

Biofuels for Aviation Summit September 1-2, 2009

Preliminary Program as of 8/24/09

Purpose:

The Air Force is planning to have its entire fleet of planes certified for 50 percent biofuel use by the end of 2012. The commercial aviation industry in the US and worldwide is on a similar timeline compared to the Air Force to certify their aircraft for 50 percent biofuel consumption. The purpose of the Biofuels for Aviation Summit is to provide the Air Force and the commercial aviation industry with a realistic, scientific-based assessment of the availability of biofuels by 2012 in different parts of the United States, and then to look ahead 5 years (2017) to determine if technology or other factors may change the availability of biofuels for aviation consumption at that time. Estimated US fuel consumption for both the Air Force and the commercial industry is approximately 1.7 million barrels (or 71.4 million gallons) per day. On a worldwide basis the consumption is about 5.0 million barrels (or 210 million gallons) per day (see <http://www.eia.doe.gov/pub/international/iea2006/table35.xls>).

The summit will produce a report estimating the current availability of biofuels and provide five-year projections on availability. The report will also include an assessment of how biofuel production could be organized for continuous delivery of quantities demanded to the major airports in the US (specific to particular locations) currently and five years into the future. The Air Force will use the report from this summit to guide their approach to the introduction of a 50 percent biofuels requirement for their fleet.

Anticipated Results:

The result of the summit will be the report prepared by the National Center for Food and Agricultural Policy (NCFAP) that details the conclusions of the summit on the availability of biofuels currently (2012) and five years in the future (2017). In addition, the report will address summit recommendations that are important to the Air Force and the commercial industry on feedstocks availability, feedstocks logistics, processing deployment, and the economics of the production and consumption prescriptions. In each of these five **tracks**, a set of **issues** will be considered. These issues include in general, the carbon footprint, sustainability, and food versus fuel considerations. Specific **questions** addressing these issues will be put before the participants in the five tracks. After these more general scientific deliberations, the participants in the summit will be asked to consider five major airports in the US, and to tailor their recommendations to special conditions that the five different localities present. Thus the report will present general information and information specialized (if important) to the localities of the five airports.

Organization:

The summit will be uniquely designed to generate concrete recommendations on biofuels for aviation. The plenary sessions and luncheons will have individuals as speakers that can set the parameters for the discussions and provide background information for addressing the topics of the five breakout and the airport supply sessions. Approximately 125 of the best

agricultural and biofuels scientists from academia and industry will attend and make recommendations, along with about 25-30 representatives from government and industry involved in decisions about biofuels for aviation.

Agenda for the summit:

Tuesday, September 1st

Washington Ballroom

7:30 A.M.

Registration/Continental Breakfast

8:30 A.M.

Welcome and Administrative Remarks
Mr. Bill Harrison, AFRL

8:40 A.M.

Plenary Session
Michael McGee, Acting Deputy Assistant Secretary Air Force (EESOH)

Mr. Jacques Beaudry-Losique, Deputy Assistant Secretary for Renewable Energy, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy

John Heimlich, Vice President and Chief Economist, Air Transport Association

10:10 A.M.

Break

10:30 A.M.

Breakout Tracks (five)
Session I – Carbon and Greenhouse Gases

12:00 P.M.

Luncheon
Speaker –Patrick Dulin, Executive Director (DESC)
Future Requirements and Feasibility

1:30 P.M.

Breakout Tracks (five)
Session II - Sustainability

3:00 P.M.

Break

3:30 P.M.

Breakout Tracks (five)
Session III – Food vs. Fuel

5:00 P.M. - 6:30 P.M.

Networking

Moderators and recorders meet during the evening to prepare remarks for the opening session the morning of day two.

Wednesday, September 2nd

Washington Ballroom

7:30 A.M.

Registration/Continental Breakfast

8:00 A.M.	Day One Five Track Reports <i>Moderators</i>
10:00 A.M.	Break
10:30 A.M.	Breakout Tracks <i>USDA Region Sessions (four sessions)</i>
12:00 P.M.	Luncheon Speaker <i>Speaker – Dr. Gale Buchanan, Former USDA Chief Scientist and Under Secretary for Research, Education and Economics, and Dean and Director Emeritus, College of Agricultural and Environmental Sciences, University of Georgia, The Way Forward</i>
1:30 P.M.	USDA Region Track Reports/Discussion
3:00 P.M.	Closing Remarks/Adjourn

Plenary and Luncheon Session Speakers

First Plenary Session:

Michael McGee, Acting Deputy Assistant Secretary Air Force (EESOH)- describing the biofuel research and development as well as the timing of the certification process and expected results

Dr. Henry Kelly, Principal Deputy Assistant Secretary for the Office of Energy Efficiency and Renewable Energy at the U.S. Department of Energy - describing the current state of the art for production and processing, 2012 and 2017

