Low Carbon Fuel Standard

Board Update
November 18, 2010
Overview

• Background

• Progress to Date
  ➢ Emergence of Biofuels Industry
  ➢ LCFS Implementation

• Next Steps
  ➢ Ongoing Efforts
  ➢ 2011 LCFS Implementation
Background: Low Carbon Fuel Standard

• Results in a 10 percent reduction in the carbon intensity (CI) of transportation fuels by 2020

• Reduces 16 MMT GHG emissions from the transportation sector by 2020

• Achieves about 10 percent of the total emission reductions required to meet the AB 32 target

• Reduces petroleum use; supports investment and jobs in green transportation
2011 Implementation Important

• Timely implementation in 2011:

  ➢ Is a significant and important step in California’s efforts to reduce greenhouse gas emissions from motor vehicles; and

  ➢ Is critical for protecting the health, safety, and welfare of the State’s citizens and its environment.
California Clean Fuel Economy

- Two ethanol plants restarting: 115 MGY
- CEC awarded $4.96 million to four biofuel projects this month
- $45 million in DOE grants awarded to CA businesses
- $200 million Mendota sugar-beet-to-ethanol plant in planning stage
- 18 of the “50 Hottest Companies in Bioenergy for 2009-2010” are located in California
Venture Capital Investments in Green Transportation

* Data current to November 2010
Data Source: Cleantech Group™, LLC (www.cleantech.com)
Projected Job Growth in US for Advanced Biofuel Production

Graph from: US Economic Impact of Advanced Biofuels Production: Perspectives to 2030, bio-era, Feb 2009
Alternative Fuels Job Growth in California

134% growth from 1995-2009

Number of New Jobs

Year

Data Source: Green Establishment Database
Progress on Program Implementation

• Key Progress Areas

- Low carbon fuel standard reporting tool
- Expert workgroup on land use and other indirect effects
- Biorefinery registration program
- New and modified fuel pathways
- Screening process for crude oils
- Credit trading program
- Advisory Panel
LCFS Reporting Tool

• ARB initiative to provide a secure web-based data collection and report generation system

• Assists regulated parties with compliance

• Enhances ARB enforcement efforts

• Official version released November 2010

• Additional enhancements ongoing
Expert Workgroup

- Convened at the Board’s direction
- Includes international experts from industry, academia, NGO, and government
- Nine subgroups formed to evaluate elements of land use change and indirect effects analysis of transportation fuels
- Recently completed draft recommendations from each subgroup posted on ARB website
Basis for Preliminary Staff Recommendations

• Draft final subgroup recommendations

• Analysis of an updated Purdue University study of land use changes for ethanol

• Independent contractor assessments of the Purdue modeling

• Subject to change based on additional analysis and public comment
• The new Purdue analysis included three modeling approaches for estimating LUC

• Staff supports Subgroup recommendation that ARB use the “Group 2” simulation methodology as basis for future analysis

• Recommendation incorporates an update of the economic baseline from 2001 to 2006

• This change reduces land use change for corn ethanol by about 50 percent
• Other updates in the new Purdue analysis
  1. Cropland pasture in U.S. and Brazil
  2. Energy sector supply and demand elasticities
  3. Treatment of co-products
  4. Structure of the livestock sector
  5. Productivity of new cropland
  6. Yield response to higher crop prices
  7. Emission factors

• Staff proposes to support updates one through five above; additional analysis required on the last two
Other Near-Term Recommendations

- ARB staff supports the following additional near-term recommendations:
  - Revise the sugarcane ethanol and soy biodiesel land use change using the updated GTAP model
  - Adopt consistent set of inputs for biofuel pathways
  - Re-evaluate the distillers grain co-product credit
  - Better understand changes in food consumption predicted by the new model version
  - Assess/justify time accounting methodologies
  - Continue to update/improve the land pools considered as accessible in GTAP
  - Continue to address the indirect effects of conventional fuels

- Impact of these changes is unknown
Next Steps

• Complete contracts for additional analyses of key inputs

• Assess subgroup recommendations

• Present analysis for public comment

• Propose amendments for Board consideration in the Spring of 2011, or as expeditiously as practical afterward
Biorefinery Registration Program

• Regulation specifies carbon intensity for many common fuel pathways

• Staff developed voluntary biorefinery registration program

• Approximately 60 facilities are currently registered

• Facilities represent over 2.8 billion gallons of biofuels
New and Modified Fuel Pathways

• Regulation provides option for producers to request new or modified pathway

• Guidelines issued to facilitate submittals

• Once approved through regulatory process, the value becomes part of the regulation

• Current applications in process represent:
  ➢ 33 facilities
  ➢ ~1.3 billion gallons of biofuels
CI for “Generic” Ethanol

• Lookup table contains carbon intensity value for average Midwestern corn ethanol

• The value is 99.4 grams of CO$_2$e/MJ

• Consistent with original intent, staff is clarifying that this value can be used for “generic” ethanol when the source and carbon intensity cannot be reasonably identified
Crude Oil Screening Process

• Use of more high-carbon-intensity crude oil (HCICO) than is in the baseline would reduce the anticipated benefit of the LCFS

• LCFS mitigates this by requiring HCICO to use an appropriate CI value – higher than the CA average

• Staff working with stakeholders to develop screening process to identify potential HCICOs

• ARB will maintain a CI list of HCICOs & non-HCICOs
Interim Approach for HCICO

1. Sufficient information and screening protocols not yet available to help stakeholders determine carbon intensity of HCICO

2. Need to provide guidance on the use of interim values

3. Staff proposes to allow use of existing baseline values for a limited time until sufficient information exists to identify and quantify HCICOs

4. Staff anticipates completing analysis and recommending amendments to the Board in 2011
• LCFS allows credit trading for compliance beginning in 2011

• System under development to streamline process
  - Near-term: simplified system
  - Long-term: electronic system

• Expect credits to be earned in 2011, traded in later years
Other LCFS Activities

• “Best Practices” Biorefinery Siting Guidance

• Electricity Credits

• Sustainability Provisions

• Environmental review of specific biofuel projects

• Assess Energy Economy Ratios of light- and heavy-duty vehicles

• Multimedia evaluation for bio- and renewable diesel
Advisory Panel

- Regulation requires external Advisory Panel to support staff in its review of LCFS

- Will hold public meetings with reports to Board by January 2012 and January 2015

- Staff solicited and is reviewing applications

- Appointments will be made in December 2010

- First meeting in January 2011
LCFS Implementation in 2011

• Requires a modest reduction of 0.25% in carbon intensity as part of gradual ramp-up to 2020

• Considered an implementation year with focused enforcement

• Provide “generic” CI for ethanol when unknown to ensure full participation of regulated parties

• Allow limited use of current baseline value for HCICO

• Provide transparency to assure public confidence
Summary

• Considerable progress since program was adopted

• Prepared for 2011 as implementation year

• Need for ongoing flexibility during transition to full implementation

• Maintain and build on close collaboration with stakeholders

• Return to the Board in 2011 with amendments and updates
Recommendations

• Reaffirm staff’s activities in fulfillment of Resolution 09-31

• Affirm staff’s plans for 2011 as necessary and appropriate for implementing the LCFS