Low Carbon Fuel Standard Compliance and Enforcement Working Group 2 Meeting

December 13, 2007

California Environmental Protection Agency

Air Resources Board

Agenda

- Introduction
- Staff Presentation
- Stakeholder Presentations
- Future Meetings

Staff Presentation: LCFS Tracking and Reporting System

Presentation Overview

- US EPA Renewable Identification Number (RIN)
- UK Renewable Transport Fuel Obligation Reporting System
- A Combined Tracking and Reporting System for LCFS
- Examples and Discussions

U.S. EPA Renewable Identification Number (RIN)

Form of RIN

- RIN is a 38-character numeric code generated by producers/importers

KYYYYCCCCFFFFFBBBBBRRDSSSSSSSSEEEEEEEE

K = RIN assignment code (1=assigned, 2=unassigned)
YYYY = Year batch is produced/imported (when it leaves the facility)
CCCC = Company registration ID
FFFFF = Facility registration ID
BBBBB = Producer assigned batch number
RR = Equivalence Value for the renewable fuel
D = Renewable type code (1=cellulosic; 2=non-cellulosic)
SSSSSSSS = RIN Block Starting Number
EEEEEEEE = RIN Block Ending Number

Equivalence Values

- Indicates how many gallon-RINs can be generated for each gallon of renewable fuel
- Determined based on volumetric energy content in comparison to ethanol
- Cellulosic biomass ethanol is an exception

  1 gallon of cellulosic ethanol = 2.5 gallon-RINs, according to the Energy Policy Act of 2005

Equivalence Values

Renewable Fuel	Equivalence Value
Cellulosic biomass ethanol or waste-derived ethanol	2.5
Ethanol from corn, starches, or sugar	1.0
Biodiesel (mono alkyl ester)	1.5
Non-ester renewable diesel and hydrotreated renewable crudes	1.7
Butanol	1.3
Renewable crude-based fuels	1.0

EPA provides a process for calculating Equivalence Values for other renewable fuels

Product Transfer Document (PTD)

- Required when ownership of a renewable fuel is transferred to another party
- May be in any form (e.g. invoice) that evidences transfer of ownership of the renewable fuel
- PTD includes:
  - Name and address of transferor and transferee.
  - Transferor's and transferee's EPA company registration numbers.
  - Volume of renewable fuel being transferred.
  - Date of transfer.

Product Transfer Document (PTD)

- PTD also must document the transfer of ownership of RINs assigned to the fuel.
  - If RIN is transferred on the same PTD
    - The RINs must be listed on the PTD.
  - If RIN is transferred on a separate PTD
    - The “Fuel PTD” must state the number of gallon-RINs being transferred and a reference to the “RIN PTD”.
    - The “RIN PTD” must be transferred to the same party on the same day as the “Fuel PTD”.
  - If no assigned RINs are transferred, the PTD must state “No RINs transferred”.

Distribution of RINs with Renewable Fuel

- For renewable fuel producers and importers
  - Generate RINs to all the renewable fuel they produced or imported
- For parties that buy, sell, or handle renewable fuels
  - Any party is allowed to transfer a volume of renewable fuel without assigned RINs, or with a different number of assigned RINs than were received with fuel
  - Assigned RINs are completely fungible
  - Subject to the end-of-quarter check

Separating RIN from Renewable Fuel

- Separated RINs are not required to transfer with renewable fuel
- K code is changed from 1 to 2
- Parties that separate RINs are:
  - Renewable fuel blenders upon blending
  - Obligated parties upon ownership
  - Exporters upon export
  - Producers/importers if fuel is used in neat form

Distribution of Separated RINs

- RINs become freely transferable once separated from renewable fuel
- Obligated parties could acquire RINs through either:
  - Purchasing renewable fuel from any party with assigned RINs
  - Purchasing unassigned RINs on the open RIN market

UK RTFO Default Value Based Reporting System

What is the Renewable Transport Fuel Obligation?

- Apply to biofuel
- Renewable transportation fuel certificates (RTFC)
- Carbon accounting methodology/tool
- Evidence of land use
- Biofuel sustainability reporting
- Independent verification

Carbon and Sustainability Reporting

- General batch information
  - Administrative batch number
  - Volume of fuel
  - Fuel type
  - Feedstock
  - Feedstock origin
- Sustainability information
  - Environmental standard
  - Social standard
  - Land use in November 2005
- Carbon information
  - Carbon intensity (gCO_2e/MJ)
  - Impact of land use change (gCO_2e/MJ)
  - Accuracy level

Carbon Reporting Calculation Methodology

- Default values is the key

Type of Default Value	Accuracy Value
Fuel default	0
Feedstock default	1
Feedstock & origin default	2
Selected default	3
Actual data	4

A Combined Tracking and Reporting System for LCFS

Overview

- Apply RIN (with modification) as the tracking tool
- Create a default value based reporting system
  - Similar to that of UK RTFO
  - Based on ARB WTW life cycle analysis

Current Problems of RINs

- Fuel type, feedstock, and feedstock origin are not explicitly indicated in the RIN
  - The Equivalence Value can not determine a fuel
  - Company & facility IDs may help, but no guarantee
- Any party is allowed to transfer fuel without assigned RINs, or with a different number of assigned RINs than were received with fuel

