

Southeastern Biomass Energy Feedstock Partnership Workshop Summary

**May 10-12, 2006
Hilton Hotel
Knoxville, Tennessee**



About the Partnership:

The goal of the Southeast Regional Biomass Energy Feedstock Partnership, as developed by member organizations, is to facilitate the development of biomass resources in the Southeast Region in order to fulfill the Southeast's potential contribution toward meeting the 1.3 Billion Ton Biomass Goal, as defined by the joint USDA/DOE study: *Biomass as Feedstock for a Bioenergy and Bioproducts Industry: The Technical Feasibility of a Billion-Ton Annual Supply*.

The first workshop of the Southeast Regional Biomass Energy Partnership was held on May 10 – 12, 2006 in Knoxville, Tennessee.

The Southeast Regional Biomass Energy Feedstock Partnership consists of members from the following states and territories: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, Puerto Rico, and the U.S. Virgin Islands.

Members of the Partnership represent a variety of organizations, including: U.S. Department of Energy (DOE), U.S. Department of Agriculture (USDA), State Energy Offices, Sun-Grant Universities, Land-Grant Universities, Extension Service Organizations, Other Academia, Industry, Environmental Organizations, State Farm Bureaus, and Foresters.

Workshop Goal:

The primary goal of the workshop is to create the foundation for a successful regional partnership, encompassing a broad range of participants to facilitate dialog and action in bringing a sustainable bio-economy to the southeast. The workshop sought to develop collaborative efforts and sharing of information across the region. This workshop was the first in a series of regional programs and served as the test site for the initiative. Additional goals of the workshop were as follows:

1. Assist in identifying and describing biofuel feedstocks, both agricultural and forest related, currently available or potentially available in the SE.
2. Ensure that lingo- and cellulosic feedstocks are sourced in an environmentally sustainable way.
3. Enable markets to add value to feedstocks while producing long-term desired results (fuels and energy).

4. Ensure economically viable production of feedstocks for producers.
5. Provide support to the integrated Biorefinery industry and partners.
6. Develop elements for an action plan for this process in the region

Overall, the Southeastern Biomass Energy Feedstock Partnership's first workshop began a dialog, established the partnership, and began to draw a path forward though developing elements critical to an action plan for the region.

During the workshop, attendees were divided into seven different working groups, based upon their professional area. These seven groups were:

1. Sustainable Agricultural Resources and Logistics
2. Sustainable Herbaceous Perennial Feedstocks
3. Sustainable Forest Resources
4. Sustainable Woody Crops
5. Resource Economics and Agricultural Engineering
6. Communications
7. Policy

An attendee list, organized by working group, is attached as Appendix A.

Working Group Outcomes:

Resource Economics and Agricultural Engineering

This working group identified a priority of developing a data analyses framework at county, state, and region levels to:

1. Identify and compile parameters that determine commercial feasibility, sustainability and environmental acceptance of growing, harvesting, and using biomass.
2. Identify and compile existing and potential resources: quantities, distribution, and qualities for:
 - a. Agricultural residues
 - b. Forestry residues
 - c. Perennial energy (specific use) crop
 - d. Annual crops
3. Analyze "production and availability, both current and potential" and "what costs to the gate" ["what are the opportunities and values (only commodity?) for use] under selected scenarios of time scales, technology, policy, markets, and social implications
4. Validate and document databases, models, and analyses assumptions

The group also developed some other points of concern that require follow-up. They are:

1. Level of analysis/purpose of analyses (who will use it)
2. Scenarios (what are they) and assumptions (documented)
3. Interface resources and feedstocks with the conversion (units for comparisons of costs and value; how final use impacts production scales and values)
4. Process for integrating other working groups outputs

Sustainable Agricultural Resources and Logistics

Through out the meeting, this working group identified the advantages/capabilities of SE agricultural resources, discussed the economic/technical issues of SE agricultural resources, and discussed the key role SE agriculture could play in the energy security of the United States. The group also identified several advantages the SE has in this area:

- Uniqueness can be advantage to thermal systems.
- Ag. Resources can function in combination with forest resources
- SE can capitalize on dry systems
- SE cropping system is flexible
- Strength of Sugar Cane/Energy Cane sector
- Potential for using BioOil as crude in the SE Refinery industry

The action items of the group include working with other groups (such as Oak Ridge National Lab) to maintain a current inventory list of agricultural resources. They also decided to form subgroups in specific areas:

- Physical/chemical properties of biomass
- Supply chain optimization
- Resource development (standardized yield trials within this region and across regions)
- Rural economic development
- Extension and education activities

