

California Environmental Protection Agency



**Air Resources Board**

***Low Carbon Fuel Standard  
Proposed Amendments***

**October 14, 2011**

# Agenda

- Introductions
- Updates
  - Land Use Change
  - Low-Energy-Use Refineries
- Revised Draft Regulatory Language
  - High Carbon-Intensity Crude Oil (HCICO)
  - Revised Definitions
  - Enhanced Regulated Party Revisions
  - Opt-In and Opt-Out Provisions
  - Credit Trading
  - Method 2A/2B Certification
  - Electricity Regulated Party
  - Energy Efficiency Ratio (EER) Revisions
- Next Steps

# *Updates*

- **Land Use Change**
- Low-Energy-Use Refineries

# *LUC Update*

- Purdue has posted an updated model version and report at: [GTAP Resource #3729](#)
- ARB staff and contractors are reviewing comments
- Planning a technical peer review of the modeling
- Deferred to summer 2012 Board hearing date
- Effective date of LUC and possible compliance schedule revisions will still be January 1, 2013.

# *Updates*

- Land Use Change
- **Low-Energy-Use Refineries**

# *Low-Energy Use Refineries*

- Working with ARB colleagues on refinery emissions
- Thorough technical analyses not yet completed
- Deferred to 2012

# *Proposed Amendments*

- **High Carbon-Intensity Crude Oil (HCICO)**
- Revised Definitions
- Enhanced Regulated Party Revisions
- Opt-In and Opt-Out Provisions
- Credit Trading
- Method 2A/2B Certification
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# Outline

- Regulation Revision
- Current HCICO Provision
- Proposed Changes
- Assessment of Proposal



# *Regulation Revision*

- Proposed amendments to current HCICO provision
- Staff considered several alternatives (six)
- Key guiding principles:
  - Accurate accounting for emissions from production and transport of crude oil
  - Discourage potential increases in emissions
  - Promote innovation for emission reduction activities
  - Avoid or limit incentives to shuffle crude

# *Proposed Approach*

## Proposed revisions: “California Average Approach”

- Accounts for and tracks overall average CI for the transport and production of crudes
- Provides incentive for companies producing own crude oil to reduce emissions
- Promotes innovation
- Provides greater flexibility to purchase worldwide crude supplies than current approach
- Provides simple approach, streamlined implementation.

# *Current HCICO Provision*

- Compliance schedule targets based on average Lookup Table values for CaRFG and ULSD
- Lookup Table values calculated using 2006 baseline crude sources
- Base Deficit: applies to all CARBOB and Diesel
- Incremental Deficit: only applies to fuels derived from HCICOs (CI > 15g/MJ) not part of basket
- Implementation of emission reduction technologies (to < 15g/MJ) eliminates incremental deficit

# *Proposed Changes: HCICO Provision*

- Remove designation of “baseline crude sources”
- Establish a baseline CA average crude CI
- Calculate a CA average Crude CI
- Base deficit same as current provision
- Incremental deficit applies to all CA refiners and importers if current annual Crude CI is greater than the baseline CI
  - Allows crude slate to shift without penalty if it does not become more emissions intensive

# *Proposed Changes: HCICO Provision (2)*

Establish LCFS credits for innovative methods, such as carbon capture, and sequestration to reduce emissions for crude recovery:

- Methods must be approved by EO
- Implementation of innovative method must have occurred during or after 2010
- Must result in reduction in crude oil recovery CI of 5 gCO<sub>2</sub>e/MJ or greater
- Number of credits equal to emissions reduction achieved by innovative method
- Credits will not be double-counted

# *Proposed Changes: Baseline*

- Update baseline from 2006 to 2009 - latest year for which data on CA Crude Slate is available
- Update baseline CA average crude production and transportation CI based on crude slate refined in CA in 2009
- Update Lookup Table CI values for CARBOB and ULSD with CA Average Crude CI for 2009
- Update compliance schedule targets based on updated values for CaRFG and ULSD

# Proposed Changes to Lookup Tables

Pathway	Current CI	Proposed CI
	(gCO <sub>2</sub> e/MJ)	
CARBOB	95.86	97.52
Diesel	94.71	96.36
Baseline California Average Crude Oil	8.07	9.72
Annual California Average Crude Oil	-	TBD

Annual crude average CI value will be first calculated for calendar year 2012 and subsequently updated annually using data for crude oil supplied to California refineries during specified calendar year

# Proposed Changes to Compliance Schedule

Year	Gasoline and Substitutes CI Requirements (gCO <sub>2</sub> e/MJ)		Diesel and Substitutes CI Requirements (gCO <sub>2</sub> e/MJ)	
	Current	Proposed	Current	Proposed
2013	94.89	96.42	93.76	95.40
2014	94.41	95.93	93.29	94.91
2015	93.45	94.95	92.34	93.95
2016	92.50	93.98	91.40	92.99
2017	91.06	92.52	89.97	91.54
2018	89.62	91.06	88.55	90.10
2019	88.18	89.60	87.13	88.68
2020	86.27	87.65	85.24	86.72

- Same percent reduction targets applied to the revised values for CaRFG and ULSD



