An Overview of the Sixth Annual Southern BioProducts and Renewable Energy Conference

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Renewable energy and bioproducts industries are experiencing great expansion and success of late. Almost 200 business, academic, association and governmental leaders participated in the Sixth Annual Southern BioProducts Conference April 16 to 18, 2007 at the Pearl River Resort near Philadelphia, Mississippi to learn more about these opportunities. The Mississippi Biomass Council, Mississippi Technology Alliance and Mississippi State University Industrial Outreach Service were the event sponsors.

Partnerships: No one business or organization can ensure continued growth in the renewable energy or bioproducts arenas. Partnerships are needed to help individual businesses get started, and are essential to the formation of a strong, sustainable renewable energy industry. Many agencies and organizations exist to provide such support. A partial listing includes USDA, including the Forest Service and Natural Resources Conservation Service; DOE, including the National Renewable Energy Laboratory and Energy Efficiency and Renewable Energy program; the Southern Growth Policy Board; Southeast Ag and Forestry Energy Alliance; American Solar Energy Association and American Wind Energy Association; and in Mississippi are several more agencies and authorities including the Farm Bureau, Forestry Commission and Biomass Council.

Time should be taken to analyze roles and capabilities of existing groups to assure synergy, rather than overlap, is achieved. The Southeast Biomass State and Regional Partnership (SEBSRP) is a regional program, funded through DOE and administered by the Southern States Energy Board. SEBSRP has provided biomass technology development assistance and funding, educational and technology transfer support and helped the member states in both state and national policy development to further deployment of biomass technologies. Currently, Mississippi's contact to SEBSRP is Mr. Kenneth Calvin, Director, Mississippi State Energy Office.

Entrepreneurs' Workshop: A great primer session was held providing information on what is required to obtain financing for businesses based upon new technologies. Much of the information is the same organizational and financial data needed for any business. But, a new technology raises the perceived risk above that of a "normal" business loan request. In the case of biomass projects the cost and availability of feedstocks must be essentially guaranteed, just as markets for your products must be proven.

Eight other major points were expressed during this seminar:

1. Government grants, bonds, loans, loan guarantees and tax credits are often available, and can make or break a project. Use them.
2. The more owner equity a project can generate the better.

3. Dr. Randy Goldsmith, MTA, pointed out that the Mississippi Technology Alliance has tools to help companies in Mississippi be successful. Access this resource. Other states have similar resources.
4. In 2006 a full 10% of all venture capital in the United States went to renewable energy.
5. Problems require solutions; Solutions allow companies to create competitive advantages.
6. Dr. Steve Barnes, Memphis Bioworks Foundation, emphasized that market solutions are what investors invest in. Technologies are simply the means to these solutions. So, sell your solution.
7. He also pointed out that the current drive toward renewable energy adoption is being driven by cost effectiveness and national security concerns, and therefore is going to last, as opposed to the "flash in the pan" situation in the 1970s.
8. Project financing is different than financing a business start-up or expansion. The scale and timeframes considered by investors are different in these two cases. But, one may well need to get a project financed to prove that a technology works before being able to attain financing for a business based upon that technology.

Success Stories in Biomass and Renewables: Scott Sklar, The Stella Group, gave a great overview of the fascinating breadth and variety of renewable energy technologies available for our use. He reiterated several basic points that bear upon renewable energy adoption and expansion.

a) Traditional fossil energy causes pollution.
b) Energy, environment and economics are intertwined.
c) Renewable energy can reduce pollution, create jobs, improve national security, and (especially in the case of biomass energy) reinvigorate rural economies.
d) There is no such thing as "free energy markets" as governmental policies from environmental regulations to tax decisions impact energy investments.
e) Efficiency is the least expensive energy technology.
f) There is no single silver bullet in renewable energy.
g) We should use the variety of technologies available to us to best address local resource needs.
h) Renewable energy deployment is not a zero-sum game.
i) Partnerships will improve all the partners' situations.

Sumesh Arora, Mississippi Biomass Council, pointed out the unequal distribution of fossil fuel resources, especially oil. He showed that biomass resources, especially animal manures, coincide much more closely with human population concentrations.

