

Industry Survey Final Report
Developing State Policies Supportive of Bioenergy
Development

Prepared for the Southern States Biobased Alliance

Managed by the
Southern States Energy Board
6325 Amherst Court
Norcross, GA 30092

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BACKGROUND

Southern States Energy Board

The Southern States Energy Board (SSEB) is a public non-profit interstate compact agency that serves as the regional energy and environmental representative for sixteen southern states, the Commonwealth of Puerto Rico and the U.S. Virgin Islands. The Board provides technical staff support, policy and program development, and implementation and information services to member jurisdictions. Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia, the commonwealth of Puerto Rico, and the U.S. Virgin Islands are members of the Board. Any state contiguous to a member is eligible to join the Southern States Energy Compact.

Each governmental jurisdiction is represented on the Board by three members: the governor, a legislator from the House and legislator from the Senate. An eleven-member executive committee, which includes a chairman governor, a vice-chairman and a treasurer, provides direction to the Board throughout the year. SSEB's federal representative, who is appointed as liaison between the federal executive branch and SSEB by the President of the United States, serves as an ex officio, non-voting member. The chairman of the Southern Legislative Conference (SLC) Energy Committee and SSEB's executive director serve as ex officio, non-voting executive committee members as well.

SSEB was created by state law in 1961 and consented to by Congress the following year. The *mission* of the Board is **to enhance economic development and the quality of life in the South through innovations in energy and environmental programs and technologies**. SSEB carries out its mission with oversight from its Board and through periodic sessions of its executive committee, advisory committees, government/industry coalitions, working groups and associate members that serve to improve communication, coordination, and collaboration among the Board's member states. The Board exercises the mandate through the creation of programs in the fields of energy and environmental policy research, development and implementation, science and technology exploration and related areas of concern. SSEB serves its members directly by providing timely assistance designed to develop effective energy and environmental policies and representing members before governmental agencies at all levels (see www.sseb.org for more information).

Southern States Bio-Based Alliance

For the past several years, states have struggled with the continued problems of declining rural economies, increasing energy costs, and increasing environmental issues—including the disposal of wastes and residues. Most states are also energy importers, increasing their vulnerability to energy price fluctuations, while at the same time draining cash from states for energy expenditures.

As a result of these and other issues, the federal government has established a federal Biobased Products and Bioenergy Initiative. This goal has strong bipartisan political support, and is a joint effort of several federal agencies with leadership provided by the U.S. Department of Energy and the United States Department of Agriculture.

Within the United States, the SSEB region is currently the national leader in the production and use of bioenergy. This leadership is due to a number of reasons including good climate and soils, relatively low land costs, labor rates, and taxes; existing major forest product industries and their extensive use of bioenergy, and well-managed, aggressive state bioenergy development programs. However, in spite of its current leadership, the SSEB region still has tremendous untapped potential to develop bioenergy and biobased products.

Therefore, under the SSEB chairmanship of Governor Hodges of South Carolina, a policy statement was introduced at the 2000 annual meeting of the Southern Governor's Association. This policy statement, passed unanimously by the governors, requested that the states work together within SSEB to establish a Southern States Bio-Based Alliance, which would function in a manner similar to existing SSEB task forces. The result of this policy has been the organization of the Southern States Bio-Based Alliance, composed of two gubernatorial appointees (a legislator and agency head) from each SSEB member state.

The **mission** of the Southern States Bio-Based Alliance is to use the SSEB's unique state, local, and other networks to provide information, technical and other assistance, to mitigate barriers, to develop and deploy bioenergy technologies, and to promote the use of bio-based products for the improvement of the regional environment and economies. With this mission statement as its focus, the Southern States Bio-Based Alliance developed a strategic plan that addresses the need to facilitate and encourage the development, deployment, and use of bio-based technologies and products. Through this coordinated and cooperative effort, the Alliance can support the decision-makers of the southern region in taking a balanced and responsible approach to policymaking on today's bioenergy and biobased issues.

The SSEB, through the Alliance, is assisting the U.S. Department of Energy to determine the effectiveness of relevant government policies and programs. The **goal of this project** is to identify and compile into one document bioenergy and biobased-related government policies and programs in the US and to determine the effectiveness of these policies and programs. Part of this activity is to interview biobased industry officials and other stakeholders. The final report is meant to serve as a resource for industry that has interest in and need for this specific information, and for government officials contemplating modification of existing legislation or creation of new legislation, policies, or programs. As a result, government officials will be able to learn from the experiences of others and efficiently create new model legislation for their states.

THE QUESTIONNAIRE

One task of this activity was to interview biobased industry officials to determine the impact of existing and/or lack of policies on efforts to develop, deploy, or use biobased technologies or products. A listing of selected industry representatives and other beneficiaries of the legislation and programs was compiled from existing SERBEP databases, after being updated from industry lists. Although this project is focused on the Southern US, there was interest in policies and programs from all levels of government both inside and outside the US. The study was also interested in all sizes of projects and technologies from utility scale to residential applications and all aspects including environmental, siting, and financing. Therefore, although this survey was focused on industry, in some cases, questionnaires were sent throughout North America to trade associations, and a few questionnaires were sent to selected government officials and academia throughout North America. Recipients of questionnaires sent to organizations were offered the opportunity to respond for the organization they belonged to or with reply as individuals.

The survey asked for comments on the effectiveness of the existing policies and programs, and asked to suggest changes in the existing policies and programs or suggest new policies and programs that are needed. The survey also asked those suggesting changes or new policies and programs to explain the rationale for their suggestions.

The questionnaire advised readers to interpret the term “governmental policies” very broadly and could include such things as federal, state, or local government policies (e.g., strategies, plans, guiding principles, courses of action, and procedures) such as the Kyoto Greenhouse Gas Treaty; government purchases of bioenergy and biobased products, and assistance with fuel certification. Legislation could also include financial support programs (e.g., subsidies, loans, grants, equity positions, interest buy-down programs, access to government bond programs, government payment for infrastructure development), tax credits or rebates, reasonable environmental and zoning legislation, Renewable Portfolio Standards, Renewable Fuel Standards, System Benefit Funds, and deregulation, among other things. A copy of the questionnaire is in Appendix I of this report.

Questionnaires were sent out in early August 2003 by email, fax, or through the U.S. Postal Service. Of the 1056 questionnaires sent out, 348 were sent to recipients in the SSEB region, 18 were sent to Canada, and the balance were for the rest of the country.

The rate of response for a questionnaire of this type was fairly typical. Of the 1,056 questionnaires sent out, 146 were returned due to bad addresses or other reasons, and 29 responses were received, for a total response rate of 10 percent. Selected raw responses from those who granted permission for publication are listed in Appendix II.

A summary of the responses is contained in the next section of this report. Unfortunately, not all responses followed the format of the questionnaire with their responses, making their incorporation into the final report difficult. These non-formatted raw responses are shown separately under Appendix II and their responses have been incorporated into the summary to the extent possible. As would be expected, responses

were governed by the responders' respective interests and most responses centered on economic or financial issues.

SUMMARY OF RESULTS

Question 1. Considering EXISTING bioenergy and biobased programs and policies, please list all (federal, state, and local) programs and policies that you are familiar with in the order of top priority for your company (number 1 highest). Please make your descriptions as clear as possible. A summary of the responses to question 1.

