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**Low Carbon Fuel Standard Advisory Panel
Meeting Notes
June 30, 2011 • 10:00 a.m. – 4:00 p.m.
July 1, 2011 • 9:00 a.m. – 2:30 p.m.
Cal EPA Building, 1001 I Street, Coastal Room**

June 30, 2011

Opening Remarks

Richard Corey thanked the panel for their engagement and the progress made in the last four months. He reminded the panel that the target is to have the program review report to the Board in December as specified in the regulation. ARB is working on the layout and topic groups for the final report and will post it when approved. Michelle Buffington outlined the workflow agenda for the next two days and reviewed the workflow process for the overall report. She identified each point in the process where panelists could provide input and future meeting dates. ARB staff incorporated comments from the April 26, 2011, meeting into the drafts of the workplan and the outline for ultralow carbon fuels topic. She also requested that if you propose more work, please include a proposal for accomplishing that work. Comments on materials covered in the next two days should be submitted via web and email to Michelle by Friday, July 15, 2011. Members of the LCFS Advisory Panel are working in parallel with the staff who are developing the regulatory amendments, which are being workshopped separately from the Advisory Panel meetings.

Staff Presentation: Environmental Outline

Michelle Buffington presented the Environmental Outline. Panel members offered the following comments on the topic:

- Biobutanol is not included in the list of multimedia fuels in the environmental outline. Will it be evaluated and included? Biobutanol is in the Tier 2 phase of the multimedia process and may be completed by the end of this year. *Staff agreed to add biobutanol to the chapter.*
- How is the scope of environmental analysis defined? There are some valuable pieces here but an environmental analysis could certainly be broader. *Staff will be discussing the environmental impacts within California.*
- One member inquired about the ethanol ratings and suggested the results with E15 be shared in the August meeting.
- A comment was offered regarding impact location, GHG, shuffling and their unintended emissions. *Staff noted this comment.*
- A question was raised about whether the report will discuss how to capture potential benefits for emerging fuels and how they can help the state achieve its LCFS goals? *Staff is looking at the penetration alternative fuels and how they are coming along.*

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- Will the final report include any information regarding biorefinery siting guidance? *Staff noted that there would be a summary of the biorefinery siting guidance document in the report. The biorefinery siting guidance document is in final review with upper management and should be released shortly.*
- Is it possible to assemble a library of successful CEQA documents/processes? *Staff noted this request.*

Public Comment

Roger Galt (Engine Manufacturers Association)

- Regarding higher ethanol content infrastructure, is there going to be a process to address concerns? Any change in the fuel supply that impacts the consumer. He suggested that ARB often overlooks what happens at the retail outlets and that customer impact should be included in the analysis. The problems do work themselves out, but there is always a short-term impact.
- Regarding LCFS credit issue, even though LCFS credits currently have an indefinite life, they will likely switch to a restricted life. *Staff noted the credits are for life and are an important compliance element.*

Staff Presentation: Economic Outline

Mike Waugh presented the Economic Outline. Economic impacts are assumptions-based out of necessity. In 2009, staff projected that oil production costs will go up and alternative fuel production costs go down. Analysis does keep tax incentives in place and came up with a potential savings to consumers. The EPA did its analysis with and without tax incentives and the numbers are very similar. The 2009 analysis assumes California refineries will continue to operate at base capacity but does not take into account the marginal cost of alternative vehicles because the LCFS does not mandate any type of vehicle. For the 2011 review, staff will be updating the analysis from two years ago and making several significant changes to it, using a new set of illustrative compliance scenarios.

Panel Discussion: Economic Outline

The panel raised a number of comments, questions, and concerns:

- Need for more sensitivity in the analysis. Sonia volunteers UC Davis for economic analysis (graduate students research team). Analysis should consider the impact to consumers, alternative fuels, and costs. *Staff noted Sonia's offer and will follow up with her after the meeting.*
- Need to look at the reality of alternative fuel prices, market assessment, and the incremental costs of replacing corn-based ethanol.
- Should assess the impact of innovation and technical progress rates.
- Examine capital costs versus cost of capital.
- A panel member suggested examining cellulosic fuels and supply and their availability.