Sustainable Herbaceous Perennial Feedstocks

This working group identified priority crops to serve as dedicated energy crops in the Southeast include switchgrass, energy cane, giant reed, and giant miscanthus. For these crops, work needs to be conducted to increase the yield through regional testing, genetic improvement, and management. Other potential research includes an examination of a particular crop's traits across various environments in the Southeast. On a larger, more regional effort, work needs to be done to identify ongoing experiments and develop a repository of literature from those experiments and others that have been undertaken since 1985. In the production of the feedstocks, work needs to be done on the identification and study of the sustainability and environmental issues surrounding each of the species. Research also needs to study storage/transport issues. Finally, expertise needs to be developed in the Southeast; both in the farming community and the Extension Service to promote sustainable herbaceous plants and to educate landowners.

In addition to collaborating on the opportunities listed above, the group identified other areas that will require future work. These areas are:

1. Fire potential in crop fields
2. Start up may require annual crops to meet immediate needs while perennial crops are getting started
3. Concerns about weeds - Giant ragweed, hemp sesbenia)

4. Will there be a transition of forest ground in the south to energy crops? At what price will these energy crops compete with the current land use?
5. What is the cost to the farmer?
6. Nutrient removal – is it better to leave the leaves and work them back in the ground or process them?

Sustainable Forest Resources

This working group focused its discussions on the Southeast's forest biomass resources. During the discussions, several generalizations were made based on the current market. These were: bioenergy will not compete with sawlogs or housing materials, but may compete with pulpwood in some markets; mill closures in the region will increase the amount of high quality wood in the market while black liquor supplies will decrease; and repurposed mills with supply sources, log/chip handling facilities, water treatment equipment, and boilers will be available.

Several areas of needs were discussed. These areas were:

1. Data needs (FIA resources, unit issues, scaling issues)
2. Forest biomass production needs (management of different species on private lands, site productivity issues, and water related issues).
3. Harvesting and collection needs (handling small stems, changes in scale, labor, and capital for biomass, integrated management, harvest, and utilization systems).
4. Feedstock enhancement./preprocessing (chip quality with small stems, unsorted chips and integration with in-plant pretreatment processes, storage of chips for long durations, pretreatment of chips in storage).
5. Thermochemical treatment of feedstock (pyrolysis and gasification)
6. Mobile plants (safety, permitting, feedstock types)
7. Transportation and handling (supply chain issues for new, large markets, automation of handling and feeding)

Sustainable Woody Crops

The primary goals of this working group were to articulate and facilitate a pathway forward for the large-scale, sustainable production and utilization of existing forest and woody crop biomass as feedstock for a commercially-viable biorefinery that could be used to produce ethanol for transportation fuel, and other valuable co-products. As we envision a sustainable biorefinery industry, the size of the resource base that is immediately available needs to be accurately assessed. This includes an accurate assessment of the land area that is currently in production, the nature of the crops being produced, the amount of standing biomass and productivity (as driven by age and site quality) of the crops currently growing, land area that can be converted to the more intensive production of biomass, including woody crops, and the cost of producing those crops.

The group looked at key issues related to:

1. Near-, mid-, and long-term feedstocks
2. Other potential woody crops
3. Quality Traits For Bioenergy and Co-products

- a. Traits that determine productivity
- b. Traits that determine feedstock quality

The group identified information gaps and research needs in the areas of consolidated bioprocessing (can the separate fermentation of C5 and C6 sugars can be combined in single bioreactor?), defining the available resource base in the SE, economic questions (a critical question is what price will wood for bioenergy have to reach before landowners begin shifting away from traditional loblolly pine culture), the productivity of eastern cottonwood in the SE, and in the accelerated domestication of *Populus*.

Other issues discussed included the fact that with the exception of pine, there is little current breeding work that is ongoing. The loss of databases and test plots/clone banks, structured pedigrees, etc. due to industrial property sales, change in corporate focus, and loss of public funding to maintain plantations are potential problems. Public acceptance of genetically-modified crops is an issue that needs to be considered. Given that woody crop plantations are amenable to treatment with animal and sewage wastes as means of disposal of those wastes is a positive social externality.

