

## FINAL REGULATION ORDER

(Note: This document is printed in a style to indicate changes from the existing language as approved by the Office of Administrative Law on January 12, 2010. All existing language is indicated by plain type. All additions to existing language are indicated by underline. All deletions to existing language are indicated by ~~strike through~~. Subsection headings are shown in *italics* and are to be italicized in Barclays California Code of Regulations.) The symbol ”\* \* \* \*” means that intervening text not being amended is not shown.

Amend sections 95480.1, 95481, and 95486, title 17, California Code of Regulations (CCR), to read as follows:

### **Subchapter 10. Climate Change** **Article 4. Regulations to Achieve Greenhouse Gas Emission Reductions**

#### **Subarticle 7. Low Carbon Fuel Standard**

##### **§ 95480.1. Applicability.**

(a) through (e) [NO CHANGE]

(f) Severability. Each part of this subarticle shall be deemed severable, and in the event that any part of this subarticle is held to be invalid, the remainder of this subarticle shall continue in full force and effect.

NOTE: Authority cited: Sections 38510, 38560, 38560.5, 38571, 38580, 39600, 39601, 41510, 41511, Health and Safety Code; and *Western Oil and Gas Ass'n v. Orange County Air Pollution Control District*, 14 Cal.3rd 411, 121 Cal.Rptr. 249 (1975). Reference cited: Sections 38501, 38510, 38560, 38560.5, 38571, 38580, 39000, 39001, 39002, 39003, 39515, 39516, 41510, 41511, Health and Safety Code; and *Western Oil and Gas Ass'n v. Orange County Air Pollution Control District*, 14 Cal.3rd 411, 121 Cal.Rptr. 249 (1975).

##### **§ 95481. Definitions and Acronyms.**

(a) *Definitions.* For the purposes of sections 95480 through 95489, the definitions in Health and Safety Code sections 39010 through 39060 shall apply, except as otherwise specified in this section, section 95480.1, or sections 95482 through 95489:

(1) through (20) [NO CHANGE]

(20.5) “GTAP” or “GTAP Model” means the Global Trade Analysis Project Model (~~February 2009~~ January 2010), which is hereby incorporated by reference, and is a software package comprised of:

- (A) RunGTAP (February 2009), a visual interface for use with the GTAP databases (posted at <http://www.arb.ca.gov/fuels/lcfs/lcfs.htm> in February 2009 and available for download at <https://www.gtap.agecon.purdue.edu/products/rungtap/default.asp>), which is hereby incorporated by reference;
- (B) GTAP-BIO (February 2009), the GTAP model customized for corn ethanol (posted at <http://www.arb.ca.gov/fuels/lcfs/lcfs.htm> in February 2009 and available with its components as a .zip file for download at <http://www.arb.ca.gov/fuels/lcfs/gtapbio.zip>), which is hereby incorporated by reference; ~~and~~
- (C) GTP-SGR (February 2009), the GTAP model customized for sugarcane ethanol (posted at <http://www.arb.ca.gov/fuels/lcfs/lcfs.htm> in February 2009 and available with its components as a .zip file for download at <http://www.arb.ca.gov/fuels/lcfs/gtpsgr.zip>), which is hereby incorporated by reference; ~~and~~
- (D) GTAP SOY (January 2010), the compressed file containing the GTAP model customized for Midwest soybeans (posted at <http://www.arb.ca.gov/fuels/lcfs/lcfs.htm> in January 2010 and available with its components as a .zip file for download at <http://www.arb.ca.gov/fuels/lcfs/gtap-soy.zip>), which is hereby incorporated by reference.

(21) through (42) [NO CHANGE]

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NOTE: Authority cited: Sections 38510, 38560, 38560.5, 38571, 38580, 39600, 39601, 41510, 41511, Health and Safety Code; and *Western Oil and Gas Ass'n v. Orange County Air Pollution Control District*, 14 Cal.3rd 411, 121 Cal.Rptr. 249 (1975). Reference cited: Sections 38501, 38510, 38560, 38560.5, 38571, 38580, 39000, 39001, 39002, 39003, 39515, 39516, 41510, 41511, Health and Safety Code; and *Western Oil and Gas Ass'n v. Orange County Air Pollution Control District*, 14 Cal.3rd 411, 121 Cal.Rptr. 249 (1975).

**§ 95486. Determination of Carbon Intensity Values.**

(a) [NO CHANGE]

(b) *Method 1 – ARB Lookup Table.*

- (1) To generate carbon intensity values, ARB uses the California-modified GREET (CA-GREET) model (version 1.8b, February 2009, updated December 2009), which is incorporated herein by reference, and a land-use change (LUC) modifier (when applicable). The CA-GREET model is available for downloading on ARB's website at <http://www.arb.ca.gov/fuels/lcfs/lcfs.htm>.

