

Summary:

**Biomass Research & Development
Technical Advisory Committee
Meeting**

July 13 – 14, 2004

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Meeting Summary

Day One: July 13, 2004

A. Purpose

On July 13 and 14, 2004, a Biomass Research and Development Technical Advisory Committee (Committee) meeting was held at the Hilton Crystal City Hotel in Arlington, Virginia. The Committee was established by the Biomass R&D Act of 2000 (Biomass Act). The Committee's mandates under the Biomass Act include advising the Secretary of Energy and the Secretary of Agriculture, facilitating consultations and partnerships, and evaluating and performing strategic planning. This meeting was the second Committee meeting held during the 2004 calendar year. The Committee members came to the meeting to hear presentations on hydrogen energy and discuss their recommendations on hydrogen from biomass. The Committee also met to review the results of the 2004 joint solicitation, to draft recommendations on the process, awards, and research and development performed under the 2004 joint solicitation, and to develop recommendations on the process and content of the 2005 joint solicitation. Finally, the Committee began developing 2004 Recommendations to the Secretaries of Energy and Agriculture.

B. Welcome and Overview of the Agenda

Thomas Ewing, Committee Chair, opened the meeting and asked that all Committee members, Federal employees, and members of the public present identify themselves. Chairman Ewing then introduced Ralph Cavalieri of Washington State University. Mr. Cavalieri was attending his first meeting as a Committee member.

Chairman Ewing reviewed the items on the agenda and asked for any comments or questions. None were received.

C. Update on Action Items from Last Meeting and Other Committee Business

Don Richardson, Designated Federal Officer, welcomed all to the meeting and gave an update on the status of the 2003 Annual Report to Congress. Mr. Richardson reported that the Annual Report is still going through the approval process and that the Committee would receive a copy of the Annual Report as soon as it is approved.

Don Richardson also announced that twelve Committee members are up for renewal this November. Factors that will effect the decision to renew or resign members include agency considerations, fulfillment of member categories defined in the Biomass Act, and how many times a particular membership has been renewed. Mr. Richardson announced that no member will be renewed for a third term. Mr. Richardson asked that any members with terms ending inform him if they have a preference as to whether or not their term is renewed. Merlin Bartz, of the United States Department of Agriculture (USDA), reported that the USDA has solicited names for new Committee member

nominations and asked that anyone with recommendations for other nominees provide them to him or Don Richardson via email or fax.

Don Richardson informed the Committee that the awardees of the 2004 joint solicitation have not yet been officially announced at the time of the meeting. Mr. Richardson explained that he could, therefore, not provide the Committee with the names of the winners, but only with general information regarding the topics of the projects selected. Mr. Richardson explained that there may be an official announcement made at the White House on Wednesday, July 14, 2004.

Don Richardson and Chairman Tom Ewing asked the Committee for questions or comments. Committee member William Guyker asked Chairman Ewing about his testimony to the Senate Committee on Agriculture, Nutrition, and Forestry on Biomass Use in Future Energy Production: Opportunities for Agriculture. Chairman Ewing, Mr. Guyker, and Committee member Robert Boeding discussed the details of the testimony, which is available publicly.

D. Presentation on Biomass to Hydrogen: “Getting Off Oil: Comparing Two Transportation Strategies.”

Chairman Ewing introduced Committee member David Morris, who gave a presentation on biomass to hydrogen (*Attachment A*). Mr. Morris compared hydrogen fuel cell vehicles to hybrid biofuel vehicles based on cost, speed of implementation and potential, and environmental impact. Based on these criteria, Mr. Morris concluded that research and development of hybrid vehicles operating on a variety of fuels is a better option than focusing all research and development on hydrogen.

Chairman Ewing thanked David Morris for his presentation and asked the Committee for questions. William Guyker asked how hybrid vehicles used ethanol. David Morris replied that they use it straight, just as a car would use gasoline.

Robert Boeding asked if David Morris would consider sorbital. Mr. Morris responded that he would.

William Nicholson asked David Morris if the only environmental factor he considered was climate change. Mr. Morris responded that ozone pollution, acid rain, and several other environmental problems should be considered, but that he believes climate change to be the environmental issue that will force the need for an alternative fuel vehicle.

Kim Kristoff questioned the freight costs associated with E85 and other ethanol fuels. David Morris acknowledged this concern but replied that the state of California has managed these costs successfully. Mr. Morris believes that diversity and dispersion of ethanol suppliers and clients is the key. Mr. Kristoff asked how realistic it is to believe that the United States could convert all petroleum use to ethanol. Mr. Morris replied that any shift in fuel supplies must be integrated, and that flexible fuel vehicles are the way to do this because they allow for the development of several alternative fuel markets, rather

than a focus on one fuel. Mr. Morris pointed out that this is a problem with hydrogen powered vehicles.

