

**Summary:**

**Biomass Research & Development  
Technical Advisory Committee  
Meeting  
August 10, 2006**

**December 8, 2006**

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# Meeting Summary

## A. Welcome from the Host

Jackalyne Pfannenstiel, Chair of the California Energy Commission (CEC), welcomed the Biomass Research and Development Technical Advisory Committee members to Sacramento. California recognizes the contributions biomass technologies can make to alternative energy solutions, and Ms. Pfannenstiel announced that representatives of both CEC and the California Biomass Collaborative would discuss their biomass work later in the meeting. She thanked the Committee for holding its Western *Roadmap* Update Workshop at the CEC over the previous two days. She also stated that the updated document will prove as useful as the original.

## B. Overview of Agenda

Acting Committee Chairwoman Terry Jaffoni welcomed Committee members and the public, and announced a rearrangement of the agenda (Addendum B) to allow for adequate time to discuss annual recommendations at the end of the meeting.

## C. Review of Western *Roadmap* Update Workshop

Committee Chairwoman Terry Jaffoni introduced member Ralph Cavalieri, member of the *Vision* and *Roadmap* subcommittee, and chairman for the Western *Roadmap* Update Workshop. Mr. Cavalieri gave a presentation (Attachment A) summarizing the results of the workshop. Thirty-five invited experts from industry, non-profits, and state interests provided their input on perceived barriers to progress, and recommended research and policy actions to combat those barriers to achieve the biofuels, biopower, and bioproducts goals set in the *Vision*.

## D. Update on USDA Activities

Bill Hagy from the U.S. Department of Agriculture (USDA) Office of Rural Business-Cooperative Programs gave a presentation (Attachment B) regarding current Department activities. These included the newly-developed Energy Council, the fiscal year 2007 USDA-DOE joint biomass R&D solicitation, the upcoming October 10-12 Renewable Energy Conference in St. Louis, Missouri, and an endorsement of a presentation to be made later in the day by Helena Chum, regarding USDA biomass R&D projects funded under Farm Bill section 9008.

## **E. Update on Action Items from the Designated Federal Officer**

Neil Rossmeissl, the Committee's Designated Federal Officer (DFO), from the Department of Energy (DOE) Office of the Biomass Program (OBP), welcomed the Committee members. Mr. Rossmeissl gave a presentation regarding current Committee business (Attachment C). This included the status of the FY 2005 annual report, plans for FY 2006 recommendations to the Secretaries of Agriculture and Energy, announcement of the approval of new Committee members August 4, 2006, a brief overview of the *Vision and Roadmap* update process, a status report on the FY 2006 joint USDA – DOE biomass R&D solicitation, and the work of OBP to implement the President's Advanced Energy Initiative goals through its own Biofuels Initiative.

## **F. Presentation on Preliminary Analysis of USDA Section 9008 Grants**

From 2002 – 2005, USDA has awarded grants to biomass R&D projects under section 9008 of the Farm Bill. Helena Chum from the National Renewable Energy Laboratory (NREL) presented preliminary results on NREL analysis of the progress of those projects (See Attachment D) .

*From this point forward the detailed proceedings of the meeting are documented in the transcript (Attachment E).*

## **G. California Biomass Policy and Efforts**

Susan Brown, a CEC senior policy analyst, discussed their work to establish a Bioenergy Action Plan (Attachment F).

Following this discussion, Valentino Tiangco, Senior Technical Lead, Energy Generation Research Office, CEC, and Bryan Jenkins, Executive Director, California Biomass Collaborative, University of California, discussed their efforts in developing a California Biomass Roadmap (Attachment G).

The Committee broke for ten minutes.

## **H. Update from the Subcommittees**

Committee chairwoman Terry Jaffoni recognized Analysis subcommittee chair Ralph Cavalieri, who discussed the work of his group to select and review several published DOE analysis documents (Attachment H).

Chairwoman Jaffoni next recognized Mike Manella of BCS, Incorporated, who reported on the Policy subcommittee's activities in the absence of subcommittee chair Jim Barber.

The group had already submitted to the Committee its draft Policy Gap Analysis document for review. This document reflects the subcommittee's research of current biomass incentives and policies, and an analysis of the missing measures which might be recommended by the Committee for future Federal implementation. The document was not made public. Mr. Manella asked that any questions be forwarded to the Committee secretariat. During the discussion Chairwoman Jaffoni asked who the members of the Policy subcommittee are. Subcommittee membership is provided in Attachment I.