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- A set of issues were raised ranging from impact of crude oil prices, electricity, enforcement, infrastructure, job creation and loss, market/technology investment, safety values, small business, social benefits, and transparency.
- Renewable Fuel Standard was reviewed relative to costs, credits, and economic impact.

Public Comment

John Braeutigam

(Vice President, Strategic and Regulatory Development, Valero, San Antonio, Texas)

- Need to consider a scenario where we do not meet the total volume of ethanol needed to fuel the projected FFVs on the road. We are not even on a track where we thought we would be. We are really looking at what is going to happen with this program by 2020. Cellulosic ethanol is running at eight times the capitol cost.
- Regarding E85, what about a case where the capital is not there? How do they fund the capital (to put all of the stations into the market)?

Roger Galt (Engine Manufacturers Association)

- The scenario currently exists where everything over E10 is E85. He suggests looking at a range of ethanol blends.

Staff Presentation: Supply and Availability Outline

Michelle Buffington presented the Supply and Availability Outline. It includes topics 6 and 7. The outline is less developed than the two topics discussed in the morning session. She requested input from the panel to expand this chapter. This chapter might be merged with the technology chapter because there is a lot of similar qualitative and quantitative analysis information.

Cathy Reheis-Boyd (Western States Petroleum Association) presented of graph of the carbon intensities of ethanol WSPA believes is necessary to comply with the LCFS requirements for gasoline assuming that the blend wall stays at E10. [The slide is NOT a representation of whether regulated parties may or may not comply with any regulatory requirement(s). Compliance with regulatory requirements is an individual company/facility process and WSPA does not participate in that process].

Panel Discussion: Supply and Availability Outline

The panel raised a number of comments, questions, and concerns:

- The issue of biodiesel not currently having a specification for fuel quality was raised and discussed. *Staff noted that a specification was under development and that ARB has no regulatory standards applicable to biodiesel in the state.*

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- A panel member commented about the need for a carbon impact analysis that includes technology improvements. *Staff is examining data and will share it when it is ready for distribution.*
- The impact of credits was discussed. The overarching question is who has the credits? An obligated party under LCFS or under AB32? Credits will be generated and we suspect people will want to use them in multiple programs. *Staff noted this comment, but pointed out that currently the regulation is written that credits can leave the LCFS market, but outside credits cannot be brought in. At this time, other programs have not included provisions for accepting LCFS credits.*
- The issue of electricity as a low cost strategy was discussed, however there were concerns about what would be driving the buildup of these vehicles and in the near term would they fill the void of other fuels. *Staff noted that they are evaluating the issues and current EV drivers*
- Looking at the WSPA charts to project the time period when issues may arise and discussion on what issues would either shorten or lengthen the time before potential compliance issues arose with the key date centering around 2015
- Was ARB tracking the impact of sugar beet ethanol in California. *Staff noted they were and a presentation was discussed in the Sustainability Workgroup.*
- The necessity for identifying and referencing useful information sources was raised. *Staff noted the comment.*
- CEC should play a big part in this. What kind of input are they providing? *Staff noted that if CEC data is released early enough to incorporate into the chapter, staff will make all efforts to update the write-up.*
- Other comments referenced: the impact of carbon intensity and the potential for CI values to change; the WSPA slide presentation and if there were additional entities that were evaluating the compliance schedule; infrastructure and would the medium to long term low CI value fuels be supported enough to meet their target dates; and timeline for consideration as to when the LCFS program should begin to worry about the fuel not being present in the necessary quantities to sustain itself.. *Staff noted they were investigating the various issues and that they would return to the Panel with more information once available.*

Staff Presentation: Credit Market Outline

Christina Zhang-Tillman presented the Credit Market Outline. This topic was added in response to panel comments in earlier sessions although it has been important since the beginning of LCFS. Staff is looking at programs outside LCFS as well as biofuel and refinery data for possible improvements to the LCFS credit trading system. Staff is focused on developing short term solutions including regulatory language and will present concepts in the July workshop. The short term solutions have been developed and ARB is putting together a contract to enhance the LCFS reporting tool to handle accounting and trading credits. It will be an integrated solution to make things easier for everybody.