Co-chair Terry Jaffoni asked whether or not E85 hybrids are currently in production. David Morris replied that they currently only exist in the test stage.

E. Presentation on Biomass to Hydrogen: “The Hype About Hydrogen: The Mainstream Analytic View.”

Chairman Ewing introduced Joseph Romm, Former Acting Assistant Secretary of Energy and Executive Director of the Center for Energy and Climate Solutions, who gave a presentation on biomass to hydrogen (*Attachment B*). Mr. Romm discussed the disadvantages of the hydrogen economy, focusing primarily on the following seven barriers: high first cost for vehicle; storage and limited range; safety and liability; high fueling cost; limited fueling stations; lack of pollution reduction; and tough competition.

During the presentation, Robert Dorsch asked for a definition of the term “green hydrogen.” Joseph Romm responded that green hydrogen is that which has a net-zero carbon balance.

Chairman Ewing thanked Joseph Romm for his presentation and asked the Committee for questions. William Guyker asked about the possibility of fusion reactors. Joseph Romm replied that he believes fusion reactor development to be farther in the future than hydrogen fuel cell vehicles. Mr. Guyker asked for Mr. Romm’s suggestion on biomass to hydrogen. Mr. Romm responded that research and development on hydrogen to biomass should not take focus away from research and development on biomass to other fuels, such as ethanol.

Chairman Ewing announced that the Committee would break for fifteen minutes.

F. Presentation on Biomass to Hydrogen: “Why Hydrogen and When?”

Chairman Ewing introduced Mark Paster from the Department of Energy (DOE) Hydrogen Program, who gave a presentation on biomass to hydrogen (*Attachment C*). Mr. Paster discussed the need to diversify future energy options and expressed the opinion that hydrogen should be included amongst other types of research and development.

During the presentation, William Guyker questioned the method of using green electricity to produce hydrogen. Mark Paster responded that that was a difficult question to answer and that the ultimate goal is to move towards all renewable forms of energy.

Robert Dorsch asked Mark Paster for the DOE position on hydrogen. Mr. Paster replied that DOE is focusing on a mix of fuel sources, both renewable and conventional.

William Guyker asked if the cost for a hydrogen fuel cell presented in Mark Paster's presentation was stable regardless of the source of hydrogen. Mr. Paster confirmed that is was.

David Morris questioned Mark Paster's base case that what we have today we will have tomorrow. Mr. Paster replied that there could be other breakthroughs.

Chairman Ewing thanked Mark Paster for his presentation.

G. Presentation on Biomass to Hydrogen: "Sustainable Mobility: A Global Imperative"

Chairman Ewing introduced Keith Cole from General Motors (GM), who gave a presentation on biomass to hydrogen (*Attachment D*). Mr. Cole discussed GM's current R&D on hydrogen fuel cells and why GM believes hydrogen to be the most viable alternative fuel source. Mr. Cole described increasing global demand for automotives and the need to diversify away from petroleum for a variety of reasons, including environmental. He described GM's vision for future automotive technology and their efforts to develop fuel cell technology.

H. Question and Answer Period between Committee and Presenters on Biomass to Hydrogen

Co-chair Terry Jaffoni thanked all of the presenters for their time. Ms. Jaffoni asked the Committee if they had any questions for any of the presenters.

David Morris commented on DOE's contribution to GM's past research on alternative vehicles that never lead to the development of commercially available alternative vehicles. Mr. Morris asked why Keith Cole believes hydrogen fuel cell vehicles will succeed. Mr. Cole responded that past research is also applicable to new fuel cell technologies and that it therefore should not be considered wasted resources. Mr. Cole pointed out that GM does currently produced hybrid vehicles, mainly at the SUV and truck level. Mark Paster replied that GM has used more of its own capital than assistance from DOE.

William Nicholson asked Keith Cole if he would discuss GM's alternative plan for research if current projects should fail. Mr. Cole responded that GM has a three-step plan that is not entirely focused on the development of a fuel cell vehicle, allowing for success even if the fuel cell is not an achievable goal. Mr. Cole discussed GM's plans to focus on improved efficiency of the internal combustion engine, on hybrids, and on the fuel cell.

Co-chair Terry Jaffoni asked if GM has looked at hybrid E85 vehicles. Keith Cole replied that Argonne National Laboratory has conducted a study for GM that looks at E85 in internal combustion engines, in hybrids, and as a source for hydrogen production. Mr. Cole said that the results of those studies are available on Argonne's website. Ms. Jaffoni asked if GM has any near-term plans for the development of ethanol hybrids. Mr. Cole

replied that GM plans to make its entire fleet from flexible fuel vehicles that can operate on E85 by the year 2008.