John Heimlich, Vice President and Chief Economist, Air Transport Association- describing possible actions of the commercial airlines for biofuels adoption and a possible time table

First Luncheon Speaker:

Mr. Patrick Dulin, Executive Director, Defense Energy Support Center (DESC), Future Requirements and Feasibility

Second Luncheon Speaker:

Dr. Gale Buchanan, Former USDA Chief Scientist and Under Secretary for Research, Education and Economics, and Dean and Director Emeritus, College of Agricultural and Environmental Sciences, University of Georgia, The Way Forward - describing the food/fuel issues for increasing aviation and other biofuels consumption

Breakout Sessions or Tracks:

- Feedstocks Availability
- Feedstocks Logistics
- Processing of Biofuels
- Deployment of the Biofuels Industry

- Economics Including Policy Issues

During each breakout session, panelists will lead discussion on the following **issues**:

First Breakout Track Session:

Carbon footprints, greenhouse gases and choice of technologies related to the topic. What is the current state of knowledge and how do the participants believe it will change over the next five years?

Second Breakout Track Session:

Sustainability - definition for the topic for the session and issues related to different technologies, input requirements and organization. What are the current recommendations about sustainability and how will they change over the next five years?

Third Breakout Track Session:

Food versus fuel issues - what are the food/fuel trade-off issues, and how will they change over the next 5 years?

The objectives of the breakout or track sessions will be to develop “game changing” information on the five breakout topics. The idea is to report information that can change the context of the discussion on each of these main topics.

The three issue sessions for each breakout track will be lead by a “moderator for the track.” In addition, the moderators for the breakout tracks will make the summary presentation at the first session in day two. In addition, each breakout track session will have three/four panelists to lead the discussion. Participants will be assigned one of the five breakout sessions, but when they are not on the program as panelists are free to attend other sessions in different tracks.

Panelists for the breakout track sessions will submit in advance a two-page abstract defining their scientific views related to the breakout track, issue and questions in their session. There will be three general questions for each breakout session issue track used to better define the Air Force concerns. The abstracts will be sent to NCFAP in advance of the summit and distributed to all participants at the Summit. The total number of panelists (and two-pagers) for each of the breakout tracks will be 12.

Supply in Different in Different Regions will be investigated in the five sessions on the final day of the summit. Two general questions will be asked of each of the special sessions:

- 1) What is your recommendation for the feedstock(s), logistics, processing, economics and policy, and deployment for supply aviation fuel to respective airport with current technology (2012)?
- 2) What is your recommendation for the supply of aviation fuel to the respective airport five years out technology (2017)?

The idea is to develop specific recommendations that are special to the selected regions of the US. They will review the topics and issues addressed in each of four breakout tracks,

and integrate them for recommendations at specific USDA national regions. A different set of participants will be assigned to these sessions than in the breakout tracks—specifically, some participants from each of the breakout tracks will be assigned to each of the four sessions on specific regions. The results of the airport discussions will be reported to all participants during the last general session of the summit.

Details on Breakout Tracks for Feedstock Availability, Feedstock Logistics, Processing/Conversion, Deployment, Economics/Policy and Region supply/demand

	Feedstocks Availability
Moderator	Ken Cassman, University of Nebraska
Carbon and Greenhouse Gases	<p>Three Panelists:</p> <p>David Bransby, Energy Crops Research, Auburn University What crops (here and after including forest crops) are best for production of biofuels for aviation in terms of production capacity?</p> <p>Michael Wang, Argonne National Laboratory What are the carbon or greenhouse issues for biofuel production and use?</p> <p>Kurt Thelen, Crop and Soil Science, Michigan State University Which crops have greatest potential for low cost production (cost per MJ of bioenergy produced)?</p> <p>Each panelist should address this additional question: What are the comparative carbon and greenhouse gas implications of the potential biofuel feedstock crops?</p>
Sustainability, Input Requirements, etc.	<p>Three Panelists:</p> <p>Joseph Burton, Research Leader ARS/USDA Which crops can be produced in a sustainable manner with regard to inputs---soil, water, greenhouse gas emissions and wildlife diversity?</p> <p>Burt English, Professor and Research Coordinator, Agricultural Economics, University of Tennessee Knoxville What are the land use implications of aviation biofuels from the most promising biofuel crops (in the US and Globally)?</p> <p>Ihhami Yildiz, Professor, Energy for Sustainable Society, California Polytechnic State University, San Luis Obispo How do we define sustainability?</p> <p>Each panelist should answer this additional question: Assuming domestic US production of biofuels for aviation, is there greater potential for oilseeds, fermentation based biofuels from starch, sugar, and or cellulosic crops?</p>
Food vs. Fuels Issues	<p>Three Panelists:</p> <p>Michael Bomford, Research Scientist, Kentucky State University Are production and processing possibilities and implications for food/fuel location specific?</p> <p>Sharon Shoemaker, Executive Director of the California Institute of Food and Agricultural Research, University of California, Davis What government policies could accelerate biofuels production?</p> <p>Goro Uehara, Professor of Soil Science, Department of Tropical Plant and Soil</p>

