

Low Carbon Fuel Standard: lifecycle assessment modeling

Public Working Meeting for Stakeholder Groups

April 4, 2017



Participating Remotely

- Posted materials can be found on the LCFS Meetings webpage

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

- To ask questions or provide feedback during the working meeting
 - Email sierrarm@calepa.ca.gov
 - Participate via conference call
 - 888-566-6573 (domestic)
 - 1-312-470-7419 (international)
 - Participant code: 7817399

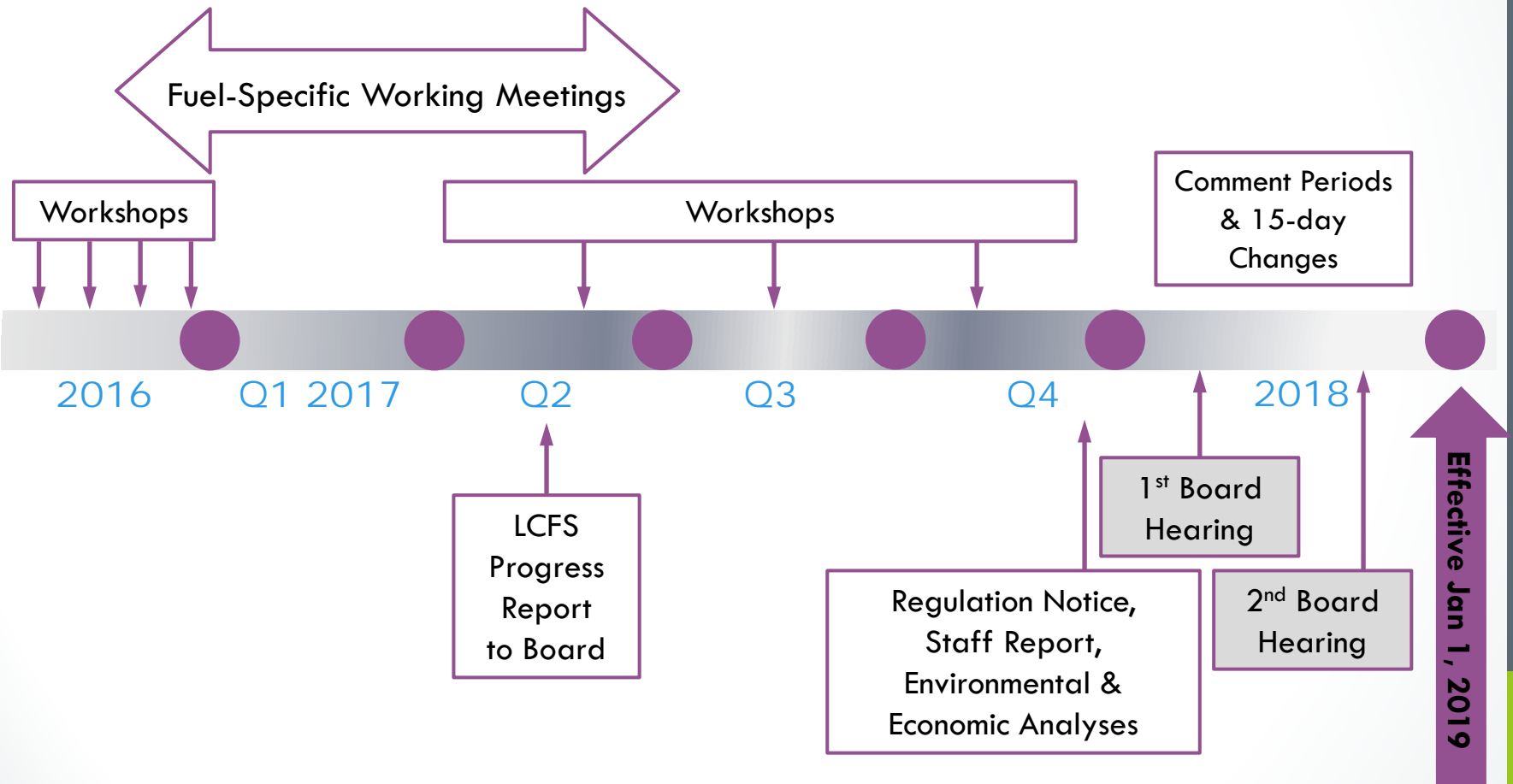
Outline

- Introduction
- Updates on LCFS Program Activities
- Potential Updates to CA-GREET
- Process for Updating OPGEE and the Crude Lookup Table
- Presentation by Stanford on Revisions to OPGEE
- Next Steps

Updates on LCFS Program Activities

PUBLIC PROCESS AND FUEL-SPECIFIC WORKING MEETINGS

Public Process (subject to change)



Public Process cont.