The Carbon-Intensity Lookup Tables, shown below, specify the carbon intensity values for the enumerated fuel pathways that are described in the following supporting documents, all of which are incorporated herein by reference:

(A) through (N) [NO CHANGE]

(O) Stationary Source Division, Air Resources Board (September 23, 2009, v.2.0), "Detailed California-Modified GREET Pathway for Co-Processed Renewable Diesel from Tallow (U.S. Sourced);" ~~and~~

(P) Stationary Source Division, Air Resources Board (September 23, 2009, v.2.3), "Detailed California-Modified GREET Pathways for Brazilian Sugarcane Ethanol: Average Brazilian Ethanol, With Mechanized Harvesting and Electricity Co-product Credit, With Electricity Co-product Credit-;"

(Q) Stationary Source Division, Air Resources Board (December 14, 2009, v.3.0), "Detailed California-Modified GREET Pathway for Biodiesel from Midwest Soybeans; and

(R) Stationary Source Division, Air Resources Board (December 14, 2009, v.3.0), "Detailed California-Modified GREET Pathway for Renewable Diesel from Midwest Soybeans.

*Table 6. Carbon Intensity Lookup Table for Gasoline and Fuels that Substitute for Gasoline.*

[NO CHANGE]

Table 7. Carbon Intensity Lookup Table for Diesel and Fuels that Substitute for Diesel.

Fuel	Pathway Description	Carbon Intensity Values (gCO <sub>2</sub> e/MJ)		
		Direct Emissions	Land Use or Other Indirect Effect	Total
Diesel	ULSD – based on the average crude oil delivered to California refineries and average California refinery efficiencies	94.71	0	94.71
Biodiesel	Conversion of waste oils (Used Cooking Oil) to biodiesel (fatty acid methyl esters -FAME) where “cooking” is required	15.84	0	15.84
	Conversion of waste oils (Used Cooking Oil) to biodiesel (fatty acid methyl esters -FAME) where “cooking” is not required	11.76	0	11.76
	<u>Conversion of Midwest soybeans to biodiesel (fatty acid methyl esters –FAME)</u>	<u>21.25</u>	<u>62</u>	<u>83.25</u>
Renewable Diesel	Conversion of tallow to renewable diesel using higher energy use for rendering	39.33	0	39.33
	Conversion of tallow to renewable diesel using lower energy use for rendering	19.65	0	19.65
	<u>Conversion of Midwest soybeans to renewable diesel</u>	<u>20.16</u>	<u>62</u>	<u>82.16</u>
Compressed Natural Gas	California NG via pipeline; compressed in CA	67.70	0	67.70
	North American NG delivered via pipeline; compressed in CA	68.00	0	68.00
	Landfill gas (bio-methane) cleaned up to pipeline quality NG; compressed in CA	11.26	0	11.26
	Dairy Digester Biogas to CNG	13.45	0	13.45
Liquefied Natural Gas	North American NG delivered via pipeline; liquefied in CA using liquefaction with 80% efficiency	83.13	0	83.13
	North American NG delivered via pipeline; liquefied in CA using liquefaction with 90% efficiency	72.38	0	72.38
	Overseas-sourced LNG delivered as LNG to Baja; re-gasified then re-liquefied in CA using liquefaction with 80% efficiency	93.37	0	93.37
	Overseas-sourced LNG delivered as LNG to CA; re-gasified then re-liquefied in CA using liquefaction with 90% efficiency	82.62	0	82.62
	Overseas-sourced LNG delivered as LNG to CA; no re-gasification or re-liquefaction in CA	77.50	0	77.50

	Landfill Gas (bio-methane) to LNG liquefied in CA using liquefaction with 80% efficiency	26.31	0	26.31
	Landfill Gas (bio-methane) to LNG liquefied in CA using liquefaction with 90% efficiency	15.56	0	15.56
	Dairy Digester Biogas to LNG liquefied in CA using liquefaction with 80% efficiency	28.53	0	28.53
	Dairy Digester Biogas to LNG liquefied in CA using liquefaction with 90% efficiency	17.78	0	17.78
Electricity	California average electricity mix	124.10	0	124.10
	California marginal electricity mix of natural gas and renewable energy sources	104.71	0	104.71
Hydrogen	Compressed H <sub>2</sub> from central reforming of NG (includes liquefaction and re-gasification steps)	142.20	0	142.20
	Liquid H <sub>2</sub> from central reforming of NG	133.00	0	133.00
	Compressed H <sub>2</sub> from central reforming of NG (no liquefaction and re-gasification steps)	98.80	0	98.80
	Compressed H <sub>2</sub> from on-site reforming of NG	98.30	0	98.30
	Compressed H <sub>2</sub> from on-site reforming with renewable feedstocks	76.10	0	76.10

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NOTE: Authority cited: Sections 38510, 38560, 38560.5, 38571, 38580, 39600, 39601, 41510, 41511, Health and Safety Code; and *Western Oil and Gas Ass'n v. Orange County Air Pollution Control District*, 14 Cal.3rd 411, 121 Cal.Rptr. 249 (1975). Reference cited: Sections 38501, 38510, 38560, 38560.5, 38571, 38580, 39000, 39001, 39002, 39003, 39515, 39516, 41510, 41511, Health and Safety Code; and *Western Oil and Gas Ass'n v. Orange County Air Pollution Control District*, 14 Cal.3rd 411, 121 Cal.Rptr. 249 (1975).