	Feedstocks Availability
	<p>Sciences What is the food versus fuel issue for biofuels?</p> <p>Each panelist should address the following question: What can the Air Force contribute to the development technology, organization and policy that would accelerate biofuels development?</p>
Summary	Presented by Moderator

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	Feedstocks Logistics
Moderator	Bob Fireovid, National Program Leader, Bioenergy, USDA/ARS
Carbon and Greenhouse Gases	<p>Four Panelists:</p> <p>Tom Richard, Director, Penn State Institutes of Energy and the Environment Leon Schumacher, Professor, Agricultural Systems Management, University of Missouri John Cundiff, Professor, Biological Systems Engineering, Virginia Tech</p> <ul style="list-style-type: none"> - What are the carbon and greenhouse gas issues for feedstock logistics? - How does feedstock logistics play into the land issue debate? - What are specific issues in feedstock logistics for oilseeds, starches, sugars or woody cellulose, and for herbaceous cellulose?
Sustainability, Input Requirements, etc.	<p>Three Panelists:</p> <p>Bryce Stokes, Navarro, DOE Contactor Kevin Shinnars, Professor, Agricultural and Biological Systems Engineering, University of Wisconsin Jon Van Gerpen, Professor, Biological and Agricultural Engineering, University of Idaho</p> <ul style="list-style-type: none"> - Define sustainability for feedstock logistics and how does this connect with the general issue of feedstock sustainability? - How does feedstock logistics impact sustainability? - How do feedstock logistics vary between oilseeds, starch, and sugar products and forest products?
Food vs. Fuels Issues	<p>Three Panelists:</p> <p>Dr. Steven Searcy, Professor, Biological and Agricultural Engineering, Texas A & M University AgriLife Terry Isbell, Research Leader, USDA/ARS Sam Tagore, DOE Timothy Rials, Director of the Tennessee Forest Products Center, Department of Forestry, Wildlife and Fisheries, University of Tennessee</p> <ul style="list-style-type: none"> - How does feedstock logistics relate to location of production issues? - What is the role of feedstock logistics in the food/fuel debate? - How can the Air Force contribute to developments in technology, organization and policy that would accelerate the biofuels industry?
Summary	Presented by Moderator

	Processing or Conversion
Moderator	Robert Brown, Iowa State University
Carbon and Greenhouse Gases	<p>Three Panelists:</p> <p>Paul Grabowski, DOE Thermochemical Conversion Technology Manager What are the interactions for carbon or greenhouse gases, if any, with the feedstock used in processing?</p> <p>Dr. Bryan Willson, Professor and Director, Colorado State University Clean Energy Supercluster What are the prospects for reducing the carbon and greenhouse gas impacts with improvements in processing technology?</p> <p>Pratap Pullammanappallil, Assistant Professor, Agricultural and Biological Engineering, University of Florida How do the different options for processing impact carbon and greenhouse gases?</p>
Sustainability, Input Requirements, etc.	<p>Three Panelists:</p> <p>Kwesi Boateng, Research Leader, USDA/ARS Can processing be widely distributed or is the value chain for biofuels intrinsically driven by economies of scale, and is this question related to feedstock?</p> <p>Troy Runge, Director, Wisconsin Biotechnology Institute What influence does the choice of processing technology have on land use change?</p> <p>Stan Bull, Vice President, Strategic Energy Analysis & Applications Center, NREL What are the major differences in sustainability among processing options?</p>
Food vs. Fuels Issues	<p>Three Panelists:</p> <p>Jennifer Holmgren, UOP Honeywell How can the Air Force contribute to developments in technology, organization and policy that would accelerate the aviation biofuels industry?</p> <p>Bruce Dale, Department of Chemical Engineering and Materials Science, Editor in Chief: Biofuels, Bioproducts and Biorefining, Associate Director: Office of Biobased Technologies, Michigan State University What are the prospects for converting lipid, sugar, starch and cellulosic feed stocks into aviation fuel?</p> <p>Hans Blaschek, Professor of Food Microbiology and Assistant Dean, College of Agricultural, Consumer and Environmental Sciences, University of Illinois Is there a relationship of these conversion methods and feedstock supplies to food/fuel Issues?</p>
Summary	Presented by Moderator