Perhaps the most surprising result was the number of responders that were not aware of existing state and federal incentives and programs—even for their own state. The state incentives that people were most familiar with seemed to be those in California. Of the federal programs, responders seem more knowledgeable and supportive of USDA programs. Along a similar theme, responders wanted to see more public education about biomass energy. Specifically, more activity from the Southern States Energy Board and the Alliance were mentioned.

Of the federal programs, responders were more familiar with the Section 29 (biomass gasification) and Section 45 tax credits (closed loop biomass and REPI), which are older programs. Most government financial incentives mentioned or requested were tied to electricity production. Some referred to animal waste management. One responder indicated that no incentives were needed providing that conventional competing fuels also were not subsidized.

Another result was that government placed too much emphasis on R&D and not enough on application and commercialization of technology. Some expressed frustration on their ability to obtain funding through existing federal government programs. Frustration was also expressed at the government's funding of research to develop technologies that were already commercial, or promotion of projects and technologies that had failed or been abandoned.

Although some responders indicated awareness of the federal government's Small Business Innovative Research (SBIR) Program, they did not indicate how they felt about the quality of these programs.

Perhaps as a result of the surplus of pulpwood and Conservation Reserve Program (CRP) wood in the South, responders wanted to see more emphasis on the use of wood feedstocks—especially pine trees—for energy and the use by utilities of biomass fuels. Along these lines, responders wanted to see more emphasis on developing technologies usable at the utility scale and more appreciation in the bigger picture for the importance of rural economic development.

The importance of the USDA Value-Added program was mentioned in this context, as was the need for state legislation to support biodiesel. The importance of the availability of tax-exempt financing and funding for working capital was mentioned.

Question 2. What is it specifically about your higher ranked bioenergy and biobased programs and policies that make them more important to you? If they need improving, how would you improve on them (be as specific as possible)?

Some respondents felt that more financial assistance was needed for low value materials as well as energy crops, since energy crops continue to be fairly high cost. Good methods to internalize what are currently externalities are needed in order to allow the industry to benefit from the true value of their efforts.

Others felt that existing federal incentives, such as Section 45 tax credits, were too restrictive to be practical. Some felt that utilities were not using their true avoided costs and thus did not pay enough for electricity generated by small providers.

More respect and financial assistance is needed for private companies and—especially—small companies and for real world applications. Solicitations should have longer lead times (announcements at 6-9 months were suggested) and more communication should occur during the solicitation period. Frustration was expressed that much of the results of government-sponsored research is no longer available to the general public. And, in general, more funding is needed for all bioenergy programs.

Education programs focused on environmental regulators is especially needed to assist these regulators to understand the benefits and opportunities of bioenergy, the science behind the technologies, and the need for reasonable and practical regulations and permitting procedures.

More integration with current government economic development programs is needed. Bioenergy can assist depressed agricultural and forestry industries; however, the use of bioenergy as an economic development tool must be incorporated into economic programs and activities.

Some felt that biomass fuel should be included in all state electrical energy portfolios. Also, in addition to a Renewable Portfolio Standard (RPS), utilities should be required to pay a minimum amount of 5.5 to 10 cents per kWh or \$5 to \$6 per million Btu for renewable energy. States with Renewable Portfolio Standards should encourage the use of standard power purchase (or energy purchase) agreements that would provide fair interconnection and standby or station power standards that would apply to both energy suppliers and purchasing utilities. Furthermore, a rule should be adopted that would not require renewable energy users to pay exit penalties to the utilities.

Section 29 tax credits were cited as being particularly helpful to creating a financially viable landfill gas industry and building the present landfill gas industry (as well as thermochemical biomass gasification). One specific suggestion for Section 29 was to allow to be used by the people that earn them, without regard to the limitation of the Alternative Minimum Tax. This change would make the tax credits more attractive to a wider range of companies.

It was suggested that Section 29 tax credits be extended a minimum duration of seven years from commencement of operations or Section 45 tax credits be modified to incorporate gasification. Section 45 needs to be broadened in general.

The California Energy Commission renewable energy payments were cited as a good program that ties economic support to renewable energy electric production. This program provides five years of payments awarded through a bid process in which projects request a certain level of support based on need.

A farm organization felt that it was important that no feedstock, so long as it meets the required standards, should be penalized or treated unfairly by legal means. The country needs all renewable resources to compete in the global market.

Funding for SBIR and other programs to assist private industry needs to be increased so that more people have the opportunity to participate in these programs. Programs to provide financial assistance to the private sector should be considered investments by the government—not expenses—and the necessary information to verify the value of these investments needs to be collected and made available.

Private business should not have to compete against the federal agencies that are putting the solicitations on the street. It is very misleading for the government to say that there is X amount of funding available when in reality a large portion is staying with government.

EPA needs to change its position on the availability of air emission credits to landfills that are subject to NSPS and that develop an energy project thereon.

Programs that support harvesting and use of crop residues are needed.

Question 3. What NEW bioenergy and biobased policies and programs are needed? List your suggestions for new policies and programs in your order of priority with number 1 the highest and be as descriptive as possible.

- a) Change IRS regulations to allow easier access to Tax Exempt Bonds to fund Biomass projects.
- b) Establish enhancement for supplier bonds for wood fuel suppliers, similar to the construction bonds provided through the SBA for construction contractors.

More focus and money needs to be directed to small businesses working in the bioenergy area. The existing SBIR program is a good start but needs improvement. For example, Phase I funding is often inadequate and there is a mandatory gap between Phase I and II. The gap is sometimes difficult for small companies to bridge.

Mandatory cost sharing can also be a problem for small business. Cost sharing requirements are the same regardless of whether one is competing against a large company or a government-run laboratory. Cost sharing requirements should either be waived for small companies or scaled to company size.

Government-sponsored research should consist of a mixture of government research on a 5-year (or less) plan combined with seed money to small entrepreneurial businesses, which are willing to take risks and try new approaches. The government needs to talk to entrepreneurs and find out what their problems and needs are.

It is not believed that new DOE programs are needed. Rather existing programs, especially those like the Regional Biomass Energy Program and State Energy Program

that support industry, need greater funding and authority—including the authority to continue to fund applied research on a limited basis.

The forestry industry is seriously struggling at present and use of wood for bioenergy, which is very feasible, could greatly assist the industry. Policies thus need to be implemented that encourage the use of wood fiber for energy purposes—especially harvesting residues and unmerchantable wood. Federal RPS could achieve this (as could state RPS's; however, a federal RPS would be uniform and universal).

The various definitions for biomass sometimes serve as an impediment. Biomass should include any biomass produced from industry or forestry operations and provide incentives for development of, or investments in, new technologies, plants, or equipment.

The new policies and programs most needed are those that result in getting existing knowledge and funding into the field where it is needed.

A clean carbon credit policy would allow biomass plantations to be financed.

The forest products industry is facing a critical time in its history. Forest product companies continue to struggle to produce profits, and property owners continue to pay increasing taxes while hoping for improvement in demand for their timber. We have a significant raw material supply coupled with declining demand. Therefore, new markets, products, and technologies must be encouraged and developed in order to help insure the long-term health and viability of the southeast's forest products industries, the infrastructure that supports them, and ultimately, our forests. Utilization of forest biomass for energy production on a commercially viable scale is an alternative that should be pursued and encouraged.

Production of energy from wood is not new. In fact, many forest products manufacturing facilities have produced much, if not all, of their own electricity for many years. The general consensus is that utilizing existing technology, bioenergy production is not economically justifiable unless oil prices are well above their long-term averages. However, there are several new technologies being developed and tested which may lead to more cost competitive and acceptable alternatives. Also, bioenergy is widely accepted as a “green” energy alternative as it produces less pollutants (SO_x, NO_x) than coal, and net greenhouse gasses (CO₂, CH₄) are significantly decreased. Finally, increased use of bioenergy also has the potential to mitigate the negative social, economic, and environmental impacts from continued US dependence on foreign oil.