Ralph Cavalieri asked about the performance of GM's hybrid vehicles. Keith Cole announced that their performance is comparable to a normal internal combustion engine. Mr. Cole said that GM is working on improving the response time of its hybrids. William Horan questioned Keith Cole about GM hybrids that were due out in 2004. Mr. Cole responded that the dates were pushed back slightly. Hybrid trucks are commercially available now, but are not widely advertised.

Carolyn Fritz asked Keith Cole about differences in perspective on hybrid, alternative fuel, and fuel cell vehicles between various car companies. Mr. Cole said that GM conducts in-house research, while other companies have contracted it out. GM had, until recently, been the leader in alternative technology research, but has recently been surpassed by Toyota. Ms. Fritz asked how much GM is planning to spend on new technologies. Mr. Cole responded that GM will spend approximately \$1 billion, which is more than the federal government is spending.

Robert Boeding asked what GM's plans are if the federal government does not provide funds to build the infrastructure needed for fuel cell vehicles to be successful. Keith Cole explained that GM is a global company and will go where there is a market for fuel cell vehicles.

Kim Kristoff questioned Keith Cole about GM's plans for the future in the face of decreased imported oil. Mr. Cole could not confirm that GM had a plan to deal with a reduction in oil imports.

I. Open Committee Discussion on the Role of Hydrogen Derived from Biomass

Co-chair Terry Jaffoni opened discussion on the Committee's position on biomass to hydrogen. Ms. Jaffoni announced that the Committee should arrive at a position on whether or not funding for biomass to hydrogen should be increased, decreased, or remain the same, and how the Committee should communicate its opinion.

Robert Dorsch remarked that carbon-based sources of hydrogen have to include carbon sequestration to make them viable. Biomass is the only source of hydrogen that does not require sequestration. Mr. Dorsch also noted that the debate should focus on utility and safety of hydrogen fuel. William Guyker supported the idea that biomass to hydrogen is a better alternative than carbon-based materials to hydrogen. William Carlson agreed that because biomass is the only form of hydrogen that does not require carbon sequestration, that biomass to hydrogen research should not be abandoned.

William Nicholson suggested that the Committee focus on a spectrum of alternatives rather than one source of renewable energy. Mr. Nicholson said that in order for the Committee to support biomass to hydrogen research it should be shown that the process

will have multiple benefits and create multiple options. Robert Boeding agreed that the focus should be on a variety of alternatives.

David Morris said that the Committee should take one of the following two positions: that biomass should have a higher priority in the hydrogen economy, or that the hydrogen economy is diverting resources from biomass research and should be viewed as a competitor. Mr. Morris expressed his own opinion that funding for biomass to hydrogen should not be eliminated, but should be reduced to allow for other areas of research. William Carlson agreed that more near-term technologies should not be abandoned to focus solely on biomass to hydrogen research. William Horan agreed. Terry Jaffoni agreed, and said that research should focus on the following three areas: plug-in hybrids, the costs of cellulosic materials, and hydrogen. A problem arises because the current administration is focusing only on hydrogen.

Chairman Ewing ended the biomass to hydrogen discussion and stated that he would like a subcommittee to meet over lunch to develop the wording for the Committee's position on hydrogen based on the discussion. Co-chair Terry Jaffoni was selected to head the subcommittee, and its members included Robert Boeding, William Nicholson, and William Horan.

The Committee broke for lunch.

J. Presentation of Subcommittee on Hydrogen Statement and Finalization of Recommendation

Co-chair Terry Jaffoni presented the subcommittee's draft position statement on hydrogen to the Committee. The three major recommendations included: 1) the acceleration of demonstration and market penetration of ethanol powered vehicles, 2) significantly increase funding for cellulosic research and development programs, and 3) hydrogen research and development should continue and multiple pathways should be perused with particular emphasis on biomass to hydrogen. Ms. Jaffoni asked the Committee for comments.

David Morris suggested that plug-in hybrid be added to the first recommendation because hybrid vehicles are already in production.

John Hickman suggested including the positive benefits to the rural community in the preamble.

Chairman Ewing suggested wording the recommendations in a way that sets funding priorities and focuses on budget issues. Ralph Cavalieri asked for clarification on whether or not the Committee would be granted another opportunity to address funding issues. Chairman Ewing responded that the Committee would also address funding regarding the solicitation.

Kim Kristoff questioned whether or not the Committee believes that any hydrogen funding should continue and stated that he does not. William Nicholson responded that the Committee should work within what is currently taking place at the DOE, and because hydrogen research is a focus of the administration that the Committee should not be completely against any hydrogen research. Jack Huttner suggested not targeting hydrogen research in the third point, but referring to all breakthrough technology so that funding in other areas is not limited. David Morris agreed that the Committee should support alternatives with a focus on biomass, not hydrogen in particular. Hydrogen should be presumed, not endorsed. Mr. Morris asked about the current status of hydrogen research in the Office of the Biomass Program. Don Richardson explained that biomass to hydrogen research is currently conducted through the Hydrogen Program.