- Quarterly Workshops
- Workshops will focus on major program-related topics including:
 - Presentation of model updates
 - Findings from fuel-specific working meetings
 - Verification-related proposals
 - Consideration of post-2020 targets
- Public materials will include: preliminary draft regulatory text for discussion and informal feedback, findings of new/updated models.
- Next workshop tentatively scheduled for July 14

Working Meeting Update

- Focus on verification requirements & related improvements/streamlining to pathway application, evaluation, and reporting
- Several fuel-specific working meetings were held in December 2016, and Q1 of 2017:
 - Natural Gas and Biomethane
 - Electricity and Hydrogen
 - Potential Verifiers and Verification Bodies
 - Refinery Co-Processing
 - Ethanol
 - Biomass-based Diesel
 - Alternative Jet Fuel

Working Meeting Schedule

- Upcoming working meetings tentatively planned for the following dates:

Topic/Fuel Type	Proposed Date
Natural Gas and Biomethane (follow-up meeting)	April 17
Biomass-based Diesel (follow-up meeting)	May 15
Refinery Co-Processing (follow-up meeting)	June 2
Gasoline, Diesel and Crude Oil (1 st meeting)	June 2
Ethanol (follow-up meeting)	June 19

Meeting details and supporting documents available at:
https://www.arb.ca.gov/fuels/lcfs/lcfs_meetings/lcfs_meetings.htm

POTENTIAL UPDATES TO CA-GREET AND PATHWAY ANALYSIS

Updates to CA-GREET

- CA-GREET 3.0 will be based on Argonne National Laboratory's GREET1 2016
- A draft version expected to be released for stakeholder review and feedback in June/July 2017
- California-specific modifications envisioned:
 - Electricity grid resource mix from e-GRID 2014
 - Tailpipe emission factors from ARB Emission Factors (EMFAC) model 2014
 - Natural gas emission factors based on updates from ARB OMMGG branch (expected Aug 2017)
 - California refinery crude slate
 - Others as appropriate based on available data

Updates to Pathway CI Analysis

- Staff is considering simplification for Tier 1 fuels by providing simple pathway application forms
 - Facilitates pathway CI application, evaluation, and verification
 - Eliminates intermediate steps to convert operational data to CA-GREET inputs
 - Clearly indicates user-input fields subject to verification
 - Limits CA-GREET expertise requirement for applicants
- Pathway application forms provided for Renewable Natural Gas, Biodiesel/Renewable Diesel and Corn/Sorghum ethanol (Cane ethanol in June 2017)
- For upcoming fuel specific working meetings, application forms will be updated to reflect stakeholder feedback

PROCESS FOR UPDATING OPGEE AND THE CRUDE LOOKUP TABLE

OPGEE revision as per LCFS regulation

Low Carbon Fuel Standard § 95489 (C)(3)

“Revisions to the OPGEE model, addition of crudes to Table 8*, and updates to all carbon intensity values listed in Table 8* will be considered on a three-year cycle through proposed amendments of the Low Carbon Fuel Standard regulation”

*Table 8: Carbon Intensity Lookup Table for Crude Oil Production and Transport

Contract with Stanford Univ.

- PI: Adam R. Brandt
- Model improvements:
 - Oil sands mining and in-situ extraction
 - Bitumen upgrading
 - CO₂ enhanced oil recovery (EOR)
 - Hydraulic fracturing
 - Misc. updates

Timeline for OPGEE revisions

Proposed Date	
April 4	Present OPGEE revisions
May 4	Due date for stakeholder feedback
July 14 (tentative)	Present draft CI values at workshop
Late summer or fall	Present revised CI values based on stakeholder feedback

STANFORD PRESENTATION ON REVISIONS TO OPGEE

THANK YOU!

Feedback should be sent to

LCFSworkshop@arb.ca.gov

by May 4, 2017

Posted information from today's working meeting can be found at

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