

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

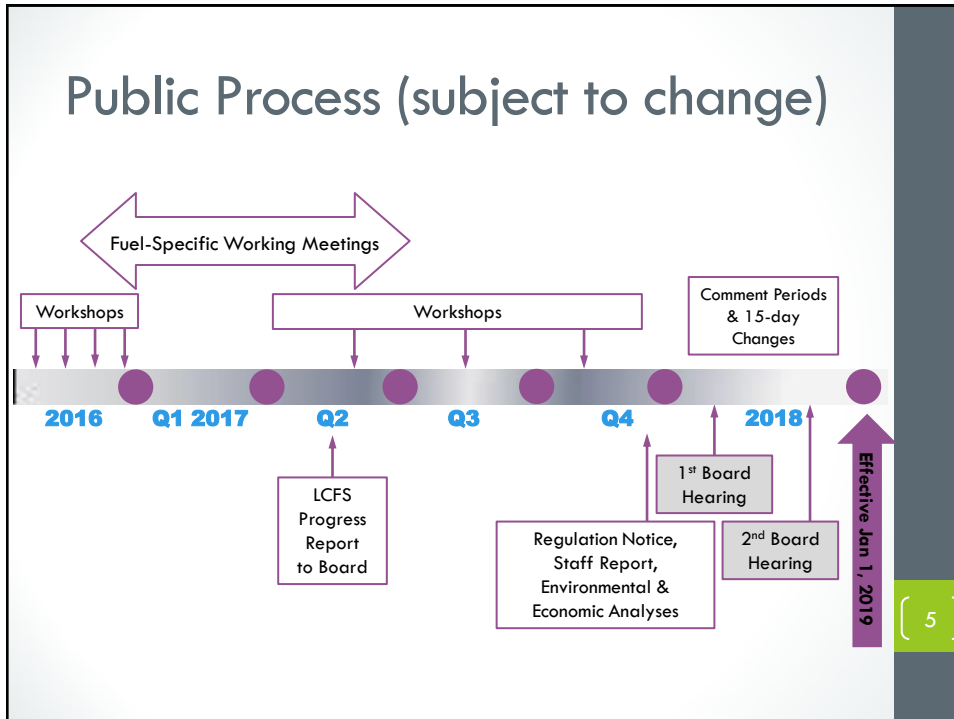
- Introduction
- Updates on LCFS Program Activities
- Potential Updates to CA-GREET
- Process for Updating OPGEE and the Crude Lookup Table
- Presentation by Stanford on Revisions to OPGEE
- Next Steps

[3]

Updates on LCFS Program Activities

**PUBLIC PROCESS AND FUEL-SPECIFIC
WORKING MEETINGS**

[4]



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

[6]

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

[7]

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

[8]

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

[9]

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

[10]

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

[11]

PROCESS FOR UPDATING OPGEE AND
THE CRUDE LOOKUP TABLE

[12]

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

[13]

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

[14]

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

[15]

STANFORD PRESENTATION ON REVISIONS
TO OPGEE

[16]

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

(17)