	Deployment
Moderator	John Ferrell, US Department of Energy
Carbon and Greenhouse Gases	<p>Three Panelists:</p> <p>Ray Knighton, National Program Leaders, Natural Resources and Environment, USDA/CSREES How does deployment relate to carbon and greenhouse gas issues?</p> <p>Donna Perla, Chief, Waste Minimization, EPA What are the land use implications for deployment?</p> <p>James Doolittle, North Central Region Sun Grant Initiative, South Dakota State University How are developments in technology likely impact deployment strategies?</p>
Sustainability, Input Requirements, etc.	<p>Three Panelists:</p> <p>Larry Russo, U.S. Department of Energy How are regional deployment considerations different for oil, starch, sugar and cellulose based aviation fuel production systems?</p> <p>John Gardner, Vice President for Economic Development and Global Engagement, Washington State University How do we deploy to assure sustainable biofuel for aviation systems?</p> <p>Robin Shepherd, Executive Director, North Central Cooperative Extension Association (NCCEA) What are the scale of conversion impacts on deployment systems?</p>
Food vs. Fuels Issues	<p>Three Panelists:</p> <p>James Trapp, Associate Director of Extension, Oklahoma State University What are food fuel issues for deployment in aviation biofuel production?</p> <p>Tom Dorr, What can the Air Force contribute to the developments in technology, organization and policy to accelerate the biofuels for aviation industry?</p> <p>Craig Kvien, Professor, Crop Physiology and Management, University of Georgia How does government policy federal and state reach and influence deployment strategies?</p>
	Presented by Moderator

	Economics and Policy
Moderator	<p>Joe Glauber, USDA Chief Economist/ Harry Baumes, Associate Director, USDA Office of Energy Policy and New Uses</p>
Carbon and Greenhouse Gases	<p>Three Panelists:</p> <p>Bill Hohenstein, Global Change Program Office, OCE How does economics and policy play into the issue of carbon and greenhouse gases?</p> <p>John Sheehan, Program Director, Institute on the Environment, University of Minnesota How does policy influence land use--agricultural policy and greenhouse gas policy?</p> <p>Brent Gloy, Associate Professor, Agricultural Finance and Agribusiness Management, Cornell Will current legislation on controlling carbon/greenhouse gases be effective? How will it impact the biofuels industry?</p> <p>Zia Haq, Analysis, OBP, U.S. Department of Energy What are the economic factors determining land use and how are they changing?</p>
Sustainability, Input Requirements, etc.	<p>Three Panelists:</p> <p>William Meyers, Professor, Agriculture Economics, University of Missouri, and Co-Director, FAPRI What are the economic factors to be considered in comparing oil, starch or cellulose based systems for sourcing aviation fuels production?</p> <p>Neil Conklin, President, The Farm Foundation What kinds of production, delivery and processing systems are sustainable?</p> <p>Greg Graff, Assistant Professor, Department of Agricultural and Resource Economics, Colorado State University How do economists define sustainability?</p>
Food vs. Fuels Issues	<p>Three Panelists:</p> <p>Joe Outlaw, Professor and Extension Economist in the Department of Agricultural Economics, Texas A&M University What are the food/fuel issues for aviation biofuel production?</p> <p>Wally Tyner, Energy Economist, Department of Agricultural Economics, Purdue University What government policies (federal and state) can accelerate biofuel for aviation production and combat food fuel issues?</p> <p>Larry Leistritz, Professor of Agricultural Economics, North Dakota State University How can the Air Force contribute to developments in technology, organization and policy that would accelerate aviation biofuels development?</p>
Summary	Presented by Moderator

USDA Regions and Biofuel Supply and Demand	
#1 - Western Region	<p><u>Dr. Mike Harrington</u>, Executive Director, Western Association of Agricultural Experiment Station Directors Bruno Miller, Regional Manager for Fuel, Delta Airlines Alaska, American Samoa, Arizona, California, Colorado, Guam, Hawaii, Idaho, Micronesia, Montana, Nevada, New Mexico, N. Mariana Islands, Oregon, Utah, Washington, Wyoming</p>
#2 - North Central Region	<p><u>Dr. Arlen Leholm</u>, Executive Director, North Central Association of Agricultural Experiment Station Directors <u>Richard Altman</u>, Executive Director, Commercial Aviation Alternative Fuels Initiative Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin</p>
#3 - Southern Region	<p><u>Dr. Eric Young</u>, Executive Director, Southern Association of Agricultural Experiment Station Directors Carolyn Brooks, Executive Director, Association of Research Directors Joel Murdock, Managing Director, FedEx Air Operations Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, Puerto Rico, South Carolina, Tennessee, Texas, Virgin Islands, Virginia</p>
#4 - Northeast Region	<p>Dr. Dan Rossi, Executive Director, Northeast Association of Agricultural Experiment Station Directors <u>Don Schenk</u>, President, ACA Associates, Inc. Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, West Virginia</p>
Roving Environmental Consultant	Tim Pohle , CAAFI

**Graphic Presentation of the Four USDA Regions
(excluding Alaska, Hawaii, and Pacific Territories – Western Region)**