Dr. Vimal Desai, New Mexico University, shared some truly innovative algae technology being developed at his institution. He also pointed out that biofuels can ensure more control of energy costs by agricultural and forestry producers if they produce fuel from their own resources.

Dr. John Scahill, DOE Golden Field Office, presented very informative data regarding liquid fuel production from biomass. Indications are that thermo-chemical processes may

well yield more fuel per acre than fermentation pathways. The National Renewable Energy Laboratory (NREL) is looking into becoming more involved in R&D regarding pyrolysis processes in addition to their current gasification work. Biomass is the only renewable energy source that can meet our demand for carbon-based liquid fuels and chemicals.

Monty Montgomery, Mississippi Development Authority, gave an overview of the State's fossil fuel infrastructure and how it is being enhanced. This infrastructure can be of assistance in the development and marketing of renewable energy resources as well.

Ms. Necy Sumait, BlueFire Ethanol, shared the success story of BlueFire. The firm had to survive over ten years of technology development and proving to get to the point where they are now building their first commercial cellulosic ethanol production facility. While the technology has been proven for a period of time, market price of petroleum and government policy developments have finally opened the window of opportunity. The lesson learned is: New technology adoption requires a window of opportunity and the ability to stay in business until that window opens.

Dennis Miller, Solena Group, described his firm's plasma-arc gasification technology. It was commercialized in Europe first due to more favorable business conditions that result from public policy mandates regarding greenhouse gas reduction and environmental quality maintenance.

Cellulosic Biofuels: Dr. David Bransby, Auburn University, discussed several goals for biofuel production that various groups have developed and then compared these goals to the amount of biomass resources suggested to be available in the "One Billion Ton" report developed by USDA and DOE. He stated that the 20% by 2010 goal is achievable by processing woody biomass resources currently available on an annual basis, and that 30% by 2030 is achievable if woody energy crops are added to the current woody biomass supply. While we will politically keep making ethanol from the current starch/sugar fermentation platform, making ethanol using thermo-chemical processes is more efficient and will become more cost-effective. He also tantalized the audience with mention of a "disruptive platform" technology called "depolymerization with catalytic synthesis". If this low temperature process proves viable it can change the ethanol production business. In closing Dr. Bransby exhorted the attendees to: "Ignore the Pessimists"; and, "Never Underestimate the Ingenuity of Farmers and Small Businessmen."

Breakout Sessions: Four breakout sessions were held on Tuesday afternoon that provided information on a wide variety of energy efficiency and renewable energy activities and businesses.

Policy Framework and Financing Options: John Moore, Environmental Law Policy Center, discussed the Farm Bill Energy Title. Section 9006 provides grants, and loan guarantees for renewable energy and energy efficiency project financing and was described as a one-stop shop. Unfortunately, only one of every three applications was

able to be funded. Higher funding levels are being sought for the 2007 bill. Another twist to this title is the consideration of a rebate component to go with the grants and loans. The 2007 bill is also expected to include R&D funds to lead to accelerated production and use of energy crops and wind energy. A strong coalition is needed to get a good bill passed.

Donna Perla, EPA Sustainable Development, discussed issues that arose as EPA attempted to address the large amount of biomass wastes created by Hurricane Katrina. A significant lack of infrastructure added to the inability to utilize these materials for energy production. She noted that many coal-fired boilers are not permitted to burn biomass, despite the fact that biomass fuels, so long as they are not treated with petrochemical preservatives, burn cleaner than coal. She did not offer that EPA could create a national regulation allowing biomass to be used in coal-fired boilers, seeming to assume that each state should deal with this matter individually. EPA has established a Woody Biomass Utilization Working Group to develop a broader framework to address future emergencies.

John Rounsaville, USDA Rural Development (RD) Director in Mississippi, described the many programs his agency can use to help finance needed biomass industry infrastructure in the state. RD is trending toward becoming a venture capital source for rural Mississippi. Section 9006 funding, as well as Business and Industry loans and loan guarantees are just some of the tools available from RD. He noted that "Americans react to what we feel in our pocketbooks." So, as fossil fuels continue to cost more the development of renewable energy sources in rural America should continue to grow.

