I. Purpose

On April 23, 2009, the California Air Resources Board (ARB/Board) approved the Low Carbon Fuel Standard (LCFS) regulation. The Board also approved Resolution 09-31 that directs the Executive Officer to convene an expert workgroup to assist the Board in refining and improving the land use and indirect effect analysis of transportation fuels and return to the Board no later than January 1, 2011 with regulatory amendments or recommendations, if appropriate, on approaches to address issues identified. The resolution further specifies that the workgroup should evaluate key factors that might impact the land use values for biofuels including agricultural yield improvements, co-products credits, land emission factors, food price elasticity, and other relevant factors.

The expert workgroup is subject to the Bagley Keene Open Meeting Act requirements in Government Code sections 11120 – 11132 which are summarized in the attached memorandum and brochure provided by ARB Office of Legal Affairs.

II. Scope of Work

The Low Carbon Fuel Standard expert workgroup will discuss and give input on technical issues regarding land use and indirect effect analysis of transportation fuels. The expert workgroup will not be debating the existence of land use change emissions nor will it debate the appropriateness of including these emissions in the regulation. The expert workgroup will focus on refining and improving the land use and indirect effect analysis of transportation fuels. The following topics provide a general overview of the scope of work. The expert workgroup may add other topics as appropriate within the scope of the workgroup objectives.

GTAP Model:

- Elasticity values – Input values used for land use modeling for different fuels.
- Impacts on food consumption – The impacts of large scale use of crop based biofuels on food price and consumption and the resulting net effect of changes in food consumption on LUC emissions.
- Co-products – The credit allotted to co-product benefits.
- Land cover types – Types of land available for conversion to cropland and effects on land use change estimates.
• Yield changes/intensification of farming – Impacts from intensification of farming activities performed to achieve higher yields induced by price effects.

Other Land Use Change/Indirect Effect Topics:
• Emission factors – Review of emission factors used for converting a land use change value to equivalent GHG emissions.
• Time accounting – Review of time accounting methods.
• Livestock issues – Potential for intensification of livestock management and changes in emissions from enteric fermentation.
• Yield changes over time – Evaluate the external model adjustment for changes in yield from the model baseline year to current yields.
• Sustainable practices – Review sustainable farming practices and their effects on LUC emissions.
• Uncertainty in LUC estimates – Conducting a more comprehensive sensitivity analysis and validating land use change estimates with empirical data.
• Biofuels without LUC emissions or other indirect effects.

Other Fuels: (Note: Other fuels refer to any petroleum or alternative fuel that ARB has not assigned an indirect effect)
• Secondary effects in the energy market – Review indirect effects associated with other fuels.
• Land use effects – Identification and quantification of direct and indirect land use effects of other fuels.

Comparative Modeling Approaches:
• FAPRI-FASOM - Compare FAPRI-FASOM models (used by U.S. EPA) to GTAP.
• Dynamic modeling – Explore potential of dynamic models in LUC modeling.
• Other approaches - Other approaches that can be used in place of indirect land use modeling for quantifying indirect emissions for biofuels, such as the concept of "opportunity cost".

GREET Model:
• Co-products – The credit allotted to co-products benefits.
• Fertilizer use – GHG emissions resulting from fertilizer application.
• Sustainable practices – Review sustainable farming practices and their effects on direct farming emissions.
• Water use – GHG emissions resulting from irrigation practices.
• Others

III. Workgroup Operations

A. Process: The expert workgroup is being asked to discuss and evaluate key factors that might impact the land use change emissions for biofuels and indirect effects analysis of other fuels. ARB staff will use the workgroup’s discussions to prepare a report for the Board’s consideration. To staff the workgroup, ARB has sought a diverse set of individuals who have the skills and experience necessary to conduct objective, technical-level analyses that can help policy development. At various times during the meetings, members may be polled on their positions regarding the topics under discussion. ARB will not seek consensus positions from the expert workgroup. However, ARB staff will give great weight to any workgroup recommendation in which there is consensus. Core workgroup members are encouraged to submit research and documentation that supports their position on the topics as well as summarized position statements. Research and documentation is to be submitted in electronic format to the facilitator for inclusion in the meeting minutes.

B. Subgroups: For some of the issues, the expert workgroup may set up working subgroups. In addition to volunteer members from the expert workgroup, the working subgroups may include invited technical advisors who possess expertise on the topic. The working subgroups will meet as necessary to discuss the topic and prepare materials and recommendations for the expert workgroup to review and discuss. Invited technical advisors who significantly contribute to working subgroups must be available for questioning when the subgroup topic is discussed by the full expert workgroup.

