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Crude Oil Screening Workgroup Objectives

Background: On April 23, 2009 the California Air Resources Board (ARB/Board) approved the Low Carbon Fuel Standard (LCFS) regulation. At that hearing, the Board also adopted Resolution 09-31 which includes a number of provisions related to ongoing work on the LCFS. Two provisions relate to the preparation of guidelines to assist regulated parties in determining carbon intensity values for new or modified fuel pathways.

The Board-approved resolutions read:

“BE IT FURTHER RESOLVED that the Board directs the Executive Officer to work with interested stakeholders to prepare guidelines to assist regulated parties in determining the data, documentation, and other information needed to support the expeditious development of carbon intensity values for new or modified pathways...”

“BE IT FURTHER RESOLVED that the Board directs the Executive Officer to work with interested stakeholders to develop an informal screening process for assessing the carbon intensity of new or modified fuel pathways.”

ARB staff has formed an informal workgroup comprised of industry, government, environmental, and academic representatives to assist in developing a screening process for determining the carbon intensity of crude oil sources under the LCFS.

Workgroup Objectives:

1. Develop a recommendation for a screening process and criteria to be used to determine the appropriate carbon intensity to be assigned to crude oil sources which are not “included in the 2006 California baseline crude oil mix”.
Attachment 1 includes a proposed screening process and criteria developed by ARB staff which will be used as a starting point for the workgroup discussions.
2. Develop a recommendation for the level of specificity to be used when assigning carbon intensity values to crude oil sources which are not “included in the 2006 California baseline crude oil mix”.

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Attachment 1: Proposed Screening Process and Criteria for Evaluating Crude Oil Sources

The purpose of this section is to clarify how a regulated party determines the appropriate carbon intensity values for CARBOB and diesel fuel derived from different crude oil sources.

Definitions

- “included in the 2006 California baseline crude mix” means the crude oil constituted at least 2.0 percent of the 2006 California baseline crude mix, by volume, as shown by California Energy Commission records for 2006.
- “high carbon intensity crude oil” means any crude oil that has a total production and transport carbon intensity value greater than 15.00 gCO₂e/MJ.

Regulation requirements

Section 95486(b)(2)(A) of the LCFS regulation specifies the requirements for using the Lookup Table to determine carbon intensity values for CARBOB, gasoline, and diesel fuel. This section requires a regulated party to use the average carbon intensity value shown in the Lookup Table if the fuel is derived from crude oil that is either 1) “included in the 2006 California baseline crude mix” or 2) not a “high carbon intensity crude oil”. If neither of these conditions apply, the regulated party must either use 1) the carbon intensity shown in the Lookup Table corresponding to the crude oil’s pathway or 2) the carbon intensity determined via Method 2B if there is no carbon intensity shown in the Lookup Table corresponding to the crude’s pathway.

If Method 2B shows that the carbon intensity for crude oil production and transport is less than or equal to 15 gCO₂e/MJ, the finished fuel will be assigned the average carbon intensity value from the Lookup Table for CARBOB, gasoline, or diesel fuel.

Technologies such as carbon capture and sequestration may be used by a producer to reduce the carbon intensity for crude oil production and transport to less than 15 gCO₂e/MJ. If Method 2B shows that the carbon intensity value for crude oil production and transport is greater than 15 gCO₂e/MJ, the finished fuel will be assigned the total carbon intensity value determined by Method 2B.

Implementation:

The regulation language implies that ARB should promulgate a means of determining which crude oil sources will result in the finished fuel being assigned the average carbon intensity value from the Lookup Table.

- A. Crude oils which are “included in the 2006 California baseline crude oil mix”
Table 1 (next page) shows that at least two percent of the total California crude oil in 2006 was received from the following sources: California, Alaska, Saudi Arabia, Ecuador, Iraq, Brazil, Mexico, and Angola. Finished fuels derived from these sources will be assigned the average carbon intensity value from the lookup table.

Table 1: Breakdown of Crude Supplied to California Refineries in 2006¹

Source of Crude	Percentage of Total CA Crude
California	38.83
Alaska	16.12
Saudi Arabia	13.27
Ecuador	10.86
Iraq	8.57
Brazil	2.74
Mexico	2.36
Angola	2.29
Columbia	1.43
Oman	0.97
Venezuela	0.63
Argentina	0.53
All others	1.42

- B. Crude oils which are not “included in the 2006 California baseline crude oil mix”
A three step screening process will be used to determine the appropriate carbon intensity to be assigned to crude oil sources which are not “included in the 2006 California baseline crude oil mix”.
1. Low carbon intensity crude production: Crude oil production methods and reservoir characteristics will be evaluated using a conservative list of criteria. Those crude sources satisfying all of the criteria will be classified as low carbon intensity sources and fuels derived from these sources will be assigned the average carbon intensity value from the Lookup Table. Regulated parties will obtain data, make a determination, and report the data and determination to ARB. An example of potential criteria follows:
 - Crude oil with an API gravity greater than 20 and produced by means other than thermally enhanced oil recovery (e.g. cyclic steam injection, steam flooding, steam assisted gravity drainage) or crude bitumen mining.
 - Gas flaring at a rate less than 175 scf/bbl (5 scm/bbl).
 - Average reservoir depth less than 10,000 ft.
 - Produced and/or injected water to oil ratio less than 10 bbl/bbl.
 - Produced and/or injected gas to oil ratio less than 2000 scf/bbl.
 2. Crude oil sources not meeting these criteria will undergo a more rigorous screening by ARB to determine if the crude oil will be considered “low carbon

¹ California Energy Commission (2009). “Energy Almanac” Retrieved from <http://energyalmanac.ca.gov/petroleum/statistics>.

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intensity” or “potential high carbon intensity”. Additional data regarding crude oil production methods and reservoir characteristics may be required to complete this screening. [If the above data is not available, ARB will make a determination based upon the best available data for oil production from the given field and/or country]

3. Sources considered “potential high carbon intensity” will require a carbon intensity determination using Method 2B to determine if the crude oil meets the 15 gCO₂/MJ threshold.