Program

CRC WORKSHOP ON LIFE CYCLE ANALYSIS OF BIOFUELS

Argonne National Laboratory

Argonne, IL

October 17-19, 2011

WORKSHOP SPONSORS

API
Argonne National Laboratory
CONCAWE
Canadian Petroleum Products Institute
Energy Foundation
National Biodiesel Board
Renewable Fuels Association
South Coast Air Quality Management District
US Department of Agriculture
US Department of Energy

WORKSHOP ORGANIZERS

Vincent Camobreco	US Environmental Protection Agency
Geoff Cooper	Renewable Fuels Association
John Courtis	California Air Resources Board
John DeCicco	University of Michigan
Dominic DiCicco	Ford Motor Company
James Duffield	US Department of Agriculture
Marvin Duncan	US Department of Agriculture
Jeff Farenback-Brateman	ExxonMobil
Phil Heirigs	Chevron Global Downstream
Steve Howell	National Biodiesel Board
Robert Johansson	US Department of Agriculture
Aaron Katzenstein	South Coast AQMD
David Lax	API
Derek McCormack	Natural Resources Canada
Mani Natarajan	Marathon Petroleum Company LP
Kenneth Rose	CONCAWE
Don Scott	National Biodiesel Board
Ray Smith	US Environmental Protection Agency
Michael Wang	Argonne National Laboratory

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Specific Workshop Goals

• Outline technical needs arising out of policy actions and ability of LCA analysis to meet those needs.

• Identify research results and activities that have come to light in the past two years that have helped to close data gaps previously outlined as outstanding issues.

• Identify remaining data gaps, areas of uncertainties, validation/verification, model transparency, and data quality issues.

• Establish priorities for directed research to narrow knowledge gaps and gather experts' opinions on where scarce research dollars would best be spent.

Monday, October 17, 2011

Argonne House

5:00 - 6:00 PM	*Registration* *Argonne House*		
6:00 - 7:00 PM	*Welcome Reception* *Cocktails and Hors d'Oeuvres at Argonne House*		

Tuesday, October 18, 2011

Auditorium

7:00 - 8:00 AM	*Registration* *Continental Breakfast in Gallery*		
8:00 AM	*Welcome: Phil Heirigs (Chevron)*		
Session 1	Current Regulatory Environment: Lessons Learned, What's Next and How are Sustainability Principles being Addressed? *1. What is the current regulatory environment? What has changed in the last two years? What is happening outside the regulatory process?* *2. What are the current thinkings at EPA?* *3. What are the current activities at CARB regarding LCA?* *4. How are the sustainability principles being addressed? (soil, water, air, biodiversity). Overview of the environmental, social and economic factors.* *5. What are the lessons learned?* *6. What is the current thinking of the Europeans and the NESCAUM regarding LCA?*		
8:10 AM	*Chairpersons: Mani Natarajan (Marathon Petroleum Company LP), John Courtis (CARB), Geoff Cooper (RFA), Ken Rose (CONCAWE), Vince Camobreco (US EPA)*		
8:15 AM	US EPA RFS2 Rules *(25 min + 5 Q&A)*	Bob Larson	US EPA
8:45 AM	California LCFS-Status and Implementation*(25 min + 5 Q&A)*	John Courtis	CARB
9:15 AM	Life Cycle GHG Emissions in the EU Biofuels Legislation *(25 min+5 Q&A)*	Luisa Marelli	Joint Research Centre
9:45 AM	Life Cycle Assessment of Biofuels: Regulatory Environment in Canada *(10 min+5 Q&A)*	Paul Wieringa	BC Ministry of EM&PR
10:00 AM	NE/MA Regional Clean Fuels Standard: Status Update *(10 min + 5 Q&A)*	Matt Solomon	NESCAUM
10:15 AM	General Discussion and Wrap-up (15 min)	All	
10:30 AM - 10:50 AM	BREAK in Gallery		
Session 2	LCA Gaps and Uncertainties *1. What are the appropriate boundary conditions for transportation fuels and how are they established?* *2. What is the appropriate treatment for co-products in life cycle analysis?* *3.What efforts are underway to reduce the uncertainty around N_2O emissions from fertilizer/soil interaction, and are potential approaches to reduce that uncertainty (e.g., modeling on a local level) practical to implement given the variety of inputs needed ?* *4. What efforts are underway to quantify uncertainty/variability in LCA modeling, and can those efforts be used to help focus future research to reduce uncertainty?*		
10:50 AM	*Chairpersons: Phil Heirigs (Chevron), Don Scott (National Biodiesel Board)*		
10:55 AM	For Better or Worse? Improving Conventional Fuel Baseline Emissions Estimates for Use in Transport Fuels LCA *(20 min+5 Q&A)*	Adam Brandt	Stanford University
11:20 AM	Attributional vs Consequential LCA *(20 min+5 Q&A)*	John DeCicco	University of Michigan
11:45 AM	Treatment of Co-Products in Fuel System LCAs *(20 min+5 Q&A)*	Don O'Connor	$(S\&T)^2$

