

Forestry and Agriculture Greenhouse Gas Modeling Forum # 4:

Modeling Ag-Forest Offsets and Biofuels in U.S. and Canadian Regional and National Mitigation

March 5-8, 2007 – Shepherdstown, West Virginia, NCTC

Organized by US Environmental Protection Agency, USDA-Forest Service, Agriculture and Agri-Food Canada, Nicholas Institute for Environmental Policy Solutions, and RTI International

Workshop Objectives: (1) identify the policy community's needs and priorities for assistance from modelers to improve understanding of the benefits, costs, and co-effects of mitigation options; (2) assess the feasibility of large-scale deployment of biofuels in the U.S. and Canada, and (3) assess the potential for reducing deforestation in the tropics and North America as a climate mitigation option.

Agenda

Day 1: Tuesday, March 6, 2007	
7- 8:00 am	<i>Breakfast: Main Dining Room</i>
8:30 am	Welcome and Workshop Overview 1) Ken Andrasko, Climate Change Division, USEPA 2) Robert MacGregor, Agriculture and Agri-Food Canada, Chief, Agricultural and Environmental Policy Analysis 3) Allen M. Solomon, US Forest Service, National Program Leader for Global Change Research
9:00 am	Stage-Setting Keynote Address: "U.S. Congressional and State Climate Policy Status, and Potential to Include Forest and Agriculture Sectors." Tim Profeta, Director, Nicholas Institute for Environmental Policy Solutions, Duke University
9:30 am	<i>Group Discussion, then coffee</i>
10:00 am	Session 1: Policy Landscape -- Program Status and Modeling Needs Objective: Review public and private greenhouse gas mitigation programs, and identify priority modeling and information needs for policymakers. <u>Discussant and discussion leader:</u> Robert MacGregor, Agriculture and Agri-Food Canada "Canadian Lessons and Implementation Issues for Developing a Greenhouse Gas Offsets Trading Market for Agriculture and Forestry." Steven Hairsine, Environment Canada "An Aggregator's Viewpoint: Developing Mitigation Activities in the Current Climate Setting." Scott Subler, President, Environmental Credit Corporation

10:50 am	<p>Panel and Audience Discussion: Which land-use options are included in current legislation and programs, and why? What can modelers contribute to advance promising options?</p> <p><u>Discussion Leader:</u> Robert MacGregor, Agriculture and Agri-Food Canada</p> <ul style="list-style-type: none"> - Ken Richards, Indiana University - Paul Thomassin, McGill University - Sandra Brown, Winrock International
12:00 pm	<i>Lunch: Main Dining Room</i>
1:00 pm	<p>Session 2: North American Modeling Landscape: New capabilities & key gaps</p> <p><i>Objective:</i> Highlight new developments in biophysical and economic modeling by North American researchers. Identify knowledge gaps and future research priorities.</p> <p>2.1 Decision Support Tools for Meeting Program Implementation Challenges</p> <p>Models ideally should accurately predict policy outcomes, including the management responses of economic actors. Session assesses work on GHG program implementation challenges, to provide a basis for model revisions.</p> <p><u>Discussant and discussion leader:</u> Jan Lewandrowski, USDA Global Change Office</p> <p>“Advances in Modeling C Stock Change on Canada’s Agricultural Land.” Brian McConkey, Agriculture and Agri-Food Canada</p> <p>“Combining Remote Sensing, Inventory Data, and Economic Modeling for Spatial Estimates of Land Management and Carbon Flux.” Tris West, Oak Ridge National Laboratory</p> <p>“Carbon Management Evaluation Tool: Voluntary Reporting Tool for Greenhouse Gases.” Carolyn Olson, USDA Natural Resources Conservation Service</p> <p>“Afforestation Offset Project Protocol: A Tool to Estimate Carbon Stocks and Fluxes for Afforestation Offsets in the U.S.”, Maurice LeFranc, EPA/Climate Change Div. Tool in development for EPA Climate Leaders voluntary program reporting</p>
2:30 pm	<i>Coffee break, then Discussion</i>
3:10 pm	<p>2.2 Modeling Ventures into Uncharted Waters: New Departures in Biophysical and Economic Modeling</p> <p><u>Discussant and discussion leader:</u> Steven Rose, USEPA</p> <p>“Fire Prevention as a GHG Mitigation Strategy.” Robert Beach, RTI</p> <p>“Public Land, Timber Harvests, and Climate Mitigation: Quantifying Carbon Sequestration Potential on U.S. Public Timberlands.” Brian Murray, Nicholas Institute for Environmental Policy Solutions, Duke University</p> <p>“Canada’s National Forest Carbon Monitoring, Accounting, and Reporting System: Applications in Reporting and Policy Support.” Werner Kurz, Natural Resources Canada/Canadian Forest Service</p> <p>“Emerging Results and Opportunities for Spatial Bioeconomic Analyses in Canada.” Dan McKenney, Natural Resources Canada</p>