C. Responsibilities:

Responsibilities of the Chair:
1. Ensure discussion on key issues remains focused.
2. Approve alternates.
3. Clarify role of core workgroup.
4. Clarify role of ARB staff.
5. Clarify points of discussion as needed.
6. Approve work and minutes of each workgroup meeting.

Responsibilities of the facilitator:
1. Facilitate the conversation so the workgroup stays focused on the issues.
2. Ensure all perspectives are heard.
3. Clarify points of discussion as needed.
4. Help all members adhere to the process and ground rules.
5. Prepare meeting notes and minutes.
6. Assist ARB in compiling the report for the Board.

Responsibilities of the LCFS Expert Workgroup members:

1. Attend each meeting to ensure continuity throughout the process.
2. Prepare in advance and set aside time for the meetings.
3. Treat everyone and their opinions with respect.
4. Allow one person to speak at a time.
5. Be courteous by not engaging in sidebars.
6. Stay focused on the specific topics for each meeting.
7. Comment constructively, specifically, and in good faith.
8. Make no attempt to represent to the public or media the views of any other member or the Workgroup as a whole.
9. Provide ARB staff and the facilitator with research and documentation that is to be included in the minutes. All documentation is to be provided in electronic format within two days of the meeting.
10. Conduct workgroup activities in compliance with the requirements of Bagley-Keene Open Meeting Act summarized in the attached memorandum and brochure provided by ARB Office of Legal Affairs.

D. Public Records and Confidentiality: LCFS expert workgroup records, such as formal documents, discussion drafts, meeting summaries, and exhibits are public records. The workgroup communications are not confidential and may be disclosed. However, the private documents of individual LCFS expert workgroup members and the Chair generally are not considered public records if ARB does not retain copies.

E. Information Exchange: LCFS expert workgroup members will make every effort to provide information that is to be included with the briefing materials to ARB staff one week in advance of the scheduled workshop at which such information is used. If a member believes the relevant information is proprietary in nature, the member will provide a general description of the information and the reason for not providing it.

IV. Public Involvement
All meetings will be open to the public and will have a limited time set aside for the public to speak. Additionally, stakeholders are encouraged to submit written comments through the LCFS expert workgroup website at http://www.arb.ca.gov/fuels/lcfs/workgroup/expertworkgroup.htm.
V. Process Support

ARB staff will support the workgroup. ARB staff will consult with other stakeholders, as needed, to support the workgroup.

**Briefing Materials:** ARB staff will make every effort to email briefing materials to the members at least one week prior to each meeting.

**Meeting Minutes:** The facilitator will prepare meeting minutes based on notes taken during the meeting and observations of the process. The chair will approve the minutes before dissemination. Meeting notes will summarize significant issues raised during the discussion, whether and how issues were resolved, and individual member positions and/or comments regarding program elements, implementation, and other action items. The meeting summaries will be posted on the ARB website at: [http://www.arb.ca.gov/fuels/lcfs/workgroup/expertworkgroup.htm](http://www.arb.ca.gov/fuels/lcfs/workgroup/expertworkgroup.htm).

VI. LCFS Workgroup Report

ARB staff will develop a report of findings with recommendations and plan for implementation. The report will be submitted to the Board at its December 2010 Board meeting.

VII. Communications and Media Coverage

The ARB office of communications will respond to public or media inquiries associated with the organization, structure, process, and work of the LCFS expert workgroup. While free to communicate and share individual perspectives with the media and others, ARB asks LCFS workgroup members to offer their personal viewpoint only and to refrain from speaking for other workgroup members as a whole. We ask workgroup members to vet ideas and issues at workgroup meetings before discussing them outside of the workgroup, since the way in which positions are publicly represented may affect the ability of the LCFS expert workgroup to work together. When asked for information about the purpose or activities of the workgroup, ARB asks you to refer others to the LCFS expert workgroup website at: [http://www.arb.ca.gov/fuels/lcfs/workgroup/expertworkgroup.htm](http://www.arb.ca.gov/fuels/lcfs/workgroup/expertworkgroup.htm).

VIII. Low Carbon Fuel Standard Expert Workgroup Membership

Members of the expert workgroup are listed along with a short biography on the ARB website at: [http://www.arb.ca.gov/fuels/lcfs/workgroup/expertworkgroup.htm](http://www.arb.ca.gov/fuels/lcfs/workgroup/expertworkgroup.htm).
IX. ARB Contacts for LCFS Expert Workgroup

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