Currently, this biomass issue is being addressed nationally in the Healthy Forest Initiative (HR 1904) and the Energy Bill (S.14). In both bills, biomass definitions include only pre-commercial thinning, wood waste, or wood by products “of preventative treatments...a) to reduce hazardous fuels; or b) to reduce the rise of or contain disease or insect infestation.” This legislation should be broadened to include any biomass produced from industry or forestry operations and provide incentives for development of or investments in new technologies, plants, or equipment.

Therefore, policies should include:

- SSEB should support the development and production of bioenergy from wood and wood waste on an economically viable, ongoing basis.

- SSEB should attempt to influence natural resources and energy legislation that favors bioenergy production from forest products and provides incentives to companies that might develop or implement such new technologies.
- SSEB should encourage research of new technologies at the state, federal, and private levels.
- SSEB should facilitate the sharing of knowledge and encourage cooperation between other similar bioenergy development efforts.

A national policy requiring utilities to pay 3-5 cents per kWh over their avoided costs is needed.

Utility interconnection issues remain a major impediment. Implementing uniform interconnection guidelines that are adopted nationally by FERC edict would help industry tremendously. The recent drafting of such guidelines by IEEE has been a positive first step.

- (a) Expand the availability of low-cost tax-exempt bond financing through set-aside of bond cap allocations specifically for biobased energy projects in each state. Expand other state biobased energy financing programs that would make low-cost financing available to biobased energy projects. Allow the pooling of such projects to achieve economies of scale in financing (i.e., to reduce the issuance costs of debt with placed securities). Provide state credit enhancement (e.g. guarantees) to bond issuances to allow for lower interest costs.
- (b) Federal, state and local governments should adopt policies that require their agencies to purchase a specified percentage of renewable source energy, including biobased energy. Such policies should recognize that the purchase of such energy will come at an initial increased cost, due to the increased costs associated with producing such energy, which tend to be generated by smaller projects in the case of landfill gas. Other forms of biobased energy can be larger, but raise other issues such as certainty of available biomass resource (e.g., wood waste, agricultural waste and municipal refuse). Included in any such policies should be a pricing mechanism and the ability for such governments to purchase renewable energy through direct access transactions (which would compel the utilities to allow use of their transmission and distributions systems in exchange for a fair cost). Since government represents a significant additional market and would directly support the development of additional biobased energy projects. However, higher pricing, available financing and the ability to authorize a direct access system (or its equivalent) are all essential for this policy to become effective.
- (c) Adopt federal or state policies that would override the policies of regional air quality management districts, such as the South Coast Air Quality Management District, that would establish a policy that would allow for the siting of biobased energy production facilities (such as electric power or cogeneration) that would have less restrictive standards for Best Available Control Technology in order to be employed. Currently, in part due to flaws in the EPA's air models, more electric power generation could be employed at larger landfills in California but for restrictive air emission policies. There should be a trade-off recognized that there may some incremental increase in pollution from energy technologies employed using landfill gas due the inherent issues of dealing with the chemical constituents in landfill gas. For instance, siloxanes and other chemicals in landfill gas, without using expensive pretreatment equipment, do not allow for the use of

selective catalytic reduction equipment to reduce emissions. Even if they did, the requirement for the use of SCR air pollution control equipment would make already difficult economics untenable for such projects-unless substantial economic incentives are made available.

- (d) Adopt a federal statute or state statutes in states that do not currently have them that would exempt from regulation as a utility any biobased energy project, whether its end use energy is sold at wholesale or at a retail to fewer than 3 customers. Some states, such as California have extensive statutes exempting landfill gas and other renewable energy projects from such regulation. Other states, such as Washington, have no such legislation, even under circumstances when such projects are exempt from federal energy regulations pursuant to PURPA or as an exempt wholesale generator.

Industry standards need to be developed.

More support is needed to develop densified wood for industrial, commercial, and governmental use.

Funding for demonstration of technology, including loan guarantees, needs to be made available. Both state and federal governments could establish programs to provide performance bonds, performance guarantees, and insurance (especially liability insurance) for new bioenergy products and services. Such things are virtually impossible to obtain through the private sector, but are essential for business.

Policies need to be changed to decrease the focus on R&D, and to decrease the emphasis on funding only PhDs. Funding to bridge the gap between R&D and commercial status is needed. Even for technologies that require relatively little assistance, funding is not available from govt sources.

Question 4. What bioenergy and biobased programs and policies does your state have? Please make your descriptions as clear as possible.

Some responders were not aware of any programs or policies in the following states: VA, GA, AL, and MO

Some responders said they were aware of programs and/or policies in the following states: IL, CA (several), MN, and AL

Appendix I
Survey Form

Bioenergy and Biobased Policy Survey

The Southern States Energy Board (SSEB) is assisting the U.S. Department of Energy to determine the effectiveness of bioenergy and biobased-related government policies and programs in the US. Part of this activity is to interview biobased industry officials to determine the impact of existing policies or lack of policies on efforts to develop, deploy, or use biobased technologies or products. The Southern States Energy Board has identified your company as a private industry either active or at least having a vested interest in the biomass field. Therefore we are asking you to provide comments on the effectiveness of existing bioenergy or biobased-related policies and programs, and to suggest changes in the existing policies and programs, or suggest new policies and programs that are needed. The rationale for your suggested changes will be most helpful to use in transferring your visions and needs to others.

Formed in 1960, the SSEB is an interstate compact that includes 16 states plus Puerto Rico and the Virgin Islands—thus it covers roughly one-third of the United States. The Board is comprised of the Governor of each member state plus a legislator from each house of each member state. Additionally, the Board includes a federal representative that is appointed by the President. The Board works to improve communication, coordination, and collaboration on energy-related issues among its member states through frequent meetings and joint activities (see www.sseb.org for more information).

The Southern States Energy Board created a task force—the Southern States Biobased Alliance (Alliance)—in September 2000 specifically to focus on bioenergy and biobased product-related issues and to cooperatively build a vibrant biobased economy in the South. The Alliance consists of a legislator and agency head from each state, with both members appointed by their Governor. COLLECTIVELY, THE SOUTHERN STATES ENERGY BOARD AND THE ALLIANCE THUS REPRESENT A DIRECT LINK TO THE HIGHEST LEVELS OF STATE GOVERNMENT IN THE SOUTH AND, WITH YOUR HELP THROUGH THIS SURVEY, PROVIDE AN UNPARALLELED OPPORTUNITY FOR INDUSTRY TO ACHIEVE A MEANINGFUL, LARGE SCALE CHANGE IN THE POLITICAL CLIMATE REGARDING BIOENERGY AND BIOBASED-RELATED ISSUES.

Based on your input, the final report is meant to serve as a resource for government officials contemplating modification of existing legislation or creation of new legislation, policies, or programs. As a result, government officials will be able to learn from the experiences of others and efficiently create new model legislation for their states. It is anticipated that the results of this study will be used not only in the South, but also throughout the US and perhaps even beyond the US.