Solutions to Make RINs Applicable to LCFS

- Only consider assigned RINs
- Fuel, feedstock & origin issue
  - Recommendation1: Add “FFSSOO” 6 more digits to RIN
    FF = Fuel type
    SS = Feedstock
    OO = Feedstock origin
  - Recommendation2: Request these info to be reported in PTD
- Fungibility issue
  - Request the party who allocates different values of assigned RINs to renewable fuel records the original RIN on PTD attached to the fuel

Default Value Based Reporting System

- Annual Report based on RIN records
- A look-up table consists of three level of default values
  - Fuel type
  - Feedstock
  - Feedstock origin
- GHG defaults to be determined by LCFS Life Cycle Analysis Working Group

GHG Actual Data Calculation Spreadsheets

- Based on ARB updated GREET model
- Flexible to different levels of proficiencies
- Basically covers:
  - Crop Production Stage
  - Drying & Storage Stage
  - Feedstock Transport Stage
  - Conversion Stage
  - Fuel Transport & Storage Stage
- ARB will provide verification protocols

Examples

Examples of RIN Generation

- Example 1:
  - Batch volume: 2000 gallons corn ethanol.
  - Equivalence value: 1.0.
  - Gallon-RINs: 2000.
  - Batch-RIN: 1–2007–1234–12345–00001–10–2–00000001–00002000.
- Example 2:
  - Batch volume: 2000 gallons biodiesel.
  - Equivalence value: 1.5.
  - Gallon-RINs: 3000.
  - Batch-RIN: 1–2007–1234–12345–00002–15–2–00000001–00003000.
- Example 3:
  - Batch volume: 2000 gallons cellulosic ethanol.
  - Equivalence value: 2.5.
  - Gallon-RINs: 5000.
  - Batch-RIN: 1–2007–1234–12345–00003–25– 1–00000001–00005000.

Example of UK RTFO Monthly Report

Batch number	Fuel type	Quantity of fuel (litres or kg[1])	Biofuel Feedstock	Feedstock Origin	Sustainability Information			Carbon Information		
					Env. Standard	Social Standard	Land use in Nov 2005	Carbon intensity	Impact of LUC	Accuracy level
								g CO_2e / MJ		
33001	Bioethanol	250,000	Wheat	UK	LEAF	Mechanised. + LEAF	Cropland	72	0	2
33002	Bioethanol	100,000	Wheat	France	-	Mechanised	Cropland	76	0	2
33003	Bioethanol	250,000	Sugar beet	UK	ACCS	Mechanised	Cropland	45	0	4
33004	Bioethanol	1,000,000	Sugar cane	Brazil	-	-	Cropland	19	0	2
33005	Bioethanol	500,000	Unknown	Unknown	-	-	Unknown	72	Unknown	0
33006	Biodiesel	1,000,000	Oilseed rape	UK	ACCS	Mechanised + RTFO	Cropland	79	0	2
33007	Biodiesel	250,000	Oilseed rape	Unknown	-	Mechanised	Unknown	79	0	2
33008	Biodiesel	500,000	Palm oil	Malaysia	RSPO + RTFO	RSPO + RTFO	Cropland	49	Unknown	2
33009	Biomethane	150,000	Dry manure	UK	By-product	By-product	By-product	36	0	2
33010	Bio-ETBE	500,000	Wheat	UK	LEAF	Mechanised + LEAF	Cropland	12	0	2

[1] biogas should be reported in kg and liquid fuels in litres

Examples of UK RTFO Default Value Tables

Level 0

Fuel	Carbon Intensity
	grams CO_2e / MJ
Bioethanol	78
Biodiesel	77
Biomethane	36
Bio-ETBE	42

Level 1

Fuel	Feedstock	Carbon Intensity
		grams CO_2e / MJ
Bioethanol[25]	Wheat	78
	Sugar beet	51
	Corn	125
Biodiesel	Oilseed rape	77
	Soy	59
	Palm	51
	UCO & tallow	14
Biomethane	MSW & manure	36
ETBE – refinery isobutene	Wheat	17
	Sugar beet	5
	Sugar cane	30
	Corn	42
ETBE – imported isobutene	Wheat	30
	Sugar beet	56
	Sugar cane	78
	Corn	51

Default Value Tables Cont'

Level 2

Fuel	Feedstock	Origin	Carbon Intensity
			grams CO_2e / MJ
Bioethanol	Wheat	Canada	104
		France	83
		Germany	77
		United Kingdom	78
	Sugar beet	UK	51
	Sugar cane	Brazil	20
	Corn	US	125
		France	62
Biodiesel	Oilseed rape	Australia	78
		Canada	77
		France	67
		Germany	69
		Poland	66
		United Kingdom	77
	Soy	Argentina	22
		Brazil	59
		USA	32
	Palm	Malaysia	51
		Indonesia	51
	UCO & tallow	UK	14
Biomethane	MSW or manure	UK	36
ETBE – refinery isobutene	Wheat	Canada	24
		France	17
		Germany	14
		United Kingdom	15
	Sugar beet	UK	5
	Sugar cane	Brazil	-6
	Corn	US	30
		France	9

Stakeholder Presentations

- BP
- Valero
- Lawrence Livermore National Lab
- Others

Open Discussion

Future Meetings

- Dates/Times
  - Mon. 1/7/2008, 9:00am-5:00pm
  - Wed. 2/13/2008, 9:00am-5:00pm
  - Wed. 3/12/2008, 9:00am-5:00pm
- Tentative Agenda
  - Incorporate RINs Compliance Mechanism into LCFS
  - Trading and Banking Issues
  - Certification/Auditing Process

For More Information

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