Chairman Ewing concluded discussion on the Committee's position on biomass to hydrogen and asked that a revised position be typed and go up for final approval on July 14, 2004.

K. Presentation on the Results of the 2004 USDA/DOE Joint Solicitation and Plans for the 2005 Solicitation

Merlin Bartz of the USDA gave a brief explanation of the joint solicitation process and reiterated that formal announcements to awardees had not gone out and that confidentiality was therefore important.

Jim Spaeth of the DOE Golden Field Office gave a presentation on the 2004 joint solicitation that covered the solicitation process, schedule, technical topics, evaluation criteria, technical rating standards, evaluation process overview, and the results (*Attachment E*).

Chairman Ewing thanked Merlin Bartz and Jim Spaeth and asked the Committee for questions.

Ralph Cavalieri and William Nicholson questioned the process of selecting proposal reviewers and the inclusion of federal employees on the review panel. Jim Spaeth explained that both federal employees and representatives of private industry were selected as reviewers. Mr. Spaeth also described the process for handling conflicts of interest that may arise with reviewers. Don Richardson explained that the Biomass Research and Development Board also raised the issue of expanding review participants and that DOE has therefore been looking into the issue.

Philip Shane and Jerrell Branson questioned why some categories had numerous applicants and awards granted while others had little response and no funding. Jim Spaeth replied that some categories were more broadly defined than others and that some did not produce any quality proposals. Projects that received awards were based on the scores they received and there was no priority as to how the award money would be split between categories.

Co-chair Terry Jaffoni asked whether or not the authors of proposals not selected were granted access to their scores. Jim Spaeth replied that applicants not selected received written and oral debriefings that include the strengths and weaknesses of the proposals, but that numerical scores are not released.

William Guyker commented that the Committee was concerned that last year's selections did not address the *Vision and Roadmap* and asked if that issue had been addressed this year. Jack Huttner expressed a similar concern. Jim Spaeth replied that the crosswalk between the solicitation results and the *Vision and Roadmap* was available online at www.bioproducts-bioenergy.gov. Also, the *Vision and Roadmap* were referenced in the solicitation. Merlin Bartz noted that last year the Committee requested a de-emphasis on animal waste projects and that only one animal waste project was funded this year.

Thomas Binder questioned the brief turn around time between when the solicitation was released and when the pre-proposals were due. Mr. Binder suggested that this practice may give an unfair advantage to smaller companies that do not have a staff of professional proposal authors. Chairman Ewing also questioned the chance that independent proposals had in this solicitation. Ralph Cavalieri also expressed concern over the role of small business in the solicitation. Jim Spaeth replied that the reason for short turn-around time was not to exclude smaller companies, but because the pre-proposal process is less involved than that associated with full proposals and because USDA and DOE are required to obligate solicitation funds during the same year that the solicitation is released. Mr. Spaeth also pointed out that there were more proposals submitted by small companies, universities, and non-profits this year than in previous years. Merlin Bartz informed the Committee that the statutory language used in the solicitation announcement gives all types of applicants equal opportunity.

David Morris requested that the DOE project cost-benefit analysis of the solicitation be made available to the public because public funds are involved with the solicitation awards. Don Richardson explained that once the projects were under contract the information would be released publicly. Jim Spaeth replied that awardees are required to write project descriptions to be released to the public. Mr. Morris asked that USDA and DOE provide justification of what was funded. He did not feel that the technology funded was developed enough to warrant the number of public education projects funded.

Kim Kristoff expressed concern over the size of the awards, stating that if smaller awards were granted more could be accomplished with less money, and that some of the awards granted for certain projects seemed too high for what would be accomplished. Ralph Cavalieri agreed. Jim Spaeth replied that the awards granted this year ranged from \$200,000 to \$2 million. Merlin Bartz stated that a wide range in awards drives applicants to submit proposals. Mr. Kristoff replied that USDA and DOE have the discretionary right to offer less money than what is asked for in a proposal but that they chose not to do so. Mr. Bartz responded that USDA offered less money than requested for two of its proposals.

Ralph Cavalieri raised concern over the five percent success rate of this solicitation, stating that an average success rate for a solicitation is at least ten to fifteen percent. Mr. Cavalieri was concerned that this would limit interest in the solicitation.

William Nicholson requested an analysis of projects funded to determine how many are demonstrations versus how many are bench-scale projects. William Guyker expressed a concern that most of the projects selected are research rather than commercial.