Note that governmental policies can be very broad and can include federal, state, or local government policies (e.g., strategies, plans, guiding principles, courses of action, and procedures) such as the Kyoto Greenhouse Gas Treaty, government purchases of bioenergy and biobased products, and assistance with fuel certification, etc. Legislation may include financial support programs (e.g., subsidies, loans, grants, equity positions, interest buy-down programs, access to government bond programs, government payment for infrastructure development), tax credits or rebates, reasonable environmental and zoning legislation, Renewable Portfolio Standards, Renewable Fuel Standards, System Benefit Funds, deregulation, etc.

Although the SSEB is based in the Southern US, we are interested in information on policies and programs from all levels of government both inside and outside the US. We are also interested in all size of projects and technologies from utility scale to residential applications and all aspects from environmental to siting to financing. Although this survey is focused on industry, in some cases we have asked others to participate in the survey.

The survey is designed to require a minimum amount of your time. We suggest that before you start the survey, you scan down through it quickly to determine the flow and nature of questions. Since many things can influence the development of a biobased economy, feel free to interpret as broadly as you desire what programs and policies are relevant to this survey.

We need your response no later than September 3, 2003. You may email (preferred method) your response to me at pbadger@bioenergyupdate.com or fax them to me at (256) 740-5635, or mail them to me at P.O. Box 26, Florence, AL 35630. Should you have questions, you may call me at (256) 740-5634.

Remember, we can't help you if we don't hear from you!

Sincerely,

Phillip C. Badger

The following information is optional:

What is the nature of your business (check all that apply)?

- Equipment manufacturer (indicate products: _____)
- Equipment vendor (indicate products: _____)
- Consultant (indicate specialty(s): _____)
- Engineering firm
- Project developer
- Biomass producer or supplier
- Biomass facility operator (indicate kind of facility: _____)
- Other (indicate nature of business: _____)

Number of employees in company

Years in business

Is your company considered a Small Business by the US Government?

Contact information:

Company name: _____

Individual's name: _____

Individual's phone number: _____

Individual's fax number: _____

Contact information will be used to clarify, if necessary, any responses. Your contact information will not be passed on to others.

We apologize if this survey was inadvertently sent to you in error.

Appendix II
Survey Selected Raw Responses

Selected Raw Responses from SSEB Bioenergy and Biobased Industry Survey

Introduction

Because of the wide diversity and limited number of responses to the survey, preparing a good summary of all responses was difficult. Therefore, after the completion of the survey, a memo was sent to those that had responded asking if their “raw” responses could be published in the appendix to the final report on the survey. Permission was sought since, in some cases, the responses may have provided information that would have identified the respondent. The following responses were from those who agreed to have their responses published. It was agreed that we would not identify individual responses. Therefore, in some cases, minor editing was performed to hide the identity of the respondents.

1. Considering EXISTING bioenergy and biobased programs and policies, please list all (federal, state, and local) programs and policies that you are familiar with in the order of top priority for your company (number 1 highest). Please make your descriptions as clear as possible.

Response. Regarding existing policies, our interest is to have a clear de-regulated environment for power generation, allowing electricity generated from 'green' resources to capture its value through lower emissions and efficiency of output. No direct subsidies are required, but the conventional fuels currently used to generate power should likewise not be subsidized.

Response. RESEARCH - We realize that research must be carried out to maintain continuous progress in technology development. Other than the spin-offs developed under the space program, we can't really point out much technology that has been developed and implemented as a result of government sponsored research. Most technology development has come from private industry with no input from government. We and you can name endless government sponsored research projects that have consumed millions of taxpayer dollars and ended in utter failure. Yet, our government continues to fund projects to "develop technology" that is already available, some already in commercial applications. Our government continues to distribute literature and promote government sponsored projects and technologies that have failed and have been abandoned. Needless to say, we would favor more emphasis on government incentives being devoted to actual implementation of projects with proven technologies.

Response. I am not familiar with any programs and policies.

Response. USDA SBIR, DOE SBIR, USDA IFAFS.

List Bio-based Programs we are familiar with:

Response 5. I am not aware of any programs or policies that give meaningful emphasis and encourage the use of wood for energy.

Response. I do not know the names or numbers of specific programs. I am familiar with the following five categories of programs and offer comments in order of importance.

1) Rural Development

Integrate technologies and financial assistance to economically depressed rural areas. Should provide funding to develop and implement

- programs, which will provide effective relief for these areas. Should probably be done through existing Economic Development organizations.
- 2) Feedstock Development
Should develop existing feedstock sources such as pine trees as viable energy sources. Develop a forest management system to include “energy thinnings” as an integral part of forest management systems.
 - 3) Bio-energy
Educate the public on the potential benefits of bio-energy
 - 4) Systems Development
Facilitate the use and integration of existing tree harvesting and conversion (e.g., gasification) systems with the power generation facilities of electric utilities.
 - 5) Thermo-chemical Development
Facilitate the construction of pilot scale bio-refineries

Response. #1 energy policy that provides a tax credit subsidy for biomass fuel for electrical production.

Response. I know of no existing programs or policies.

Response. Beyond performing two studies, we have not been able to make use of current programs due to a narrow focus or lack of follow-on programs beyond the initial program (i.e. one year hot gas filtration may be supported but dropped the next year in favor of gasification which is dropped for bio refineries, etc). Once a study or preliminary research is completed, there needs to be ongoing support for an implementation phase. Perhaps these short range types of programs are beneficial to a large company or utility which is going to do the work federal funds or not, but they become a frustration to smaller firms in their efforts to move forward to bring technologies to a commercial stage. It is understood that programs funded under one phase must compete for follow-on programs along with all other applicants, but to change technology focus from year to year is counter productive.

Unfortunately, I am not familiar with many of the programs or policies currently implemented on a state or local level except on the most rudimentary levels and do not feel qualified to respond other than in broad terms.

Response. I am unfamiliar with specific programs and policies except for tax credits and rebates. I am not sure if any apply directly to our products—but any that promote the use of biomass as a fuel source will indirectly benefit our company

Response. Section 29 tax credits under the Internal Revenue Code; California Energy Commission renewable energy payments; Renewable Portfolio Standards for renewable energy (e.g., California, Nevada); Bonus depreciation for new equipment under Internal Revenue Code (50% bonus depreciation currently, formerly 30% bonus depreciation, depending on when new equipment is placed in service); Renewable Energy Certificates-tradable; Air Emission Credits for capture of methane and CO₂; Low-cost limited recourse financing available through government agencies, such as the California Power Authority and the California Pollution Control Finance Authority.

Response. USDA & DOE Biomass Research, Development & Demo Project Kyoto Protocol and Off Site Directories related to Biomass.

Response. We are familiar with several federal and state programs; however, few programs are geared to private industry—especially small business.

2. What is it specifically about your higher ranked bioenergy and biobased programs and policies that make them more important to you? If they need improving, how would you improve on them (be as specific as possible)?

Response. We believe that 'higher ranked' programs should consist of short-term assistance to farmers and industry suppliers involved with waste to energy production. Growing dedicated energy crops is a difficult area because of the challenge in defining true cost of fuel equivalents net of inputs to produce the crops. The material handling issues are often overlooked. (gathering, transporting, drying, storage etc). The capital equipment for this aspect of the industry should be assessed more carefully.

Response. FUNDING - We have tremendous energy resources (MSW, Sewage Sludge, Paper mill sludge, etc.) that are being buried in the ground to contaminate our water and air resources because they do not qualify for "closed loop" or "non-conventional gas" or other government programs. We have utilities selling commercial and industrial electricity for 7, 8, 9 cents per kilowatt or higher, yet, the utilities hide behind their "avoided cost" government benefit and offer to pay 2 or 3 cents per kilowatt to generators. So called "Clean Energy" and "Environmental" funding agencies are created with government funds and sponsorship to promote project implementation, yet the bureaucracy and evasiveness in these privately administered agencies stifle any attempts to tap these funding resources. Research is good. Implementation is better. We should be encouraging project implementation to utilize the roughly one billion tons of waste fuels available annually here in the United States.