11:45 AM - 1:00 PM	LUNCH in Gallery		
1:00 PM	Agricultural N_2O Models and Estimates *(20 min+5 Q&A)*	Kent Hoekman	Desert Research Institute
1:25 PM	Issues Related to Uncertainty and Variability in LCA Modeling *(20 min+5 Q&A)*	Jim Hileman	Massachusetts Institute of Technology
1:50 PM	General Discussion (20 min)		
Session 3a	Land Use Change and GHG Emissions - Panel Discussion on Major Models *1. What have been the major developments in land-use change modeling over the past two years?* *2. In what ways are findings from different modeling initiatives converging or diverging?* *3. Where has progress been made in strengthening the empirical underpinnings of the models?* *4. Where have there been the greatest challenges that inhibit efforts to narrow the uncertainties?* *5. What are the data and analysis needs for improving the modeling efforts going forward?*		
2:10 PM	*Chairpersons: Geoff Cooper (RFA), John DeCicco (Univ. of MI), Jim Duffield (USDA), Jeff Farenback-Brateman (ExxonMobil)*		
2:15 PM	Panel Discussion on Major Models *(90 minutes)*		
	FAPRI-CARD Modeling of LUC and GHG Emissions	Jacinto Fabiosa	Iowa State
	LUC and Associated GHG Emissions for Conventional and Cellulosic Biofuels	Wally Tyner	Purdue
	LCA, Renewable Fuels and Modeling: Some Thoughts Related to FASOM	Bruce McCarl	Texas A&M
	European Work on ILUC Modelling	Robert Edwards	Joint Research Centre
3:45 PM - 4:05 PM	BREAK		
4:05 PM	Open Forum Discussion *This session will provide a moderated discussion of the high priority question or issues related to the first day panels and identified by workshop participants as warranting additional discussion.*		
	Discussion (45 min)	Chairperson: Robert Sawyer	UC-Berkeley
6:00 PM	Reception in Argonne House		
6:30 PM	Dinner in Argonne House		

Wednesday, October 19, 2011

Auditorium

7:30 - 8:00 AM	*Registration* *Continental Breakfast in Gallery*		
Session 3b 8:00 AM	**Land Use Change and GHG Emissions - New Data, New Approaches & Estimation Questions** *1. What has been done to characterize and examine the implications of modeling uncertainties?* *2. What progress has been made in, and where are the opportunities for, improving the applicable econometric methods?* *3. What is the status of field data, available data bases, and state of the science on land use change and its drivers?* *4. What new approaches have been developed to model and evaluate indirect land use change, and how have perspectives on the issue evolved over the past few years?* *5. What are the priorities for ongoing scientific research in this area?* *Chairpersons: Geoff Cooper (RFA), John DeCicco (Univ. of MI), Jim Duffield (USDA), Jeff Farenback-Brateman (ExxonMobil)*		
8:05 AM	Perspectives on Land Use Change Analyses *(20 min+5 Q&A)*	Keith Kline	Oak Ridge National Laboratory
8:30 AM	Land-Use Change Data and Ground Truthing *(20 min+5 Q&A)*	Ken Copenhaver Steffen Mueller	UIC Energy Resources Center
8:55 AM	Uncertainties in the Life Cycle Assessment of Biofuels *(20 min+5 Q&A)*	Richard Plevin	UC-Berkeley
9:20 AM	Identifying Supply and Demand Elasticities of Agricultural Commodities: Implications for the US Ethanol Mandate *(20 min+5 Q&A)*	Michael Roberts	NC State
9:45 AM	Rethinking the Indirect Effects of Biofuel *(20 min+5 Q&A)*	David Zilberman	UC-Berkeley
10:10 AM	General Discussion (20 min)		
10:30 AM - 11:00 AM	BREAK in Gallery		
Session 4 11:00 AM	**Emerging LCA Issues** *1. What are the two or three key outstanding and emerging issues related to LCA modeling of petroleum/fossil fuels, biofuels, and electricity?* *2. Are current modeling tools sufficient to estimate well-to-wheel GHG emissions from emerging/new fuel pathways and categories of GHG emissions with respect to: feedstock production/processing, direct effects, indirect effects, and disposal/residual issues associated with that fuel pathway?* *3. In the short-term (i.e., the next year or two), what are the key LCA inputs for which data need to be collected, and are efforts underway to collect those data with respect to: feedstock production/processing, direct effects, indirect effects, and disposal/residual issues associated with that fuel pathway?* *4. What lessons from the commercialization of ethanol and FAME production are/are not applicable to addressing the challenges in extrapolating research results for new fuel pathways to commercial operations and emissions?* *Chairpersons: Phil Heirigs (Chevron), Rob Johansson (USDA), Mani Natarajan (Marathon Petroleum Company LP), Ken Rose (CONCAWE), Don Scott (National Biodiesel Board)*		
11:05 AM	Indirect Effects of Petroleum *(10 min)*	Stefan Unnasch	Life Cycle Associates
11:15 AM	Emerging LCA Issues - Oil Sands and Biofuels *(10 min)*	Heather MacLean	University of Toronto
11:25 AM	Critical Issues of Biofuel Life-Cycle Analysis *(10 min)*	Michael Wang	Argonne National Laboratory
11:35 AM	Emerging Issues and Data Needs for LCA Modeling of Electricity *(10 min)*	Constantine Samaras	Rand
11:45 AM	Emerging LCA Issues: A European Perspective (*10 min)*	Uwe Fritsche	Oeko Institute
11:55 AM	General Moderated Discussion *(60 min)*		
12:55 PM - 2:25 PM	LUNCH in Gallery		
2:25 PM	**Open Forum Discussion** *This session will provide a moderated discussion of the high priority question or issues related to the workshop and identified by participants as warranting additional discussion.*		
	Discussion (45 min)	Chairperson: Robert Sawyer	UC-Berkeley
3:10 PM	End of Workshop		
3:30 PM	Optional tour of Argonne's Advanced Powertrain Research Facility-Meet in Auditorium lobby (approximately 1 hour)		

Notes