Chairman Ewing announced that the Committee would break for fifteen minutes.

L. Open Committee Discussion on the Process and Results of the 2004 Solicitation and Plans for the 2005 Solicitation

Chairman Ewing introduced Delmar Raymond, who was attending his first meeting as a Committee member. Mr. Raymond had been with Weyerhaeuser for 28 years and is working on Agenda 2020.

Chairman Ewing opened discussion on the 2004 solicitation process and results and on plans for the 2005 solicitation. Don Richardson explained that DOE organized the solicitation this year with help from Jim Spaeth of the Golden Field Office and that USDA would be in charge of the 2005 solicitation. Merlin Bartz explained that, in 2005, USDA would not reduce its grant amounts to cover administration costs, that solicitation categories may or may not be the same as 2004, and that USDA intends to follow a schedule similar to that of this year's solicitation.

David Morris asked what the average cost of preparing and submitting a proposal is. Mike Pacheco of NREL responded that average cost is around \$2500 for the submission of a pre-proposal and full proposal for a team consisting of a company and a national lab. Robert Dorsch pointed out that the way different companies calculate cost varies.

Jack Huttner and Don Richardson discussed the theme of the 2005 solicitation. Don Richardson stated that the focus should generally be on achieving an operational biorefinery, but that DOE has not yet determined specifically what should be focused on. Mr. Huttner suggested that it would be easier for the Committee to give recommendations on the 2005 solicitation if they had access to the MYTP or some other measure of the USDA and DOE project portfolios.

John Hickman asked for USDA's 2005 solicitation categories. Merlin Bartz explained that the two USDA categories will be biobased products and forest training under the Healthy Forest Initiative. William Horan asked why joint solicitation funds were going to procurement for biobased products. Mr. Bartz replied that the Farm Bill sets rules for federal procurement, which therefore allows the solicitation to fund procurement related projects.

John Hickman asked about DOE's funding for the 2005 solicitation. Don Richardson replied that DOE will not know how much it has for the solicitation until appropriations

are granted. Carolyn Fritz raised the issue of the DOE's mid-year products solicitation and asked where funding for that solicitation would come from. Mr. Richardson explained that DOE funding comes from Energy and Water Development and the Interior Appropriations Subcommittees, and that he believes the products solicitation will be funded with Interior funds. The solicitation can go out before the funds are appropriated as long as those submitting proposals are made aware. Jim Spaeth replied that the products solicitation will be funded with FY 2005 funds, but that no formal announcement of that solicitation has been made.

William Guyker asked whether or not technical topic areas not funded in 2004 can be added to the 2005 solicitation, thereby not filling gaps in the USDA and DOE portfolios but creating new technical areas in them. Merlin Bartz responded that topic areas can be added as long as they fit within the statutory requirements. Mr. Guyker asked whether or not a loan guarantee for a biorefinery fits within the statutory requirements, to which Mr. Bartz replied that the statutory language states that financial assistance can be granted through the solicitation, and that financial assistance could be stretched to mean a loan guarantee. David Morris said that the combination of a loan guarantee plus grant money could be enough to get a commercial plant from the solicitation. Jack Huttner called for a capital assessment of biorefinery projects. Mr. Bartz replied that the USDA does have the tools to conduct such an analysis. Mr. Morris asked whether or not the government had the ability to do an in-house risk assessment of biorefinery projects. Jim Spaeth answered that a Congressionally-directed project covered the issue.

M. Develop and Draft Committee Recommendations on Process and Results of the 2004 Solicitation and Plans for the 2005 Solicitation

Chairman Ewing asked the Committee if they were ready to begin drafting formal recommendations regarding the 2004 solicitation results and the 2005 solicitation topics. A majority of the Committee expressed the opinion that they did not yet have enough information to begin making recommendations on the 2005 solicitation. The Committee called for a review of the USDA and DOE portfolios and for an analysis of where each Department's projects were in meeting the *Vision* and *Roadmap* goals. Some recommendations, however, were made.

Several Committee members, including Philip Shane, Thomas Binder, and William Guyker expressed concern over the timing of the solicitation, as it was released during the Christmas holiday.

N. Adjournment of Day One

Chairman Ewing confirmed that the Committee would wait to make recommendations on the 2005 Joint Solicitation until after receiving more information. Chairman Ewing announced that the meeting scheduled for July 14, 2004 would start a half hour early and the agenda would shift accordingly. Chairman Ewing adjourned the meeting for the day.

Day Two: July 14, 2004

O. Presentation on the Office of the Biomass Program Overview

Chairman Ewing opened the second day of the meeting by introducing Jim Spaeth of the DOE's Golden Field Office. Mr. Spaeth gave a presentation on the Office of the Biomass Program's (OBP) Multi-year Technical Plan (MYTP), current research and development focus areas, budget, and how these relate to the *Roadmap* categories (*Attachment F*).