Response. Not familiar with any existing programs.

Response. The possibility of grant money to fund company projects. There is a lot of room for improvement here in terms of overall funding, communication to us both in terms of emailing timely announcements of grant programs (6-9 mos prior) and promptly mailing application kits, communication during submission period (none now), and more real financial support for small businesses in this area. Both DOE and USDA have small levels of extramural funding relative to their bioenergy efforts and much of that goes to "outreach", convincing people that bioenergy and conservation are good ideas. For those of us actually trying to develop viable technologies which can survive in the marketplace, this doesn't leave much. Most of DOE's money supports in-house research or large corporate grants (e.g. Novo, Genencor) which are good, but don't help small business. Plus the results of that research are not available to the public (e.g., I can't find out what cellulase enzymes will really cost in order to plan a project). Last time I looked DOE's SBIRs did not even fund ethanol-related projects. Finally the total effort is ****very**** small relative to the amounts spent on fossil fuel research and existing ag programs.

List importance of Bio-based Programs listed above

Response. N/A.

Response. The Rural Development program offers the opportunity to integrate all the good intentions of Congress and DOE in areas that have combinations of abundant forest resources and are suffering from the loss of demand for timber because of depressed economic conditions in the pulp and paper and southern lumber industry. These are geographic areas where unemployment is high and where a large percentage of the unemployed do not have the skills to find jobs in industries other than forest products.

Response. Include the use of biomass fuel to all state electrical energy portfolios.

Response. NA

Response. Our firm has been engaged in the development of landfill gas-to-energy projects for X years. We have developed X projects throughout the United States using a number of different technologies—electric power, medium Btu gas, high Btu gas, CNG, cogeneration (we have also been involved in evaluating LNG and methanol produced from landfill gas). Landfill gas projects are capital intensive and, due to the limitations on the size of the energy resource (i.e., the gas generated by landfills), they do not enjoy the economies of scale of larger energy projects. Accordingly, receiving the economic support provided by Section 29 tax credits has been essential to providing sufficient economic return to warrant the risk of the capital needed to develop and operate most of the landfill gas-to-energy projects that our company developed during the past 15 years.

Any policy or program that will provide direct economic support to renewable projects, in particular biobased energy projects, will be important to providing the needed incentives to the equity and debt markets to attract the capital required to develop renewable energy projects such as landfill gas-to-energy, which entail higher risks than energy projects that use conventional fuels, such as natural gas. Most renewable energy projects entail a fuel risk—landfill gas (rate of production of landfill gas and cost of collection within a moving mass of refuse); wind (uncertainty as to how long wind will blow and its velocity); hydro (uncertainty as to drought periods); geothermal (uncertainty as to duration of resource and solids build-up).

For landfill gas, it is important that the Federal Government either extend the Section 29 tax credits (with a minimum duration of 10 years from commencement of operations) or expand the application of Section 45 credits to biomass-related energy production (also with a duration of 10 years from commencement of production). If Section 45 tax credits are adopted, they should apply to all forms of end-use energy produced from a biomass source (such as landfill gas), i.e. they should apply to high Btu gas or medium Btu gas as well as electric power. In some parts of the United States, it makes more sense to produce high Btu gas (i.e. pipeline quality equivalent) rather than electric power. However, producing high Btu gas is capital intensive and can only be developed when tax incentives or other economic incentives are available to assist with providing a return of and return on invested capital commensurate with the risk.

A specific improvement to the effectiveness of Section 29 tax credits, or even Section 45 tax credits if they were to be extended and made applicable to landfill gas, would be to provide that such credits could be used by the persons that earn them without regard to the limitation of the Alternative Minimum Tax. This would enhance the attractiveness of the tax credits to a wider range of companies.

The California Energy Commission renewable energy payments have been very important in providing direct economic support tied to renewable electric energy production. This program provided 5 years of payments that were awarded based upon a bid process in which projects requested a certain level of economic support based on need. The bid process provided for awards based upon the most viable renewable projects getting priority, since they would require the least amount of economic support from the California Energy Commission renewable energy payments program. All of the landfill gas projects developed by our company during the eligibility period for the California Energy Commission program qualified to receive payments in excess of \$0.01 per kWhr, a much needed incentive.

The recently discussed Renewable Portfolio Standard in California, which is anticipated to have rules adopted by the California Public Utilities Commission this year interpreting its application, is positive for increased development of renewable energy in California. However, there is no specific economic support for renewable energy, including biobased energy, as part of such Renewable Energy Portfolio standard. Such standard should also include an indication to the utilities that if they were to purchase biobased and other renewable energy at a price within a given range, e.g. \$0.055 to \$0.10 per kWhr or \$5.00 to \$6.00 per MMBtu, the purchase price paid would be deemed reasonable and allowable in the rate base of the purchasing utility. This would provide a realistic range of prices that would reflect the higher costs associated with developing, constructing and operating renewable energy technologies and would provide the utilities with more certainty in entering into energy purchase agreements with renewable sources.

In addition, states adopting Renewable Portfolio Standards should also encourage the use of standard power purchase (or energy purchase) agreements and interconnection agreements that would provide fair interconnection and standby or station power standards that would apply to both energy suppliers and the purchasing utilities.

In states, such as California, a rule should be adopted that would allow for direct access for renewable energy sources without the payment of exit penalties to the utilities.

The EPA and others should change their position as to the availability of air emission credits to landfills that are subject to NSPS and that develop an energy project thereon. Currently such landfills do not qualify for the sale of air emission credits if the landfill is subject to NSPS. If the objective is to provide incentives to develop landfill gas resources for end energy use, then the current position by the EPA is counterproductive. The largest landfills generate the most gas that could serve as an emission source. Even though NSPS requires the collection and burning of such landfill gas, it does not provide any incentive for the productive use of such landfill gas. If the rule were modified to open up such landfills to the sale of air emission credits if an energy project were developed thereon, this would provide the potential for additional economic support for the use of a domestic renewable energy source. To the extent that landfill gas-to-energy projects are developed, they serve to displace other sources for energy use in the United States, such as imported oil and LNG.

Response. Anything affecting the harvesting collection and transformation of residue is important to us.

Response. Private business should not have to compete against the federal agencies that are putting the solicitations on the street. It is very misleading for the government to

say that there is X amount of funding available when in reality a large portion is staying with government.

Cost sharing for small businesses should either be eliminated or scaled to company size—instead of one size fits all. A small company is limited even with in-kind cost-sharing.

3. What NEW bioenergy and biobased policies and programs are needed? List your suggestions for new policies and programs in your order of priority with number 1 the highest and be as descriptive as possible.

Response. Again, new programs are always proliferating but often at cross purposes. Government mandates that require green energy minimum percentages are good but hard to track at the supply side. (i.e. initial stages of biomass production upstream.). The end RPS outputs are straightforward. Production tax credits may still be the best approach.

Response. New Programs Needed: a) Change IRS regulations to allow easier access to Tax Exempt Bonds to fund Biomass projects. b) Establish enhancement for supplier bonds for wood fuel suppliers, similar to the construction bonds provided through the SBA for construction contractors.

