

Low Carbon Fuel Standard Workshop: Review of the Draft Regulation

October 16, 2008

California Environmental Protection Agency



Air Resources Board



LCFS Timeline Oct. 08 – March 09

October 08	<ul style="list-style-type: none">▪ Release draft regulatory language▪ Release preliminary estimates of land use change▪ Present compliance scenarios
November 08	<ul style="list-style-type: none">▪ Release revised fuel pathways▪ Update preliminary LUC numbers▪ Release preliminary environmental and economic analyses
Dec. 08 – Jan. 09	<ul style="list-style-type: none">▪ Develop ARB staff report▪ Initiate multi-media analyses▪ Update preliminary environmental and economic analyses▪ Continue public workshops
February 09	<ul style="list-style-type: none">▪ Publish staff report with proposed LCFS regulation▪ Continue public workshops
March 09	<ul style="list-style-type: none">▪ ARB Board hearing



Today's Meeting Agenda

Block 1: 9:30 am – 10:30 am	<ul style="list-style-type: none">▪ Compliance Schedules▪ Standards for Alternative Fuels
Block 2: 10:30 am – 11:30 am	<ul style="list-style-type: none">▪ Compliance<ul style="list-style-type: none">– Regulated Parties– Determining Compliance– Reporting and Recordkeeping
Block 3: 11:30 am – 12 noon	<ul style="list-style-type: none">▪ Credits Calculation, Banking & Trading▪ Determination of Carbon Intensity Values
12 pm – 1:00 pm	<ul style="list-style-type: none">▪ Lunch break
Block 4: 1:00 pm – 4:30 pm	<ul style="list-style-type: none">▪ Lifecycle Analysis – Land Use Changes▪ Multimedia Evaluations

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Feedback for Draft Regulation

- **Feedback requested for all sections**
 - Applicability
 - Standards
 - Standards for Alternative Fuels
 - Compliance
 - LCFS credits and deficits
 - Determination of carbon intensity values
- **Feedback requested by November 14, 2008**

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Questions/Comments

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§ 95421. Standards



Baselines

Gasoline:

- Carbon intensity: 96.7 gCO₂e/MJ
- Year: 2010
- Fuel: CaRFG containing 10% ethanol derived from corn

Diesel:

- Carbon intensity: 95.8 gCO₂e/MJ
- Year: 2010
- Fuel: ULSD without biomass-based diesel

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Compliance Schedule Gasoline and Gasoline Substitutes

Year	Carbon Intensity (gCO ₂ e/MJ)	% Reduction
2010	96.7	0
2011	96.5	-0.3
2012	96.2	-0.5
2013	96.0	-0.8
2014	95.5	-1.3
2015	94.5	-2.3
2016	93.1	-3.8
2017	91.4	-5.5
2018	89.4	-7.5
2019	87.5	-9.5
2020	86.5	-10.5

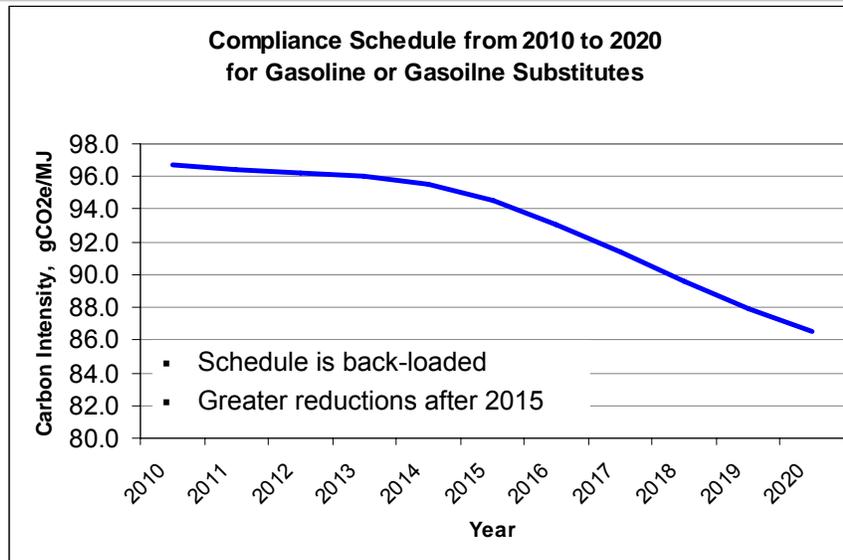
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Note. Additional reductions beyond 2020 to be determined.

