuels being evaluated include:
 - fossil/renewable natural gas, grid/renewable electricity, biodiesel and renewable diesel, starch-derived ethanol, fossil/renewable hydrogen
- Staff has published several discussion papers to inform the fuel-specific stakeholder meetings

https://www.arb.ca.gov/fuels/lcfs/lcfs_meetings/lcfs_meetings.htm



Fuel-Specific Verification Audit Plans

- Verification Bodies to develop fuel-specific verification audit plans based on risk assessment and sampling procedures
- Staff is developing criteria to provide fuel-specific guidance for Verifying Bodies
- Biofuel producers to develop monitoring plans that inform audits points and areas of high risk
- Staff recognizes that existing certification systems can contain effective audit plans

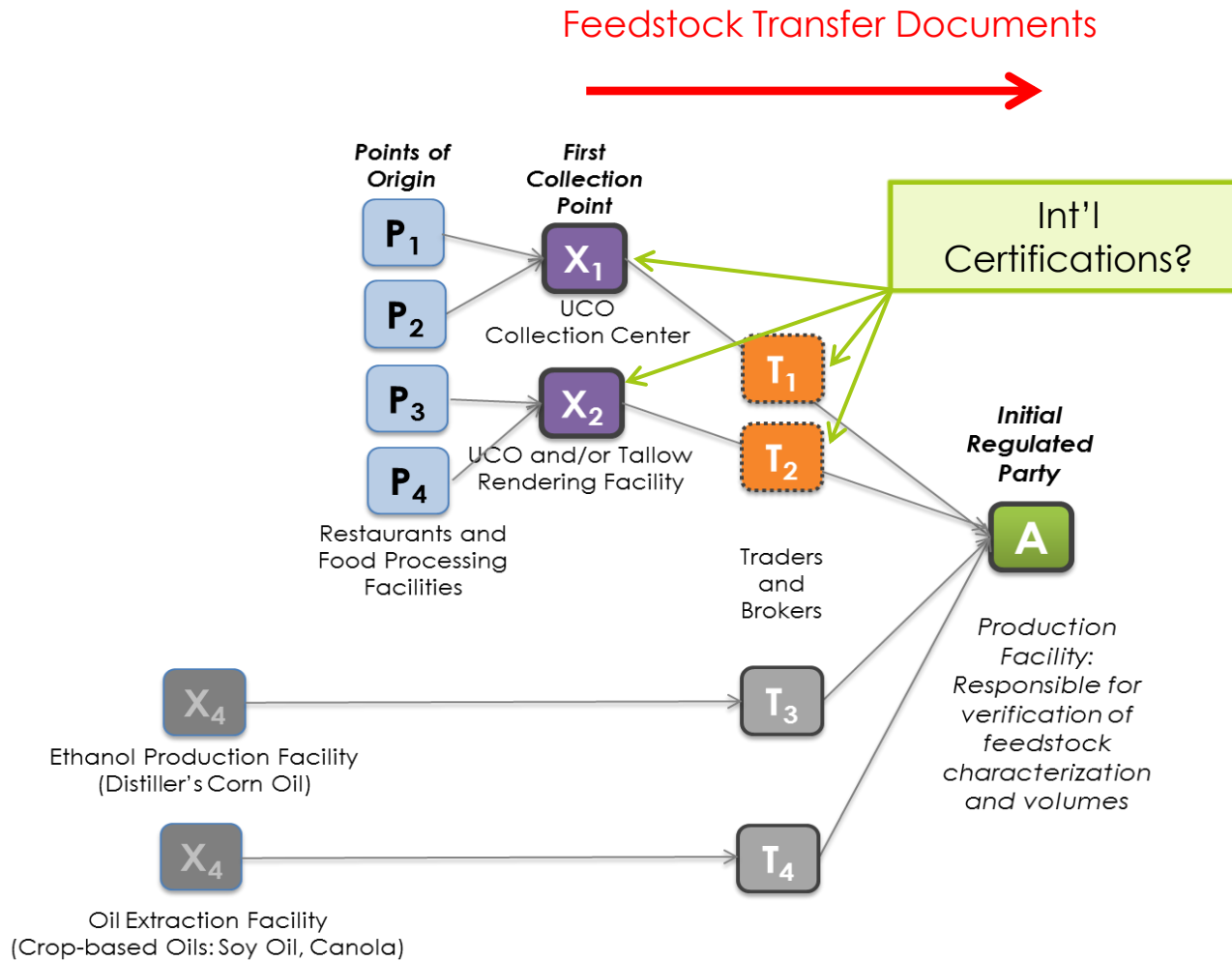


ARB Consideration of International Fuel Certification Systems

- Governance structure to accommodate ARB control
- Compare existing certification system audit points with developing fuel-specific verification audit plans
- Staff reviewing key best practices among international certification systems to benchmark material balance requirements for biofuel production and feedstock supply chains
- Explore potential to recognize international certifications within LCFS verification program



Example of Biodiesel Feedstock Supply Chain



Next Steps

- More work needed to complete assessment of international certification systems
- Complete stakeholder fuel-specific meetings and synthesize conclusions
- Draft staff proposal on detailed fuel-specific verification audit plan requirements
- Discuss at LCFS public Workshop tentatively scheduled for March
- Continue stakeholder dialogue



For More information...

- LCFS Homepage at: <https://www.arb.ca.gov/fuels/lcfs/lcfs.htm>
- General framework for LCFS verification program described in staff White Paper published on October 24, 2016 at:
https://www.arb.ca.gov/fuels/lcfs/lcfs_meetings/verification_whitepaper_102116.pdf
- Materials from previous public workshops at:
https://www.arb.ca.gov/fuels/lcfs/lcfs_meetings/lcfs_meetings.htm
- Schedule for upcoming meetings and workshops also distributed through LCFS email Listserve – sign up at:
https://www.arb.ca.gov/listserv/listserv_ind.php?listname=lcfs



Thank you, any questions?

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