Chairman Ewing asked several questions about the budget and how the Joint Solicitation fits into it. Jim Spaeth and Don Richardson explained that the figures shown represent the entire OBP budget, including but not limited to the Joint Solicitation funds, and that approximately \$11 million of the total would go to the solicitation.

After much discussion, most of the Committee agreed that even with the OBP overview presentation they currently have too little information to make recommendations. Chairman Ewing appointed Carolyn Fritz the chair of a subcommittee to review the USDA and DOE project portfolios to identify gaps in meeting Roadmap goals and potential areas of new opportunity. The subcommittee includes William Nicholson, Robert Dorsch, Delmar Raymond, Jack Huttner, David Morris, Gary Pearl, and Jerrell Branson.

P. Presentation on "The 2001 Net Energy Balance for Corn Ethanol"

Chairman Ewing welcomed Hosein Shapouri from the USDA. Mr. Shapouri gave a presentation on a USDA study that analyzed the net energy balance of corn ethanol (*Attachment G*). The study focused on the energy used in the production of corn, in the transportation of corn to an ethanol plant, in the conversion of corn into ethanol and byproducts, and in ethanol distribution. Chairman Ewing asked the Committee for questions.

David Morris asked Hosein Shapouri about the key factors that raised the efficiency of corn to ethanol. Mr. Shapouri replied that corn yield was the key factor.

John Hickman asked about irrigation issues. Hosein Shapouri responded that USDA does consider irrigation and other corn-production-related costs in its analysis.

William Carlson asked what is meant by the term "weighted average". Hosein Shapouri said that it is weighted by acreage.

Gary Pearl asked if USDA did any comparison between corn to ethanol and biodiesel. Hosein Shapouri responded that the energy balance for biodiesel is very high.

Kim Kristoff asked about the cost of ethanol. Hosein Shapouri responded that it depended on whether or not the ethanol was being used as an additive or a fuel, and

explained that ethanol was originally produced as a fuel due to fuel shortages, but that it is now mandated as an additive.

Q. Committee Vote on the Hydrogen Statement

Co-chair Terry Jaffoni posted the revised statement on hydrogen and asked the Committee for any changes they would like to make before finalizing the statement.

Robert Dorsch suggested including “ethanol-powered” hybrid and plug-in in the first point.

John Wootten suggested dropping the carbon neutral statement from the preamble, but a majority of the Committee disagreed.

Delmar Raymond suggested dropping the farm statement and simply saying rural.

The Committee voted on and accepted the hydrogen statement (*Attachment H*) with one negative vote. The Committee broke for fifteen minutes.

R. Review of Committee’s 2004 Joint Solicitation Observations

Chairman Ewing announced his intention to hold the next meeting on September 29, 2004 and that it be only a one day meeting. Don Richardson announced that the 2004 Annual Report to the Secretaries would be sent to the Committee once it circulates through the approval process.

The comments made on the Joint Solicitation process and results during the July 13th portion of the meeting were organized into a Power Point slide and posted for the Committee’s review.

Delmar Raymond questioned whether or not posting the solicitation over a holiday would have a negative impact on applicants. William Nicholson felt that posting it prior to the Christmas break allowed applicants that time to work on submitting a proposal.

These discussions lead Carolyn Fritz and others to question whether or not three weeks was enough time for applicants to respond. She felt that the response time was a more important issue than the time of year. Tom Binder agrees that three to four weeks was not enough time to put a team together. He suggested that information about the details of the solicitation should go out ahead of time to give applicants more time to prepare. Robert Dorsch noted that the pre-application was for the benefit of the reviewers because full applications were too long to review. The committee then agreed to add a point of issuing a non-binding pre-solicitation notice that listed the technical topic areas.

John Wooten had a problem with the proposal to move away from paper studies. He insisted that paper studies were a critical part of pre-development and design. William

Nicholson agreed with him. However, David Morris added that paper studies should have a limited dollar amount.

The Committee then discussed whether or not long-term projects should have a series of periodical benchmarks to assess their progress. Ralph Cavalieri asked Merlin Bartz if decision points are used in USDA contracts to track their progression. Mr. Bartz said that he could not answer the question but that typically money was obligated up front for multiple years and the awardees assume they will have this funding throughout the course of the project. Don Richardson noted that there is a difference in procurement laws between grants and financial assistance. USDA issues grants while DOE provides financial assistance. Mr. Richardson also noted that DOE regularly reviews multi-year projects and builds in Go/No Go decision points.