Key questions being asked:

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- What determines a viable credit trading market?
- What is transparency?
- What information should ARB collect?
- What should be released to the public?
- What about alternative compliance payment methods that stimulate growth?

Panel Discussion: Credit Market Outline

The panel raised a number of comments, questions, and concerns:

- There were general questions regarding target date for going live, market depth and breadth, cap and trade market, IRS tax credit, generation of credits, and ARB workload capacity. *Staff noted that the Office of Climate Change has become part of the Stationary Source Division, so market issues for cap and trade are now under Richard Corey's domain.*
- Comment was offered regarding credits generated by consumers driving electric vehicles as well as costs for putting in technology to capture the consumption of electricity. The monitoring and metering of the technology and its cost. *Staff noted that the Electricity subgroup is looking at crediting and documentation (meeting again on July 11th). Subgroup will make proposals during regulation amendment sessions..*
- Driver should include other alternative fuels natural gas and ultra-low CI biofuels. *Staff noted comment.*
- Comment to assess market design and its costs and benefits. *Staff noted comment.*
- Other issues identified included alternative compliance mechanisms and values associated with the credits. *Staff noted comment and identified this as an area that requires further examination.*

Public Comment: Supply and Availability Outline / Credit Market Outline

John Braeutigam

(Vice President, Strategic and Regulatory Development, Valero, San Antonio, Texas)

- Seems like we are trying to put a square peg in a round hole. Look at lead credits and many other credit markets: File report with EPA. File report with CARB. Contract broker and report purchase or sale. That is it. Keep it simple at least in the beginning. Get the reporting tool to show the credits are there. Sell the credits. Get the market started. If it's a market, let it be a market. No floors or ceilings.
- There are no incentives for automakers to make electric vehicles.
- Volunteered for subgroup.
- Contact EPA for recent reports on cellulosic.
- Many plants have two carbon intensity numbers and some have a third carbon intensity number from other people. It's hard to figure out from the registration what the numbers really are.

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Michael Eaves

(Assistant Vice President, Technology Advancement, Clean Energy, Seal Beach, CA)

- Regarding utilities looking at credits for electric vehicles: Should also include discussions with natural gas utilities as private light duty vehicles are filled at home. Probably 50% or more of natural gas volumes in the state are not being recognized but are being sold and documented through a meter. They could be earning credits.

Harvy Etter (phone)

(Solar Power Coalition)

- Natural gas over the life of the vehicle has a lot more methane. He submitted a report to a panel member in the past discussing methane grams/mile for busses. Nothing has really been done (except this study/report) to look at what happens over time. Lots of activity to push natural gas in transportation right now.
- Referenced legal activity against ARB regarding AB 32. *Richard Corey briefly addressed issue, including its non-relation to LCFS and offered to continue discussion offline.*

July 1, 2011

Agenda and Objectives

The panel will hear one presentation on the technology chapter and two presentations on the HCICO outline.

Staff Presentation: Technology Chapter

Michelle Buffington presented the technology chapter. It is not uniform in level of completeness. Bob Epstein (Environmental Entrepreneurs) presented an outline for E2's Advanced Biofuel Market Progress Report. The report's goal is to produce an independent report by the end of July for ARB to use. It is not a forecast; it is a collection of data. It represents 156 existing companies in the US and Canada that produce biofuels with a carbon intensity at least 50% less than gasoline from crude oil. It also references international companies that could access the California market.