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Compliance Schedule Gasoline and Gasoline Substitutes



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Basis for 2020 Standard

- Baseline is 2010
 - Gasoline likely to contain 10% ethanol in 2020
 - Previous baseline (2006) contains 6% ethanol
- Indirect land use effects cause slight increase in GHG emissions over 2006 gasoline
- 2020 standard (10.5%) designed to capture GHG increases from 2006 to 2010

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Compliance Schedule Diesel and Diesel Substitutes

Year	Carbon Intensity (gCO ₂ e/MJ)	% Reduction
2010	95.8	0
2011	95.6	-0.3
2012	95.3	-0.5
2013	95.1	-0.8
2014	94.6	-1.3
2015	93.6	-2.3
2016	92.0	-4.0
2017	90.5	-5.5
2018	88.6	-7.5
2019	86.7	-9.5
2020	86.2	-10.0

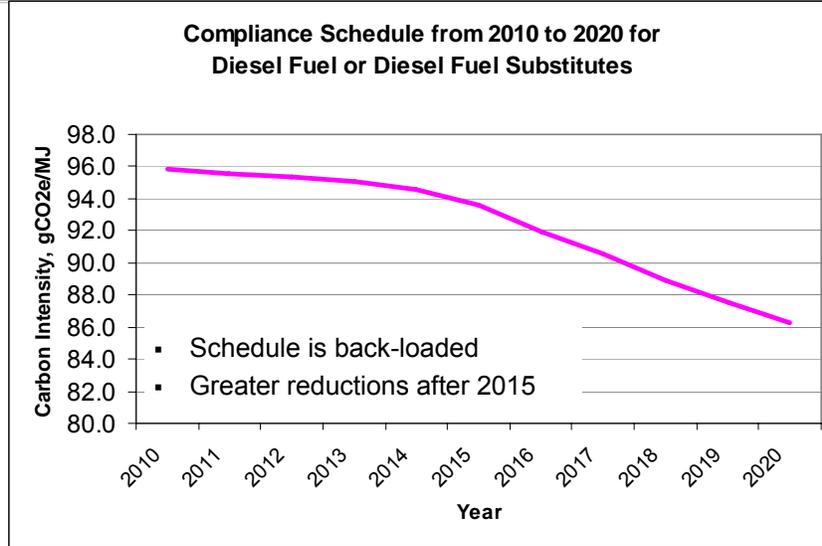
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Note. Additional reductions beyond 2020 to be determined.

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Compliance Schedule Diesel and Diesel Substitutes



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Questions/Comments

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§ 95422. Applicable Standards for
Alternative Fuels



Applicable Standards for Alternative Fuels

- **Gasoline and Alternative Fuels that Substitute for Gasoline (except biomass based diesel and diesel fuel used in light or medium duty vehicles)**
 - Light-duty vehicles
 - Medium-duty vehicles
- **Diesel and Alternative Fuels that Substitute for Diesel**
 - Light and medium duty vehicles
 - Heavy duty vehicles
 - Off-road transportation and equipment
 - Locomotive
 - Other applications

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§ 95423. Compliance

- Regulated parties
- Determining compliance
- Reporting requirement
- Recordkeeping and auditing



Gasoline, Diesel Fuel, and Blends

Gasoline and diesel:

- Producers, importers
- Transfer of title or custody
 - Recipient assumes obligation and becomes regulated party through contract
 - Transferor may choose to maintain obligation through contract with recipient
- Non-regulated party may not modify transferred fuel unless:
 - Become regulated party, or
 - Contract with regulated party to make modifications

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Natural Gas and Propane

Natural Gas (CNG, LNG, Biomethane) & Propane:

- Producer or entity responsible for quality
- Transfer of obligation
 - When title or custody is transferred, *transferor* remains the regulated party, unless
 - Transferee accepts obligation through contract

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Electricity and Hydrogen

Electricity

- Direct providers, including electricity Load Servicing Entities (Investor Owned Utilities and Publicly Owned Utilities)

Hydrogen

- Produced onsite: station owner
- Delivered: producer

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Determining Compliance

Compliance Period: Calendar Year, starting 2010

Compliance Determination: Sum of:

- Total gasoline + diesel credits
- Credit/deficit balance from prior year
- Credit retirement (earned or purchased credits)

If sum is:

- ≥ 0, compliance achieved
- < 0, violation

- Significant figures to be established

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Determining Compliance

Substantial violations:

- Credit deficit $\geq 10\%$ of Incremental Compliance Obligation
- Credit deficit (credits < 0) for 2 consecutive years
- May result in penalties

Non-compliance:

- Credit deficit $< 10\%$ of Incremental Compliance

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Incremental Compliance Obligation

- Used only for determining the extent of non-compliance (see § 95423(b)(2)(D))
- Measures additional reductions needed for current reporting period, as compared to previous reporting period
 - Calculates the difference in CI's of the standard between 2 consecutive years, starting 2011
- Similar calculation method and units as credits/deficits

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Determining Compliance

Deficits:

- Must be cleared by Dec. 31st of the next compliance period
- Without incurring a deficit in the current (second consecutive) year
 - Two consecutive years of non-compliance is “substantial”
- Parties in substantial noncompliance face the same deadline, plus possible additional penalties

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Reporting Requirements

Quarterly Progress Reports:

- All Regulated Parties must report quarterly on
 - *May 31st,*
 - *August 31st,*
 - *November 30th,* and
 - *February 28th (29th in a leap year)*

Annual Compliance Reports:

- Due by April 30, starting in 2011

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Reporting Requirements

Annual Compliance Report—Primary Contents:

- Parameters specified in Table 4 of the Draft Regulation
- Credits and deficits generated, acquired, or used
- Credits and deficits carried over from previous year

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Reporting Requirements

Quarterly Report—Primary Contents:

- Items specified in Table 4 (in the Regulation)
- Fuel volumes and carbon intensities
- Federal Renewable Identification Numbers (RINs) retired for California facilities

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Recordkeeping & Auditing

- Regulated parties maintain for three yrs:
 - Product transfer documents and progress and compliance reporting background information
 - Documentation of physical pathways by which ethanol and biodiesel arrived in California
 - Data and calculations behind reported carbon intensity values
- ARB can enter facilities to examine records relevant to compliance determination

Questions/Comments

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§ 95424 and 95425

- LCFS credit calculation, banking & trading
- Determination of carbon intensity values



LCFS Credits and Debits

Credit/debit calculations

- Used partly for determination of compliance
- Measured in metric tons of CO₂e (“MT”)
- Based on amount of gasoline and diesel fuel displaced (using EER values)

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Carbon Intensities in Credit Eqn.

- **Blendstock carbon intensity (UAFCI_i)**
 - Determined from fuels pathways in ARB CA GREET
 - Unadjusted by the EER
 - Does not change based on fuel mixture supplied
- **Compliance carbon intensity (AFCI_{compliance})**
 - Determined by a weighted average
 - Adjusted by the EER
 - Changes based on fuel mixture supplied

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Credit Trading and Banking

LCFS credits

- Can be generated starting 2010, quarterly
- Can be banked but may be capped in the early years (2010 to 2014)
- Are limited to regulated parties, or their agents
- May not be purchased, sold, or traded by non-regulated parties

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Questions/Comments

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Carbon Intensity Values: Method 1

Method 1: Lookup Table

- Provides carbon intensity values (CI) by fuel type
- Includes indirect land use values, where applicable
- A fuel or blendstock may have more than one CI
 - CI value depends on amount of information provided
 - For example, corn ethanol look-up table (Appendix B of the Draft Regulation)

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Other Considerations

Conventional Crude Oil:

- Current average crude used in California refineries
- Includes primary, secondary, and tertiary crude

Non-conventional crude oil:

- Crude from oil sands, CTL, GTL, oil shale
- Less than 10% above conventional crude oil carbon intensity – use conventional crude CI value
- Greater than 10% above, discuss with ARB
- **Lookup Table will provide values for conventional and non-conventional crude oil**

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Carbon Intensity Values: Method 2

Method 2: Customized Lookup Table

- Allow some changes to ARB CA GREET input
- Custom values to be added to Lookup Table
- Data/calculations submitted to ARB must be:
 - Scientifically defensible, and
 - Meet substantiality requirements:
 - a) carbon intensity values significantly different (>10% of Method 1)
 - b) regulated party provides at least 10 M gge/yr

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Questions/Comments

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Feedback Submission Procedure

- **Send email to Christina Zhang-Tillman (czhangti@arb.ca.gov)**
 - **Subject: “Comments for Draft LCFS Regulation”**
 - **Submit feedback as attachment**
- **Comments submitted will be posted online**
- **Comments must be submitted by:**

November 14, 2008

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