# *Assessment of Proposed Changes*

- Proposed changes are improvement to current approach
- Proposal explicitly accounts for and tracks overall average CI for transport and production of crudes used by California refineries
  - Current regulation allows unmitigated CI increases in crude oil supplies from baseline countries and from crudes that have high CIs but do not exceed 15 gCO<sub>2</sub>e/MJ threshold for HCICO
  - Proposed approach removes possibility that such crudes could cause average CI from production and transport to increase but not be mitigated

# *Assessment of Proposed Changes*

- Proposal more accurately calculates the 2010 CI baseline for CaRFG and ULSD upon which the LCFS is based
- Because the revised baseline CI is slightly higher, 10% reduction goal of the LCFS will produce greater net emissions reductions
  - estimated at 650,000 MTs
  - about 1% of emissions reductions expected from LCFS over the 8 years between 2013 and 2020

# *Assessment of Proposed Changes*

- Proposal provides additional flexibility for refiners to:
  - change crude slates without incurring deficits
  - avoid need to prepare and get EO approval of CIs for every crude classified as a potential HCICO
- Proposal treats CA products and imported products consistently

# *Concluding Remark*

Staff is open to further dialogue and encourages stakeholders to submit comments

# *Proposed Amendments*

- High Carbon-Intensity Crude Oil (HCICO)
- **Revised Definitions**
- Enhanced Regulated Party Revisions
- Opt-In and Opt-Out Provisions
- Credit Trading
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# Revised Definitions

- LCFS Reporting Tool (LRT) terms
  - Deleted previously proposed section 95481.1 Definitions for LRT
  - Added terms in Table 3 to section 95481(a) Definitions
  - Remaining terms will be added to LRT User's Guide or LCFS Guidance Document
- Revised “Biogas,” “CNG,” and “LNG” definitions
- Added new definitions:
  - “Electrical Distribution Utility”
  - “Petroleum Intermediate”

# *Proposed Amendments*

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# *Enhanced Regulated Party Updates*

- Presented at second workshop – Sept 14, 2011
  - Revised “importer” and “import facility” definition
  - Deleted “transloading facility” definition
  - Revised “producer” definition
- Draft amendments would include as potential regulated party:
  - Out-of-state producers
  - Intermediate entities
  - Transloading operators



# Comments

## “Importer” and “Import facility” Definitions

- Revise “import facility” definition to account for revised definition of “importer”
  - Previous proposed “importer” refers to owner of product when delivered at the “import facility” in CA
  - Refers to “facilities” crossing the border
  - Not necessary to include “storage tank” or “cargo tank” as part of “import facility” definition
- Two separate parties can rightly claim to be the “importer”
  - “Import facility” definition includes both mobile transportation equipment and stationary storage tank
  - Need to define default “importer” and allow importer to be producer, intermediate entity, or other party delivering fuel

# *Enhanced Regulated Party Revisions*

- Revised “importer” definition
  - Refers to owner of the product at the point equipment entered CA
  - Includes transportation equipment that carried or held product when it entered CA
- Deleted “import facility” definition
- No additional revisions to “producer” definition

# *Proposed Amendments*

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# *Draft Amendments*

- Presented at second workshop – September 14, 2011
  - Opt in for
    - Non-CA ethanol or biomass-based diesel producers
    - Intermediates (between producer & importer)
    - Gas companies in lieu of fueling station owners
  - Address multiple parties claiming reg party status for same fuel
  - Revised 30-day opt out notice to 90 days
- Draft amendments specified procedure:
  - Opt-in order
  - Determining initial claim of credits

# *General Comments*

## Suggestions and recommended revisions:

- Revise language to include intermediates are not in CA and are not the direct importer
- Clarify language on who would receive credits if multiple parties claimed credits

# *Proposed Amendments*

- Add language to allow intermediates outside of CA to claim credits if producer of fuel does not opt-in
- Require producers and downstream parties to sell obligation to the fuel purchaser if they are not a regulated party or have opted in
- Specified order in which credits would be released

# *Proposed Amendments*

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# *Draft Amendments*

Presented at second workshop – Sept 14, 2011

- Revisions to 95484(b)
  - Credit Calculations
  - Annual Compliance
- Revisions to 95488
  - Unique IDs
  - Credit Transfer Form
  - Mandatory Retirement of Credits for the Purpose of Compliance



# *Draft Amendments (Cont.)*

Draft amendments offer:

- Clear distinction between credit generation and annual deficit compliance
- The framework for a credit trade market
- Details to be included for each credit transfer
- Unique IDs for tracking of credits
- Compliance hierarchy for credit retirement

# *General Comments*

Suggestions and recommended revisions:

- No distinctions for when a credit is generated
- Reporting of credit market activities remain on an aggregated basis
- Removal of credit price on credit transfer forms
- Review of credit transfer to occur within 6 months
- Clarify language in 95484(b) where compliance period is used in two separate ways

# *ARB's Response*

## Proposed amendments:

- Relocated 95484(b) to 95488(a)
- Revised Credit Transfer Form
  - Deleted Fuel Type
  - Unique IDs (dependent upon ARB development)