Response. What's needed? More focus and money directed to small businesses working in this area. There are a couple of problems with existing programs. One is that the SBIR formula starts with a small Phase I grant which may be sufficient for a "flyer" project done by a well-funded company, but is usually insufficient to meet the needs of a startup. In addition, SBIRs mandate a "gap" between Phase I and Phase II, which is often problematic for small companies if they are dependent on that grant.

A second problem with some grant programs is the requirement for a percentage or in-kind contribution from the small business grantee. Small businesses are always in a struggle to survive, and people often fund them with personal resources or by forgoing a salary. Agencies should remove or waive this requirement for small businesses.

Let me emphasize that in the area of biomass conversion, no one knows all the answers yet - that's why there are few viable biomass to ethanol projects. Lots of experimentation, failure and R&D are needed, and some of that may not fit into DOE's chosen plan or timeline. There are some very competent researchers in the biobased area in NREL and ORNL at DOE, NCAUR and other parts of USDA. Some of these have been very helpful to me and my research on an individual basis. But the overall climate of the institutions reflects the belief (mistaken in my opinion) that an agency can somehow plan how technology will develop in these areas. This view makes sense for agency intramural research, but is totally unrealistic in terms of how new technologies actually develop in the marketplace. The best strategy, in my opinion, is a mixture of the two: fund intramural research according to a five-year plan (no more than five years), but start injecting some seed money into the arena of small entrepreneurial businesses which are willing to take risks and try new approaches. Talk to entrepreneurs and find out what their problems are. Angels and venture capitalists may somehow assume that the federal government is supporting businesses in this area. If there actually were financial support, it would likely encourage private investors, multiplying the effect of these funds.

Again, while noting the excellent contributions of individual DOE and USDA researchers, I'd like to point out that in fact this area of research is an international effort, and that many of the results useful to me have come from research done outside the United States. Obviously we all feel that this is an important area. It's time to put some real resources out there and encourage lots of experimentation.

What New Bioenergy programs are needed:

Response. Need policy that encourages use of wood for energy, especially fiber that due to size or quality or inadequate markets, is not currently harvested for higher use products. This includes topwood from pulp and sawlog size trees, and smaller low value material. We are losing markets for forest products (mill closures and consolidations) and forecast indicate that we will have a surplus of fiber for pulp and paper over the next 10 to 20 years. We've never had adequate markets for fuel-type fiber and refuse generated from traditional harvesting operations. Removing such unused fiber from the forest enables better forest management, encourages better stewardship of our forest, improves visual appearance, and relieves pressure on petroleum and coal products. Equally important, wood offers a cleaner source of fuel than coal or petroleum, is renewable, and provides less dependence of foreign oil.

We apparently have the technology (wood energy systems) and delivery systems (harvest and delivery systems) to make this happen. Short vision and corporate politics (in pulp and paper industry...fearing competition) are possibly our greatest obstacles to free market developing the concept... Federal Law would break this selfish corporate barrier, if electric power companies (others) were required to use 10% green energy (wood fuel), and/or given sufficient tax incentives to enable, or encourage the use of wood for energy.

Policy regarding use of wood for fuel must not be restricted to lands approved by government or NGOs under some politically correct and strangling rules of so called "wildlife, ecological or forest restoration scheme." To be efficient and meaningful, a fuel wood demand-supply policy must recognize the efficiency of the free market, and let it work accordingly. This is not time to let extremist eco-groups strangle a potentially viable program with eco-policy that will not work.

Response. The "New" bio-energy and bio-based programs and policies most needed are those that will result in getting existing knowledge and funding into the field where it is needed. This may mean streamlining the process and those organizations in it. If an organization is not providing tangible results, it should be eliminated; and the money to support it should be used directly on projects in the field.

Response. A clear carbon credit policy for biomass plantations that allow them to be financed.

Response. The forest products industry is facing a critical time in its history. Forest product companies continue to struggle to produce profits, and property owners continue to pay increasing taxes while hoping for improvement in demand for their timber. We have a significant raw material supply coupled with declining demand. Therefore, new markets, products, and technologies must be encouraged and developed in order to help insure the long-term health and viability of the southeast's forest products industries, the infrastructure that supports them, and ultimately, our forests. Utilization of forest

biomass for energy production on a commercially viable scale is an alternative that should be pursued and encouraged.

Production of energy from wood is not new. In fact, many forest products manufacturing facilities have produced much, if not all, of their own electricity for many years. The general consensus is that utilizing existing technology, bioenergy production is not economically justifiable unless oil prices are well above their long-term averages. However, there are several new technologies being developed and tested which may lead to more cost competitive and acceptable alternatives. Also, bioenergy is widely accepted as a “green” energy alternative as it produces less pollutants (SO_x, NO_x) than coal, and net greenhouse gasses (CO₂, CH₄) are significantly decreased. Finally, increased use of bioenergy also has the potential to mitigate the negative social, economic, and environmental impacts from continued US dependence on foreign oil.

Currently, this biomass issue is being addressed nationally in the Healthy Forest Initiative (HR 1904) and the Energy Bill (S.14). In both bills, biomass definitions include only pre-commercial thinning, wood waste, or wood by products “of preventative treatments...a) to reduce hazardous fuels; or b) to reduce the rise of or contain disease or insect infestation.” This legislation should be broadened to include any biomass produced from industry or forestry operations and provide incentives for development of or investments in new technologies, plants, or equipment.

Therefore, policies should include:

1. SSEB should support the development and production of bioenergy from wood and wood waste on an economically viable, ongoing basis.
2. SSEB should attempt to influence natural resources and energy legislation that favors bioenergy production from forest products and provides incentives to companies that might develop or implement such new technologies.
3. SSEB should encourage research of new technologies at the state, federal, and private levels.
4. SSEB should facilitate the sharing of knowledge and encourage cooperation between other similar bioenergy development efforts.

Response. As an alternative a national policy requiring utilities to pay 3-5 cents/kWh over their avoided cost for bioenergy would be a much more healthy and sustainable way of promoting bioenergy projects nationwide. The most significant impediment to the implementation of bioenergy projects is the resistance by the utilities to the interconnection of these projects. A uniform set of interconnection guidelines that is adopted nationally (by FERC edict) would go along way toward the resolution of this problem. The recent drafting of interconnection guidelines by IEEE has been a positive first step in this direction.

Response.

1. Include sensible heating in the Energy Policy Act where incentives or mandates are provided. The 7.5% mandate for federal agencies could be met through heating with economical renewable biomass as well as buying more expensive biomass generated electricity.
2. Create a renewable fuel standard comparable to the renewable portfolio standards. Require the technology to be clean and efficient.
3. Provide revolving loan funds to finance conversions of public facilities to biomass heating.

4. Do not subsidize plants (i.e. pellet plants). Help create the market and let the private sector meet the demand.
5. States should exempt the sale of pellet fuel from Sales or GRT.
6. Encourage renewables that are at or are close to economically feasible. Discourage the continued building of low efficiency facilities using old technologies and that will always require subsidy to remain in operation.
7. Encourage technologies that can pay for the raw materials, (i.e. thinning the forests). Discourage technologies that will always require government funding for the thinning, but will use the free or low cost materials (usually inefficiently).

Response. There are three main areas that are of benefit to the biomass industry as a whole.

The first is continued support for technology development. Due to our business focus, we would like to see gasification and hot gas filtration included as technologies receiving support.