Panel Discussion: Technology Chapter

The panel made a number of comments and asked questions concerning the outline for E2's Advanced Biofuel Progress Report including::

- Comments focused on the level of technology development, the funding process, difference in technology processes, and scaling. Most of the data are from public sources. One panel member gave an update on one of the companies indicated in the report.

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- Numbers don't reflect permitted capacity, it's just the numbers that companies release as public information and that are reliably determined.
- 2015 is less of a technology risk and more about reliable market.
- Request for clarification on table headings: gas vs. diesel vs. drop-in renewable.
- Several comments about LCFS certainty in California and the focus for fuel supply and diversification.
- Discussion on a well designed and implemented LCFS as well as some comments on possible models and incentives.

Staff Presentation: HCICO Outline

There were three presentations on the topic. First, Jim Duffy (ARB Alternative Fuels Section) presented High Carbon Intensity Crude Oil (Topic 14) Draft Outline. He outlined five approaches. Cathy Reheis-Boyd (WSPA) introduced Dr. Harold (Skip) York, vice president at Wood Mackenzie (energy research consulting firm). Dr. York presented Implications for Crude Oil Carbon Intensity Differentiation under the LCFS. Simon Mui (Natural Resource Defense Council) presented Accounting for High Carbon Intensity Crude Oils in Low Carbon Fuels Policies.

Panel Discussion: HCICO Outline

The panel raised a number of comments, questions, and concerns:

- Several comments were offered based on the NRDC presentation that addressed justification and why HCICO provisions were needed:
 - o The benefit of trying to provide the low CI fuels,
 - o the potential cost for having to purchase non-HCICO fuels and their sources,
 - o and unintended consequences of including HCICO provisions such as not deterring the upstream production of HCICO and increasing the cost to consumers without having a net environmental benefit.
- Comments about the Wood Mackenzie presentation focused on:
 - o petroleum displacement and shuffling crudes to other countries,
 - o regulatory language and the non-differentiation between crudes, and
 - o the potential of the lifecycle to increase emissions because of shuffling.
- Comments on the ARB staff presentation centered on: baselines, cap and trade, the five options, consumer cost, differentiation, flaring and GHG reductions, HCICO policy, incentives/disincentives, shipping, shuffling, and LCFS purpose.

Public Comment: Technology Chapter / HCICO Outline

John Braeutigam

(Vice President, Strategic and Regulatory Development, Valero, San Antonio, Texas)

- Regarding Jim Duffy's presentation, need the carbon intensity of crudes spelled out specifically. Can we get a breakdown by crude name or market name? Need

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market names to the baseline values so we know which crudes to examine compared to 2006 numbers. *Staff will provide this information.*

- Why do you not have the ability to get credit if you reduce the baseline or carbon intensity value? You get penalized for going higher. Why don't you get rewarded for going lower? That might impact which of the 5 options (Duffy presentation) you prefer. Until you do the evaluation, I'm not ready to throw option 1 under the bus.

Michelle Passero (online, Panel Member)

- Concerned that a changing baseline would undermine the integrity of achieving GHG reductions. Leakage is not unique to this issue. Look for opportunities to minimize leakage.

Summary and Next Steps

ARB staff will follow up with panelists who volunteered to participate in various ways; we will present draft chapters on environmental impacts and supply and availability. Due to the need for further work with panelists, updates will be provided on economic impacts, credit market, and HCICO. Staff will present draft outlines on lifecycle assessment, harmonization, and meeting compliance schedule targets. Panel members will have the opportunity to provide written comments on the materials presented over the past two days. Email Michelle Buffington to request a Word draft copy to make revisions electronically.

Next panel meeting is August 25-26, 2011. There is a public update meeting on July 25th that panelists are not required to attend.

Richard Corey thanked the panel for a constructive meeting that got to the heart of the issues. He is pleased and encouraged by the level of engagement. ARB will be updating the compliance scenarios. Any independent work done by panelists should be shared with the group. This creates more transparency and a better final report. In addition to the panel process, ARB is always open to one-on-one conversations to further discuss any issues that don't fit well into a panel format.