# *ARB's Response (Cont.)*

No proposed revisions:

- Average transaction price on Credit Transfer Form
  - Individual transaction prices will be kept confidential
  - Necessary to provide accurate trends for LCFS
- Credit Retirement Hierarchy
  - Default will be a sweeping of credits
  - Unique IDs would be necessary to handle specific retirements
- Credit Allocation Form (dependent on ARB development of Unique IDs)

# *Proposed Amendments*

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# *2A/2B Certification Program*

## Summary of Revisions to Draft Certification Program Language Since Previous Workshop:

- Lookup Table to Remain in the LCFS Regulation
- Changes to Method 1 and Method 2A /2B Provisions
- Revisions to Recordkeeping and Reporting Requirements
- New General Requirements and Other Provisions

# 2A/2B Certification Program

## Status of the Lookup Table in the LCFS Regulation:

- According to the APA, rules of general applicability must exist in a regulation
  - Therefore, Lookup Table to Remain in the LCFS Regulation
  - Maintains compliance with the APA
  - Table may be modified only through the regulatory change process (existing practice)
    - Example: new ARB-developed internal fuel pathways
- Method 2A-2B pathways are not rules of general applicability
  - Can be processed via a certification program
  - Will only be available for use by the Applicant

# *2A/2B Certification Program*

## Changes to Method 1 and Method 2A-2B Provisions:

- Language on allowable use of Method 1
  - Clarifies Intent of existing regulation
  - Lookup Table C.I. may be used for fuels with similar lifecycle WTW pathways
- No substantiality requirements for Method 2B
  - No minimum 5 MGY fuel production requirement



# *2A/2B Certification Program*

## Recordkeeping and Reporting Requirements:

- Recordkeeping requirements for co-products
- Only apply to co-products included in the C.I. calculation
  - RFS2 Fuel Producer Co-Product Sales Report constitutes acceptable documentation
- Reporting requirements for transportation distances and agricultural practices
  - No reporting required if GREET default values utilized

# *2A/2B Certification Program*

## New regulatory default C.I. values

- Available for fuels with unknown CIs
- Based on current Regulatory Advisory 10-04a provisions
- C.I.s of 99.40 and 94.71 g CO<sub>2</sub>e/MJ available for gasoline and diesel substitutes, respectively

# *2A/2B Certification Program*

## Other language affecting Certification Program

- Pathway application public review process described
- How Staff apply evaluation criteria when evaluating pathway applications
  - Replication of CA-GREET C.I. Values, Energy Consumption Verification, and Input Value Traceability

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# *Electricity Regulated Party Modifications to Proposal Since Last Workshop*

- All credit revenue required to be used for EV customer benefits or for public EV education
- Detailed annual reporting required
- EO approval added to trigger default regulated party
- Electrical Distribution Utility definition enhanced
- Provision added for transport electricity not otherwise included

# Credit Revenue

- All credit proceeds must be used for:
  - EV customer benefit
  - Public EV education
- LCFS credit proceeds shall not be used to replace other sources of funding for public EV education
- EV education efforts must be *in addition to* current efforts

# *Annual Compliance Reporting*

- Itemized summary of efforts to meet all requirements
- Accounting of credits
- Accounting of EVs operating in territory
- Demonstration that LCFS credit proceeds funded new/additional efforts

# *EO Approval for Default Regulated Party*

- Contract between first-in-line and default regulated party no longer proposed
- Approval by ARB's Executive Officer required for default regulated party to report for credits



# *Definition of Electrical Distribution Utility*

- Owns and/or operates an electrical distribution system
  - Investor Owned Utilities (IOUs)
  - Publicly Owned Electric Utilities (POUs)
  - Electrical Cooperatives
- Community Choice Aggregators (CCA)

# *Provision for Transportation Electricity Not Otherwise Accounted For*

For transportation electricity not otherwise provided for in this regulation, the Electrical Distribution Utility may opt-in as the regulated party

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# *Data for EER Calculation for FCVs*

- Honda FCX Clarity: 61 mpg
- Honda Accord (reference vehicle): 26 mpg
- $EER = 61 / 26 = 2.35$
- Mercedes F-Cell: 54 mpg
- Mercedes SLK350, SLK300, C300 (reference vehicle): 21 mpg
- $EER = 2.57$
- $Average\ EER = (2.35 + 2.57) / 2 = 2.46$

# *Data for EER Calculation for PHEV/BEV*

- Chevy Volt (electricity only): 93 mpg
- Chevy Cruze (reference vehicle): 28.3 mpg
- $EER = 93 / 28.3 = 3.29$
- Nissan Leaf: 99 mpg
- Nissan Versa (reference vehicle): 28.4 mpg
- $EER = 3.49$
- $Average\ EER = (3.29 + 3.49) / 2 = 3.39$

# *Next Steps*

- Comments due October 21, 2011
- 45-day comment period begins Oct 31, 2011
- Board hearing – Dec 15, 2011

# Contact Information

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<http://www.arb.ca.gov/fuels/lcfs/lcfs.htm>

**Thank You**