Dr. Noel Schulz, Mississippi State University, pointed out the economic, technical and political policy issues that complicate efforts to affordably interconnect distributed electric generation to the existing power grid. Mississippi is an "avoided cost" state. This means that non-utility electric generators, whether using solar, wind, or biomass power, can only receive a small portion of the retail rate, often less than two cents per kilowatt hour, for any electricity they would send back into the electric grid. Technology now exists to assure safe interconnection of renewable energy production to grid. But, until governmental policy changes, renewable energy production beyond what the generator can use for its own internal needs will not be economically viable. MSU is developing computer modeling methods in order to allow utilities to see a more complete picture of how distributed electric generation could be to their benefit.

David Waide, President of the Mississippi Farm Bureau, discussed the 25 X 25 initiative aimed at providing 25% of the country's energy from renewable resources by the year 2025. Simply put, at some point in the future the United States will see reduced access to relatively affordable oil. Another indicator of the need to replace fossil resources with renewable resources in agriculture includes the escalating cost of nitrogen fertilizers since their production is dependent on natural gas. He pointed out that local cooperative ventures have in the past provided a certain level of support for local agricultural development and that these ventures may well play an increasing role in development of renewable energy and bioproducts production and use in rural areas.

Bruce Crain, Crain Consulting, noted that renewable energy development creates sustainable jobs by building stronger local communities. He has developed a "low-income financing model" for renewable energy business financing. This model is based upon layering multiple funding sources into a single project to reduce the level of risk for any one financier, thus getting to "yes" more easily. He pointed out that funding can come from private and state providers, as well as a variety of federal sources including the Department of Commerce. Congress has expressed a clear desire to see renewable energy technologies get implemented and has produced a stronger and more sustained level of support for renewable energy development. Using existing programs in non-traditional ways can open additional funding opportunities for renewable energy entrepreneurs. These individuals would often be well served to employ a finance specialist as they move to financing the implementation stage of their new business.

Other areas touched upon in the final session were the significant financial backing available through Go Zone legislation for the hurricane damaged areas of the Gulf Coast; the assistance and support available for ethanol development through the Governors' Ethanol Coalition; and the Association of State Energy Research and Technology Transfer Institutions (ASSERTI) which is a valuable source of energy technology data and development assistance. Another indication of the growth of renewable energy is that the GEC now contains 36 members, a fourfold growth in the last 10 years.

Summary: This year's conference is different than earlier versions in its emphasis on getting renewable energy technologies into commercial operation. The wonderful news is that renewable energy technologies are being profitably installed around the world right now. Originally, the big push for renewable energy was from a strictly environmental angle, seen as a way to reduce pollution. Then, farmers saw an opportunity to add additional value to commodity-priced corn through ethanol production. Now, renewable energy technologies are becoming cost-effective in their own right.

Infrastructure to plant, harvest, process, store and deliver biomass other than grain and oilseed crops needs to be further developed and optimized. This is a key area where public-private partnerships are needed. As Ben Franklin said, "We must surely all hang together, lest we hang separately."

Education is still a very necessary element in furthering the adoption of renewable energy technologies. Both the general public and the country's financiers must be educated as to the technical soundness, problem solving capabilities and economic viability of renewable energy. Great projects can be killed by an uninformed public that reacts to a sense of something being either forced upon them or snuck by them.

So, successful renewable energy and bioproducts projects and companies can be created by finding a problem that can be solved by the firm's technology. Then a business plan must be constructed that clearly shows how the problem can be solved at a profit.

Whether a community is being rebuilt after a hurricane, or simply is seeking to reinvigorate itself after years of economic decline, renewable energy and bioproducts technologies can be key components of this rebirth. The challenge is to find that mix of renewable energy and bioproducts technologies and businesses that best addresses the unique resource base and economic needs of each community.

We see ourselves in an increasingly global economy and often wonder whether the viability of individual towns is even within their control. Renewable energy and bioproducts technologies provide a significant opportunity to increase this level of local self-determination. These technologies may in fact hold the key to maintaining and reinvigorating the capitalist, entrepreneurial democracy that is the true strength of the United States of America.