John Wooten did not agree with the observation of including smaller projects and award amounts. William Carlson and Terry Jaffoni agreed stating that awards should be based on merit not size. However, William Guyker felt there was a need for broad types of projects that were not necessarily large-scale. Ralph Cavalieri restated his point that these projects will only have a five percent success rate which will not generate a lot of interest. Kim Kristoff stressed the importance of giving less expensive projects with more ingenuity a chance. David Morris added that everything in government is big so there is a need to acknowledge a function that allows for small and local businesses to succeed.

Chairman Ewing confirmed that the Committee was in favor of all recommendations and finalized the recommendations (*Attachment I*).

S. Recommendations for 2005 Joint Solicitation Topics

Chairman Ewing directed the Committee to state its recommendations for the 2005 Joint Solicitation topics in a round-robin style discussion. Chairman Ewing acknowledged the Committee's concern that it may not have enough information to do so, but directed them to make any recommendations they could, and noted that these recommendations would be discussed further at the next meeting.

Jerrell Branson suggested focusing on something other than ethanol.

Gary Pearl suggested that the Departments continue to evaluate other alternative fuels strategies, including hydrogen with particular emphasis on biomass to hydrogen in recognition of its unique carbon sequestration capabilities.

Ralph Cavalieri suggested moving beyond biofuels to focus on other bioproducts. Mr. Cavalieri also recommended reducing the emphasis on education and training at this stage.

Delmar Raymond recommended adding products upstream of the pulp and paper digester.

Robert Dorsch suggested focusing on increasing renewable content into the diesel fuel stream.

John Wootten recommended addressing the energy density of feedstocks and the modular system level to address farm installation.

Kim Kristoff supported a topic that shows farmers how to add value to their products from a bio-oil catalyst side. He also suggested more work on adhesives.

Carolyn Fritz suggested a stronger focus on feedstock logistics, expanding bioproducts, and expanding policy.

Tom Binder would like to focus on feedstocks that are already captive and to shift the focus from anhydrous ethanol to hydrous ethanol.

William Carlson requested the continuation of the move away from food-grade materials as feedstocks to waste materials. He also supported further policy development.

William Guyker recommended more work on co-firing in large and small boilers and on the efficiency of feedstocks.

Terry Jaffoni supported more work on policy and education initiatives to increase market penetration of the ethanol hybrid vehicles, on the collection and transportation of feedstocks, and on an ethanol pipeline transportation demonstration project.

Chairman Ewing recommended more emphasis on biopower generation.

T. Recommendations for the Secretaries of Agriculture and Energy

Chairman Ewing directed the Committee to state its recommendations to the Secretaries in a round-robin style discussion.

William Carlson commented on the time it takes Committee documents to be made public. He suggested that this be a speedier process. Mr. Carlson also suggested involving more non-government reviewers in the solicitation process.

William Guyker would like to see work towards quantifying where the Departments are in meeting the *Roadmap* goals.

Tom Binder emphasized the training of scientists in chemistry to deal with biofuels and biochemicals.

Carolyn Fritz suggested analyzing the progress of previously funded projects based on the *Roadmap*.

Kim Kristoff requested feedback from Congress on how the Committee has or has not impacted its decisions.

Delmar Raymond requested more funding so that *Roadmap* goals may be achieved. Ralph Cavalieri asked that the Secretaries reprioritize their appropriations requests. Mr. Cavalieri also requested more emphasis on a highly distributed process.

Gary Pearl suggested filling portfolio gaps by evaluating the effectiveness of current projects rather than assigning new projects.

Jerrell Branson suggested that the intermediate between the petroleum and hydrogen economies be biobased.

Chairman Ewing recommended placing emphasis on additional funding to biobased resources.

U. Adjournment

ADDENDUM A

Biomass Research and Development Technical Advisory Committee Meeting July 13-14, 2004

ATTENDEES

Committee Members Present

Tom Ewing
Terry Jaffoni
Wayne Barrier
Tom Binder
Robert Boeding (July 13 only)
Jerrel Branson
William Carlson
Ralph Cavalieri
Robert Dorsch
Carolyn Fritz
William Guyker

John Hickman
Bill Horan (July 13 only)
Jack Huttner (July 13 only)
Kim Kristoff
David Morris
Bill Nicholson
Gary Pearl
Delmar Raymond (July 14 only)
Philip Shane (July 13 only)
John Wootten

Committee Members Not Present

Roger Beachy
Dale Bryk
Joseph Chapman
Roger Fragua
Charles Goodman

Brian Griffin
Pat Gruber
William Richards
Larry Walker

Federal Employees Present

Mike Kossey – USDA
Merlin Bartz – USDA
Glen Carpenter – USDA
Hosein Shapouri - USDA
Larry Russo – DOE
Jim Spaeth – GFO
Paul Grabowski – DOE
Mark Paster – DOE
Mike Pacheco - NREL