The second area, which benefits a much larger range of technologies, are tax credits for biomass fueled projects such as the wind production tax credit (PTC) section of the Federal Energy Policy Act (EPAct) of 1992. The tax credits should cover projects using forest and ag wastes, animal wastes, urban wood waste, and a partial renewable credit (70%?) for refuse derived fuel (RDF).

A federal RPS is needed to mandate the use of renewables on a national basis. It is critical to our company that the RPS includes biomass combustion, gasification and cofiring.

Response.

- (e) Expand the availability of low-cost tax-exempt bond financing through set-aside of bond cap allocations specifically for biobased energy projects in each state. Expand other state biobased energy financing programs that would make low-cost financing available to biobased energy projects. Allow the pooling of such projects to achieve economies of scale in financing (i.e., to reduce the issuance costs of debt with placed securities). Provide state credit enhancement (e.g. guarantees) to bond issuances to allow for lower interest costs.
- (f) Federal, state and local governments should adopt policies that require their agencies to purchase a specified percentage of renewable source energy, including biobased energy. Such policies should recognize that the purchase of such energy will come at an initial increased cost, due to the increased costs associated with producing such energy, which tend to be generated by smaller projects in the case of landfill gas. Other forms of biobased energy can be larger, but raise other issues such as certainty of available biomass resource (e.g., wood waste, agricultural waste and municipal refuse). Included in any such policies should be a pricing mechanism and the ability for such governments to purchase renewable energy through direct access transactions (which would compel the utilities to allow use of their transmission and distributions systems in exchange for a fair cost). Since government represents a significant additional market and would directly support the development of additional biobased energy projects. However, higher pricing, available financing and the ability to authorize a direct access system (or its equivalent) are all essential for this policy to become effective.
- (g) Adopt federal or state policies that would override the policies of regional air quality management districts, such as the South Coast Air Quality Management District, that would establish a policy that would allow for the siting of biobased

energy production facilities (such as electric power or cogeneration) that would have less restrictive standards for Best Available Control Technology in order to be employed. Currently, in part due to flaws in the EPA's air models, more electric power generation could be employed at larger landfills in California but for restrictive air emission policies. There should be a trade-off recognized that there may be some incremental increase in pollution from energy technologies employed using landfill gas due to the inherent issues of dealing with the chemical constituents in landfill gas. For instance, siloxanes and other chemicals in landfill gas, without using expensive pretreatment equipment, do not allow for the use of selective catalytic reduction equipment to reduce emissions. Even if they did, the requirement for the use of SCR air pollution control equipment would make already difficult economics untenable for such projects—unless substantial economic incentives are made available.

- (h) Adopt a federal statute or state statutes in states that do not currently have them that would exempt from regulation as a utility any biobased energy project, whether its end use energy is sold at wholesale or at a retail to fewer than three customers. Some states, such as California have extensive statutes exempting landfill gas and other renewable energy projects from such regulation. Other states, such as Washington, have no such legislation, even under circumstances when such projects are exempt from federal energy regulations pursuant to PURPA or as an exempt wholesale generator.

Response. Development of standards.

Response. Need support for densified wood (pellets) for industrial/commercial/ governmental usage. This area has been ignored by the DOE etc. as far as I can tell.

Response. Alabama needs to evaluate a Renewable Portfolio standard like many states already have. None of which are in the Southeast. It should include tax credits for the producer of the new material all the way through the process. We literally have tons of available biomass from forestry operations currently initialized. There are proven systems in wood synthesis gas and pyrolysis that can be a large contributor to local power.

Response. States should establish programs to purchase bioenergy products and services. This would help establish critical market mass and provide visible indication to the public that the states support bioenergy. Both state and federal governments could establish programs to provide performance bonds, performance guarantees, and insurance (especially liability insurance) for new bioenergy products and services. Such things are virtually impossible to obtain through the private sector, but are essential for business. Funding to bridge the gap between R&D and commercial status is needed. Even for technologies that require relatively little assistance, funding is not available from government sources.

4. What bioenergy and biobased programs and policies does your state have? Please make your descriptions as clear as possible.

Response. Virginia has no biobased programs and policies.

Response. IL state programs. Not aware of any, except the demo corn ethanol plant in southern Illinois headed by Rod Bothast.

Response. I don't know of any meaningful ones.

Response. I do not know what bio-energy and bio-based programs the State of Alabama has. There has been a lot of discussion but little action. The State can't seem to get beyond having "meetings".

Response. We don't work in our state (Tennessee).

Response. I am not familiar with Georgia policies if they even exist.

Response. The following is an excerpt from the Idaho's website describing their biomass programs. "Through support of the U.S. Department of Energy's Pacific Northwest and Alaska Regional Bioenergy Program and the state of Idaho, the program maintains a full-time technical staff person to provide assistance to people interested in Bioenergy project development. The technical assistance includes evaluation of plans, referral to equipment vendors and other technical experts and assessment of biomass feedstock supply and Bioenergy product markets.

Among the notable Bioenergy demonstration projects sponsored by the Idaho Bioenergy Program are the on-the-road demonstration of bio-diesel with the University of Idaho, a new wood pellet mill feedstock dryer at the Jensen Lumber mill in southeast Idaho, a biogas cleaning system at the Nampa Wastewater Treatment Plant and a small back pressure turbine at the Ceda-Pine Veneer mill in Samuels. The Idaho Bioenergy Program was also instrumental in the decision of the University of Idaho to install its wood-fired boiler for campus heating and cooling."

Response.

- (a) Renewable Portfolio Standard-signed into law with regulations being adopted by the California Public Utilities Commission.
- (b) California Energy Commission Renewable Energy Fund providing for new projects to apply, through a bid process, for 5 years of energy payments to supplement electric power production.
- (c) A body of statutes that exempt renewable energy projects, and specifically landfill gas-to-energy projects, from regulation as a utility.
- (d) Certain low-cost financing options for biobased energy projects through the California Pollution Control Finance Authority and the California Power Authority.

Response. Alabama Power has done some work with switchgrass. How many acres of land would have to be converted to make switchgrass available bioenergy source when we already have thousands of tons of wood waste from forestry operations?

General Comments

Note to the Reader. Some respondents chose to provide additional comments beyond those in the survey. These comments are shown in this section.

Response. I commend the DOE for this effort to determine the effectiveness of its programs and policies. I will answer the questions asked as best I can, then I will recommend a specific project, which can be implemented immediately and can provide meaningful, visible, and meaningful results.

This project can integrate the resources of the DOE, USDA, U.S. Forest Service and other agencies with those of private organizations and individuals to produce short-term results in geographic areas where relief is needed most. I'll be as brief as possible here and will not attempt to include details.

First, identify geographic an area(s) in a state or region which has high unemployment, an abundance of forest resources, and an excess of timber resulting from the reduction in timber demand due to the depressed economic conditions in the forest products industry. Examples of this are the Black Belt counties in Alabama, Mississippi, and Georgia. These can be easily combined into a Region.

Conduct a survey of the forest resources in the area of interest. The survey would include timber (particularly pine) volume, number of acres in forests, volume of timber used from the area, the ability of the area to support additional wood consuming businesses such as forest based energy, unemployment rates, labor force, and other relevant economic data. The potential for growing other energy crops such as switch-grass should be included in the study.

Identify markets, such as the electric utilities, for forest resources and other alternative sources of energy. Determine which power plants can use "co-firing with coal" and which can use gasified bio-mass.

Identify and quantify the wood harvesting capabilities in the areas of interest.

Determine which areas will provide the best economic development support through their community, county, and regional organizations.

