

Today's Agenda

- ✓ Introductions
- ✓ Bagley-Keene Review
- ✓ Advisory Panel Guidelines
- ✓ LCFS Overview and Updates
- ✓ Draft Workplan and 2011 Agenda
- ✓ Expert Workgroup Summaries
- ☐ Method 2A/2B Review and Update
- ☐ Next Steps

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Status of the Method 2A/2B Process

Advisory Panel Presentation
February 16, 2011

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Background

- The LCFS is designed to decrease fuel carbon intensity 10% by 2020
- Designed to incentivize entry of new low-carbon fuels into the market
- The regulation's Method 2A/2B provisions allow providers to apply for new pathways
- A "pathway" is a production process description and the associated CI

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Purpose of Method 2A/2B

- Mechanism for adding new fuel pathways to Lookup Tables
- 2A: improvements to existing pathways
- 2B: entirely new process or fuel
- ARB also develops some pathways on its own initiative

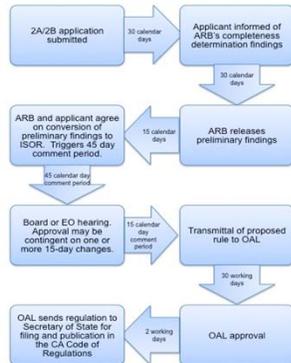
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2A/2B Process Timeline

- Extensive guidelines available to assist 2A/2B applicants
- Staff works directly with applicants through the pathway development process
- Adding new pathways is an intensive process
- Recently issued advisory (LCFS Reg. Advisory 10-04)
- Staff is evaluating options to streamline process

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2A/2B Process



Total time investment ~6 months

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Use of New CI Values

- Interim use may begin once staff has posted pathway application on the web:
<http://www.arb.ca.gov/fuels/lcfs/2a2b/2a-2b-apps.htm>
- All pathways must still be approved by the Board or the Executive Officer (EO) in a rulemaking
- Some pathways appearing on the 2A/2B web site scheduled for February 24th EO hearing
- Remaining pathways will be scheduled for a subsequent hearing

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Terms of Use for New CI Values

- Applicants may temporarily use their posted pathway CIs*
- Once adoption by the EO or the Board becomes effective, they are added to the Lookup Table and are no longer considered to be "interim."
 - If they are modified or denied at hearing, the applicant may continue to use the interim values for up to six months after decision.

8 *<http://www.arb.ca.gov/fuels/lcfs/122310lcfs-rep-adv.pdf>

Current Status

- The LCFS 2A/2B web site currently lists 80 approved or proposed fuel pathways
 - 17 applications, 74 specific pathways have been posted by staff to date
 - Six staff-developed pathways posted
- The first EO Hearing is scheduled for February 24, 2011*. It will consider:
 - 6 2A/2B applications consisting of 25 individual pathways
 - 2 staff-developed pathways consisting of 3 individual pathways

9 *See formal rulemaking page at <http://www.arb.ca.gov/regact/2011/lcfs11/lcfs11.htm>

New Corn Ethanol Pathway Characteristics

- Several of these are for the current generation of Midwestern dry mill plants
- Most plants designed by ICM, Inc. often referred to as “cookie cutter” plants
- The energy consumption and CI values in latest Argonne GREET reflect results of a 2008 survey of all dry mill ethanol plants in the U.S.
- ICM cookie cutter plants are well-represented in this survey

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Impacts for New Corn Ethanol Pathways

- **Modifications:**
 - CA-GREET – version 1.8b – is 36,000 BTU/gallon of ethanol produced
 - GREET – version 1.8d – is 26,856 BTU/gallon
- **Implications for the Method 2A/2B pathways:**
 - Regulation requires use of CA-GREET 1.8b
 - Method 2A/2B applicants have modified 1.8b to reflect energy consumption values of 1.8d
 - ICM corn ethanol plant CIs are hovering in the 80s (gCO₂e/MJ)

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Other Ways Ethanol Facilities are Achieving CI Reductions

- One achieves CIs in the upper 80s despite using some coal in its fuel mix
 - Very efficient scavenging and re-use of waste heat
 - Use of biomass to displace some coal.
- Using special enzymes to convert starch to sugar and to ferment the sugar to ethanol
- Using various waste products in process power mix: landfill gas, agricultural and wood waste, etc.

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Other Ways Ethanol Facilities are Achieving CI Reductions

- Some plants use feedstocks in addition to corn
 - Waste wheat slurry
 - sorghum
- One small plant produces ethanol from beverage waste

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New Non-Corn-Ethanol Pathways

- One new LNG pathway
- Three pathways for hydrous Brazilian sugar cane ethanol that is dehydrated in the Caribbean Basin

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6 New Pathways from Staff

- Developed 6 new “generic” pathways
- Values can be used by any plant that:
 - Produce fuel as described in pathway documents
 - Achieve a CI that is at or below pathway CI

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New Pathway Characteristics

- 2 pathways for biodiesel produced in the Midwest from used cooking oil – low and high energy rendering
- 2 sorghum ethanol pathways – wet and dry DGS
- Canola grown and crushed primarily in Canada, processed into biodiesel in U.S.
- Corn oil biodiesel

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Next Steps

- Continue to accept, evaluate, and approve new pathways
- Continue integrating various LCFS components
- Refine, streamline, and document evaluation/approval process
- Develop a certification process which would not require a rule change for adding new pathways
- Seek Board approval for proposed certification process

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