Total Public Attendees – 11

Total Attendees – 42

Designated Federal Officer – Don Richardson

ADDENDUM B

**Public Meeting of the
Biomass Research and Development Technical Advisory Committee
July 13 – 14, 2004
Hilton Hotel, Crystal Room
Crystal City, VA**

Description of subjects of this meeting:

The agenda for this meeting will include a discussion on the Committee's recommendation on the role of biomass as it relates to hydrogen energy as well as a review of the results for the 2004 joint solicitation. Specifically the Committee will:

- Hear from presenters representing various positions on the topic of hydrogen energy.
- Discuss the Committee's recommendations on hydrogen from biomass.
- Review the results of the 2004 joint solicitation.
- Discuss recommendations on the process, awards, and R&D performed under the joint solicitation.
- Develop recommendations on evaluation criteria for the FY2005 joint solicitation.
- Begin developing FY 2004 Recommendations to the Secretaries of Energy and Agriculture

Previous decisions or actions related to this agenda:

At the March 2004 meeting, the Committee obtained an overview of progress and the history of research efforts in major biomass technology areas. The Committee also received updates on the status of the USDA – DOE 2004 joint solicitation for biomass R&D, activities to promote federal procurement of biobased products, a matrix for tracking the progress of R&D awarded under the joint solicitation, and results from tracking the Committee's goals defined by their *Vision* document. The Committee made plans for a two day meeting in July to develop their recommendations on the role of biomass as it relates to hydrogen energy and, since the results of the 2004 joint solicitation process should be determined by then, to review that process and results in order to make its recommendations for the 2005 joint solicitation.

Agenda

July 13th - Biomass R&D Technical Advisory Committee Meeting

- | | |
|--------------|--|
| 8:00 – 8:30 | Continental Breakfast |
| 8:30 – 8:45 | Welcome and Overview of Agenda – <i>Thomas Ewing, Committee Chair</i> |
| 8:45 – 9:00 | Update on Action Items from Last Meeting and Other Committee Business - <i>Don Richardson, Designated Federal Officer</i> |
| 9:00 – 9:45 | Presentations on Hydrogen Derived from Biomass - <i>David Morris, Instituted for Local Self Reliance, and Dr. Joseph Romm, Fmr. Acting Assistant Secretary of Energy</i> |
| 9:45 – 10:00 | Break |

- 10:00 – 10:45 Continue Presentations on Hydrogen Derived from Biomass – *Mark Pastor, DOE Hydrogen, Fuel Cells, & Infrastructure, and Keith Cole, General Motors*
- 10:45 – 11:15 Question and Answer Period Between Committee and Presenters – *Terry Jaffoni, Committee Vice-Chair*
- 11:15 – 11:45 Open Committee Discussion on the Role of Hydrogen Derived from Biomass
- 11:45 – 12:00 Public Comment on Biomass to Hydrogen discussion
- 12:00 – 1:00 Lunch
- 1:00 – 1:30 Committee Finalizes Recommendations on Hydrogen from Biomass and Identifies the Communication Channels for Distributing this Opinion
- 1:30 – 2:15 Results of 2004 USDA/DOE Joint Solicitation and Plans for 2005 Solicitation
Jim Spaeth (2004 results), Merlin Bartz (2005 plans)
- 2:15 – 2:30 Break
- 2:30 – 3:00 Open Committee Discussion on Process and Results of 2004 Joint Solicitation, Plans for 2005
- 3:00 – 4:00 Group Break-outs: 1) Review of FY 2004 Awards and 2) Recommendations for FY 2005 Solicitation
- 4:00 – 5:00 Group Summaries, Develop and Draft Committee Recommendation on Process and Results of 2004 Joint Solicitation, and Plans for 2005 – *Terry Jaffoni, Committee Vice-Chair*
- 5:00 Adjourn
- July 14th Biomass R&D Technical Advisory Committee Meeting**
- 8:00 – 8:30 Continental Breakfast
- 8:30 – 8:45 Public Comment
- 8:45 – 9:30 Presentation on “Energy Balance for Corn Ethanol!” - *Hosein Shapouri, USDA’s Office of the Chief Economist*
- 9:30 – 10:00 Identify Topics for Additional Recommendations and Begin Open Discussion/Sub-group break-outs on FY 2004 Recommendations to the Secretaries of Energy and Agriculture
- 10:00– 10:15 Break
- 10:15 – 11:45 Continue Open Discussion/Sub-group breakouts on FY 2004 Recommendations to the Secretaries of Energy and Agriculture

11:45 – 12:00 Closing Committee Comments and Next Steps – *Thomas Ewing, Committee Chair*

12:00 Adjourn