4:30 pm	Break and Discussion
5:00 pm	<p>Session 3: Environmental Co-effects of GHG Mitigation: The Ecosystem Services View</p> <p><u>Panel Discussion: (short presentations + general discussion)</u></p> <p>Questions for panel to address: (1) How are environmental services being incorporated into models? Into policy decisions? (2) Can GHG emissions be usefully addressed by framing emissions reductions and sequestration as ancillary environmental services incentivized by market or governmental policies or actions? (3) Anticipated developments in US (e.g., Farm Bill 2007) and Canadian policy processes.</p> <p><u>Discussant and discussion leader:</u> Ralph Alig: US Forest Service work: Ecosystem services within a climate change context</p> <ul style="list-style-type: none"> - "Potential for Bundling and Trading Ecosystem Services, Including Climate Benefits and Comparison to Water Quality Trading." Richard Woodward, Texas A&M University - "Environmental Co-effects of Greenhouse Gas Mitigation: The Role of Wetlands." Pascal Badiou, Institute for Wetland and Waterfowl Research, Ducks Unlimited Canada
5:30 pm	General Discussion: Continue over dinner and post-dinner fluid dynamics session.
6:00 pm	<i>Dinner: Main Dining Room</i>
7:15 pm	<i>Informal Discussions in the Roosevelt Room – Continue ecosystem services and carbon discussion</i>
Day 2: Wednesday, March 7, 2007	
7-8 am	<i>Breakfast: Main Dining Room</i>
8:15 am	<p>Session 4: Biofuels: How Feasible Are Large-Scale Goals for Biofuel Penetration in the US and Canada?</p> <p>Objective: Gauge the technical and economic potential for large-scale biofuels production and use in Canada and the US, and implications for GHG mitigation portfolios, commodity crops, and the environment. US biofuel initiatives include "25x'25" (25% renewable share of energy by 2025) and the President's "Biofuels Initiative" (making cellulosic ethanol cost competitive by 2012 and displacing 30% of U.S. gasoline with biofuels by 2030). Potential Canadian initiatives include a provisional goal of all gasoline containing 5% biofuel by 2010.</p> <p>Questions include:</p> <ul style="list-style-type: none"> • What feedstocks and technologies are feasible for liquid transportation and electricity generation biofuels, for large-scale targets before and beyond 2030? • How do biofuels compete with other GHG management options? • How are land use, the environment, and crop and energy prices affected? • How can we improve modeling of biofuels to support climate policy? <p>4.1 National and Global Overview</p> <p><u>Discussant and discussion leader:</u> Ken Andrasko, USEPA</p>

9:00 am	<p>Biofuels Keynote Address: “How Feasible Are Dreams of Biofuels?” Bruce McCarl, Texas A&M University. FASOMGHG update, analysis of competing feedstocks, environmental and economic effects of large-scale biofuels, assess large-scale biofuels potential</p>
9:30 am	<p>“The Renewable Fuel Standard: A Status Report.” Michael Shelby, EPA/Office of Transportation and Air Quality</p> <p>“Challenges Facing Modelers of the Biofuels Industry in Canada.” Kurt Klein and Danny LeRoy, University of Lethbridge, Canada</p> <p>“Estimating GHG Benefits and Economics of Biofuel Options.” Mark Bernstein, University of Southern California and RAND 25x25 study lead author</p>
10:40 am	<i>Coffee break</i>
10:55 am	<p>4.2 Supply Opportunities and Economic Modeling in US and Canada Ag/forestry models typically take energy prices as given, while energy models take biofuel supplies as given. Since large-scale deployment would affect supplies and prices, integrating models from both sectors would improve the robustness of projections of biofuel market penetration.</p> <p><u>Discussant and discussion leader:</u> Bruce McCarl, Texas A&M</p> <p>“Feasibility of Large Scale Biofuels: Assessing the One Billion Ton Study.” John Miranowski, Iowa State University</p> <p>“Biofuels in Polysys: Model Design, Simulation, and Expansion.” Chad Hellwinckel, University of Tennessee</p> <p>“Modeling Bioenergy in the US Forest Service’s RPA Assessment: Designing U.S. Forest Assessment System to Analyze Agricultural and Forest Feedstock Markets, Including Small-diameter and Fire Salvage Wood, and Impacts of Biorefinery Development.” Peter Ince, USFS-Madison, Forest Products Laboratory</p>
11:55	General Discussion
12:10 pm	<i>Lunch: Main Dining Room</i>
1:30 pm	“The Life Cycle Question, and Infrastructure Requirements for Expanding Biofuels.” Hossein Shapouri, USDA Office of Energy and New Uses
1:50 pm	<p>4.3 Panel and Group Discussion 1: What are the <i>environmental</i> implications of increased biofuel use in the U.S., and how can we model them? <u>Discussion leader:</u> Bruce McCarl, Texas A&M University John Miranowski, Iowa State University (confirmed) Lynn Wright, consultant and former Oak Ridge National Lab</p>
2:45 pm	<i>Coffee break</i>