With these and other factors considered, write and implement a strategic plan to develop a biomass energy industry in the selected area. This will require financial assistance and the probable use of a private organization with knowledge and experience in the forest products industry.

Closely monitor and direct the project as necessary. It will be highly visible, and the impact of its success can be substantial and widespread.

I hope my input to this survey is helpful. I will be happy to discuss it further and in more detail. The DOE and other organizations have done a tremendous amount of good work. Their intentions are good, but the bureaucracy limits the effectiveness. Hopefully this survey will result in positive change. If not, the public should demand change, and the money spent more productively elsewhere.

Response.

- We produce wood pellets for residential fuel, commercial fuel and bedding materials. We have obtained a portion of our raw material for the past two years from forest thinning projects. 8 - 11 semi loads per day.
- We pay a portion of the cost of thinning and can afford to pay all or almost all of the cost of thinning for commercial system fuels.

- The commercial fuels we produce are competitive with conventional fuels.
- We currently do not know of any policy or program that promotes or assists these endeavors in any way.
- We heated approx 20,000 homes last year; the industry heated 500,000 homes in N/A
- The annual energy output of our plant is equivalent to the annual output of a 25MW power plant. The industry output is equivalent to a 575 MW power plant.
- We replace the burning of the equivalent of 5 million ccft of Nat gas last year. The industry replaced 165 million ccft.
- If wood is considered carbon neutral in the U.S., we prevented the release of almost 30,000 tons of CO2 last year. The industry prevented release of 7 - 800,000 tons of CO2.
- We provide renewable, sustainable, clean burning heat and there are no programs that recognize this as a prudent use of resources or a renewable energy source.
- A few states have exempted pellet fuel from sales tax and a few states have some sort of credit for purchasing a new cleaner burning appliance, but these are the exception, not the rule. Renewable Portfolio Standards are in place in most states in the SW, but only apply to electric generation.

Response. While many of the specific or even general questions do not apply to my situation, being a Canadian small business with limited resources, I do have at least one (bad) experience last year (2002) in the US when I applied for financial assistance from the \$4.5 million Biomass R&D Fund (SN 1435-01-02-RP 86382). Of course, I was unsuccessful for an unexplained reason. The agent apparently who handled the applications simply lost my application, although he confirmed its receipt at the time of submission. I never got a satisfactory answer for this.

Disappointing and unbelievable as this may be, I doubt that I would have qualified for funding anyway, being a small company and unable to match the funds if awarded. These rules are similar in Canada (double frustration!) by SDTC (Sustainable Development Technologies Canada, a \$350 million fund). It seems these funding schemes are set up to fund companies rather than technology development per se. For individual technology developers, who may have spent literally millions on patenting (as is my case) these funds are not accessible since the matching fund criterion does not recognize patenting costs as in-kind contribution to technology development (I do not know what is?).

So individuals, like myself, are then forced to find "industrial partners" who have to be rewarded for showing interest (no expertise) in the technology and lending their names to the project. Venture capital is yet totally disinterested in bio-based technologies and is literally non-available to us.

Thus many inventors with perfectly workable prototypes refrain from application for funding because they need to be protective of their technology and thus struggle on until they run out of energy.

I have several people telling me that our technology should have been commercialized a long time ago. It was not for really not trying. But how? Every time I tried to link up to a major company, I ended walking away with new losses. My inability to access funds to build a visible entity with suitable expertise and reputation seems to shut me out of

funding programs. The truth of the matter is, that small developers are more frugal with the funds they receive than large companies are, where much of the funds disappear as “overhead”. I know of several technologies which were assigned to large companies that simply swallowed up large funds (in the tens of millions) and the technology was still not developed. I also know of other companies where the owners were successful siphoning off government funds year-after-year and today they are multi-million technology companies. These cases simply speak for the individual inventor with credible technology constantly looking for support.

The truth of the matter is that my experiences, both in Canada and the USA, have long discouraged me from applying for R&D funding for commercialization of our process. Finding private investors is an equally tortuous route; so implementation of our technology is unnecessarily delayed.

Awarding funds to technology developers, even if they qualify marginally, is tricky for some other reasons. Government funding, especially in the USA, is generally linked either to a government research institute active in the field or to a consulting company. These agencies want to run the show. So, “one is damned if one does and also damned if one does not” disclose all the information required to move the development. Disclosing all the information also runs the danger that on further improvements by the institute workers, one ends up buying back its own technology, as the institute will patent the technology under the institute’s ownership. Even non-profit institutes are prolific copy-cats or vultures and, rumor has it, they misappropriate (read withhold) crucial information for their own benefit.

Private inventors have really nowhere to turn. I appreciate SSEB/SSBA’s concerns about funding innovation but I doubt that even through a survey like this, the bugs could be worked out of the system. Competition among individuals and institutions and pressure to succeed is just too great to create equal access to funding for all. The only time I was successful in raising larger amounts of R&D funds was when I managed to pull aside a major politician (energy minister) or fund administrator for a personal interview, who could then be convinced about the potentials of the ACOS technology. Access to such influential people is always difficult to get.

It would be desirable to devise procedures for inviting technology developers to workshops and conferences where a panel could interview the technology developers and ask them specific questions. It is likely that technology developers will volunteer for presentations and be willing to answer questions from the panel relating to the technology. I have done it once in 1982 and was successful and would do it again, any time.

I do not know how useful these comments are for your Alliance’s task. To be sure, the concerns of the SSEB board are real. Distribution of funding to include individuals is a valid concern. Considering now the multifaced nature of the energy problems and predatory behaviors surfacing year-after-year in the energy sector in the USA and governments shutting their eyes as to what is going on, it would be high time to get bio-based renewable technologies going to dampen their hunger for senseless profits by some real competition.

Equally worrisome is the concern that discovery of new fossil energy sources is on the decline and their exhaustion is now becoming more predictable (see attached article

form the Canadian Time magazine). Even if we knew what to do to initiate the transition to renewable energy, creating the foundation for sustainable biomass reserves, capable of satisfying the needs for the automotive fuel blending (45 billion/yr) and generating the renewable hydrogen supply for fuel cells from bioethanol, it will take more than 20 years to get to a steady state with biomass supply. I estimate that the US has less than 50% of the biomass required for sufficient bioethanol production for a 10% ethanol blending and a distributed electricity program covering the growth in electricity (some 35000 MW) expected during the next 5 years. For these reasons, barriers to rapid technology development for bioethanol production need to be eliminated as soon as possible.

Response. Target: 20 Billion gallons of biomass derived ethanol in 20% gasoline and diesel blends; built and in production by the year 2020; Benefits the environment, economy, and employment

Environment: Reduced greenhouse gas emission; reduced smog levels; reduced landfill and refuse burning

Economy: Reduced petroleum imports; Improved trade balance; Improved petroleum refinery efficiency; Increased utilization of sub-octane gasoline reducing refinery energy consumption; Increased local state and federal tax revenues

Employment: 400-800 local and regional Biomass Ethanol Plants translate to 100,000+ jobs in: plant construction, plant operations; Transport of 25% of one billion tons per year of forest waste and residue, agriculture waste and residue and municipal waste translates to 200,000+ jobs in: biomass collection, biomass transport, biomass processing

Requirements: Legislation and regulations to permit 20% ethanol blends; Legislation to provide a 50¢ per gallon ethanol producer incentive for the biomass ethanol industry, more than balanced by reductions in other direct and indirect energy and agricultural subsidies; Legislation to foster loan guarantees or equivalents from Federal, State and Local sources.