Communications

The communications working group discussed several communications/information needs that are apparent in the southeast. These include:

1. Increased communication between feedstock suppliers/farmers, investors, researchers, engineers, and industry to commercialize technology (“matching service”)
2. Target messages – economic, environmental, national security, & energy security benefits – to appropriate target audience/stakeholder interests
3. Make information available to spur regional economic development through biomass technologies/feedstocks
4. Increase use of K – 12 energy education program/materials
5. Represent SE biomass issues at Federal level, including need for additional R&D
6. Promote a future/sustainable biomass vision – long term impacts are the focus
7. Innovation in communication tools utilized (i.e. explore video options)
8. Promote and coordinate sharing of information between research groups
9. Develop a database of experts in various technical areas for public utilization
10. Communication of the “real” cost of gasoline
11. Explore the promotion of flex fuel vehicles to create demand

The group also identified several “next steps” for work in the region. One action item was to identify and communicate with specific communication groups in the SE to examine their efforts, and identify overlap/gaps in activities. This would help build coordination among groups. Another action item was to explore options for development of a tool to link investors, researchers, engineers, and industry for commercialization. The group also felt that we should seek ways to make information resources (data, incentives, etc.) available to farmers in the SE, potentially through the Extension Service. The group also wanted to work with the Sun Grant BioWeb to identify (potential) links with/relationship to E-Extension and BFIN materials.

After completing some of these tasks, the group will explore the option of developing a SE Communications Plan and examine how this plan would fit into the overall regional partnership approach.

Policy Development and Analysis

The Policy working group identified some key areas where additional efforts could aid in the development of biomass industries in the southeast. One effort would focus on the development of white papers for policy makers that cover the concepts of a biorefinery and why it is important to the southeast. Another effort would be to conduct an economic analysis on revitalization of traditional industries and rural development in the southeast through the utilization of biomass.

Another initiative the group developed was to hold “futuring” colloquies with specific stakeholder groups to identify potential policy issues. These meetings would be conducted in two levels, one level with groups such as Farm Bureau, ag industry, state and federal agencies, universities, and environmental groups. Another level would be held with financial interests, such as investment bankers and analysts.

The group also decided to begin developing a roadmap for the southeast. This roadmap would include information on: the unique regional dynamics, the mutual benefits for all (moving traditional industries forward, identifying and nurturing champions), and prioritized policy issues and identified barriers. The impetus to develop a regional policy roadmap is to provide information and guidance to state policy makers.

General Summary

At the concluding session of the workshop, several methods of continuing the work of the partnership were discussed. These included:

- Within working groups:
 - Compile existing resources, data, projects, etc. to aid in identifying gaps in knowledge and/or overlap between groups.
 - Reconvene individual groups to further develop objectives and activities.
 - Develop a set of tasks for the group to accomplish
- Hold a follow-up meeting of the entire partnership within one year
 - Meeting should include more participation from the biorefinery industry and government agencies.

Appendix A.

1st Workshop of the Southeast Region Biomass Energy Feedstock Partnership Attendee List

Sponsors:

United States Department of Energy, Office of the Biomass Program
United States Department of Agriculture Southern States Energy Board
Sun Grant Initiative

Contributing Sponsors:

University of Tennessee North Carolina State University
Oak Ridge National Laboratory - Managed by UT-Battelle for the Department of Energy
Southeastern Region Sun Grant Center

Sustainable Agriculture Resources and Logistics

Badger*, Phil	Southern States Energy Board
Batchelor, Bill	Mississippi State
Cobill, Robert	USDA Agricultural Research Serv.
Columbus, Eugene	Mississippi State
Cundiff, John	Virginia Tech
Das, K.C.	Univ. of Georgia
Duplantis, Jr., Dan	Raceland Raw Sugar Corp.
Erbach, Don	USDA Agricultural Research Serv.
Hess, Richard	Idaho National Lab
Hladik, Maurice	IOGEN
Lawson, William	Cameco Industries, Inc.
Priepke, Ed	CNH America
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Tagore, Sam	DOE/Office of Biomass Programs
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Sustainable Forestry Resources

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Sustainable Herbaceous Perennial Crop Development

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Sustainable Woody Crop Development

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Rockwood, Don	Univ. of Florida
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Sustainable Feedstock Resources Economics and Engineering Analysis

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Perlack*, Bob	Oak Ridge National Lab

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Turner, Larry	Southern Region Extension Directors

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Huhnke, Ray	Oklahoma State University
Kuzel, Fred	Coalition of Great Lakes Governors
Nipp, Terry	Sun Grant Initiative
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Shirley*, Larry	North Carolina Energy Office
Smith, Stephen	Southern Alliance for Clean Energy
Tiller, Kelly	Univ. of Tennessee

Other Participants

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Jackson, Sam	UT - S.E. Sun Grant Initiative
Rogers, Hiram	BCS, Inc.
Seward, Linda	Idaho National Lab
West, William Buck	Idaho National Lab

* Indicates a Working Group Facilitator/Leader