3:00 pm **4.4 Modeling Ag/Forestry and Energy Sector Market Linkages**
 Demand-side view of the energy and transportation sectors' potential to use biofuels: Opportunities, hurdles, and technology penetration assumptions (which technologies, when, at what cost?).

“Biofuel Demand Projections in the Annual Energy Outlook.” Michael Schaal, Energy Information Administration (EIA), DC

“Seeking Negative-Carbon Bioenergy Options: Cost-Competitive Synfuels from Coal and Sustainable Prairie Grass Biomass.” Robert Williams, Senior Research Scientist, Princeton University Environmental Institute

“Demand for Small Scale Bio-energy Technology: Opportunities for Agricultural & Energy Policy Integration.” Joel Schumacher and Vince Smith, Department of Agricultural Economics, Montana State University and Big Sky Carbon Sequestration Partnership.

4:10 pm *Break*

4:30 pm **4.5 Panel and Group Discussion 2:** Which biofuel technologies should we model, with what assumptions, in the near- and long-term timeframes? What are the next steps in modeling needed to facilitate biofuel penetration?

Discussion leader: Ken Andrasko, EPA/Climate Change Div.
 - Hossein Shapouri, USDA
 - Robert Williams, Princeton University
 - John Miranowski, Iowa State University

5:30 pm *Dinner: Main Dining Room*

7:00 pm *Conviviality in the Roosevelt Room*

Day 3: Thursday, March 8, 2007 (end at 12:15 pm)

7-8 am *Breakfast*

8:30 am **Session 5: Reducing Deforestation as a Mitigation Option**
 Objective: This session focuses on modeling deforestation and considers whether the North American experience and related policy analyses offer useful lessons for examining policies to reduce deforestation in other regions. Deforestation is important in some developing countries, and new policy options are being considered to reduce its incidence. For example, the dialogue relating to avoiding emissions from deforestation in developing countries now taking place under the UNFCCC has sparked considerable interest in the potential role of reducing deforestation and degradation (REDD) in a comprehensive climate change strategy.

Questions include:

- What does the cost curve look like for avoided deforestation in the tropics and in North America?
- What types of activities might slow loss of forest area in the tropics and in North America?
- What have we learned from North American modeling and implementation

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- that could inform how to address reducing deforestation in the tropics?
• How are national reference cases of forest change best developed from which to estimate reductions?

Discussion coordinator and intro: Brian Murray, Nicholas Institute, Duke University “Policy Context of Reducing Deforestation”

“Modeling Economic Opportunities for Avoided Deforestation.” Brent Sohngen, Ohio State University/RTI

9:40 am *Coffee Break*

10:00 am Group Discussion

10:30 am “Deforestation Research in the United States: Evidence to Inform the Avoided Deforestation Discussion.” Ralph Alig, USDA, Forest Service

“Overview of scientific, technical and methodological issues related to reducing emissions from deforestation in developing countries (RED RED-DC).” Sandra Brown, Winrock International

11:30 am General discussion

11:50 am **Session 6: Workshop Review & Conclusion: Organizers & Participants**

Discussion and brainstorming:

1. Draft modeling priorities agenda, and potential next steps for modeling in support of policy
2. Plan any follow-up Forum cooperative activities: studies? Joint scenarios? Case studies?
3. Next Forum topic and dates
4. Outreach for Forum results: Summary publication? Journal articles? Policy briefing in Washington and/or Ottawa?

12:15 pm *Lunch: Main Dining Room or bag lunch. Departure home as needed.*

2:00 pm Shuttle departs to Dulles Airport