## **I. Public Comment**

Committee Chairwoman Terry Jaffoni opened the floor to members of the public for comment on the proceedings and biomass R&D. Those who gave comment were:

William Nicholson – Former Committee Member  
Michael Theroux – United States Combined Heat & Power Corporation  
Bruce McLaughlin – Attorney representing California Municipal Utilities Association  
Sharon Shoemaker – University of California - Davis  
Bill Snyder – California Department of Forestry and Fire Protection

The Committee broke for lunch.

## **J. Discussion and Vote on FY 2006 Recommendations to the Secretaries**

Acting Committee chairwoman Terry Jaffoni re-convened the meeting, asking members to spend the remainder of the afternoon focused on the Committee's annual recommendations for biomass R&D. She called attention to the list of submitted recommendations for FY 2006 (Attachment J). Handouts were distributed to the Committee containing additional recommendations from Jim Martin and Larry Pearce (Attachments K and L). Chairwoman Jaffoni explained that the recommendations technically were submitted after the previously-agreed upon deadline of July 14, 2006, and asked the members to consider whether to include the additional recommendations or table them until FY 2007. The Committee agreed to consider all recommendations provided, including the additional submissions, and reached approval for each recommendation included in the final list by majority vote. The PowerPoint slides used to document the votes can be viewed in Attachment M.

Recommendations approved are as follows:

### **A. Recommendations Regarding the Distribution and Use of Biomass Initiative Funds**

1. In order to fully support the vision of the integrated biorefinery, the thermochemical platform should receive continued funding, and those

thermochemical technologies should become an integral part of the Biofuels Initiative.

2. The Biomass Program and the Fossil Energy Program at DOE should report to the Committee on how their efforts in the areas of thermochemical conversion and in carbon capture and storage are interacting with each other, what synergies and benefits they see in expanding the coordination and collaboration from current levels, and what future coordination and collaboration are being planned.
3. R&D should be pursued to develop liquid transportation fuels from biomass, in addition to ethanol and biodiesel.
4. R&D should be funded to develop technologies capable of processing multiple and mixed feedstocks into biofuels and bioproducts (to the extent possible).
5. Research should endeavor to provide technologies of scale that can be practiced on a local basis in dispersed geographies utilizing readily available feedstocks. Such technologies will help to reduce the concentration of plant emissions in an area, reduce the transportation requirements for inbound feedstocks and outbound finished products and provide the economic benefits of resulting jobs to more locations.
6. To reach the billion-ton feedstock goal, support R&D capable of handling and converting a wide variety of feedstocks. This should include research directed at overcoming logistical hurdles and addressing issues of harvesting, handling, densifying, transporting, preparing, and storing feedstocks headed for the biorefinery.

## B. Recommendations on the Solicitation and Proposal Review Process

1. The 2007 USDA – DOE joint solicitation should be issued in a timely manner, by October 1, 2006.
2. Funding budgeted for the Initiative should be subject to fewer Congressionally-directed projects, and provide a greater proportion of discretionary amounts to pursue projects that are measured by documented milestones and which reflect the Committee's *Vision* and *Roadmap*. For example, a separate targeted program and/or solicitation should be developed in consultation with appropriate Congressional staff, focusing on drawing in state research and demonstration funding in a true partnership fashion. Around the nation, governors and legislators are making decisions about increasing funding for biofuels and bioproducts research, demonstration, and

infrastructure efforts. States are providing not only funding but tax incentives, education, and outreach to the public. Leveraging these public interest funds and efforts in a manner that recognizes the important role of the states would greatly expand available resources for sector biofuels and bioproducts development efforts. Moreover, properly structured and communicated, it would greatly aid efforts in reducing the overall proportion of congressionally directed funding.

3. Support ongoing review and analysis of awards made to determine the impact of funded programs.

### C. Overall Recommendations to the Secretaries

1. Opportunities for workforce development in biomass-related disciplines should be pursued.
2. Outreach to the general public should be expanded to better communicate the benefits of biomass technologies.
3. Fuel tax abatement has been extremely successful in promoting biofuels. Similar incentives should be developed to promote biobased products. An evaluation should be conducted to identify policy initiatives that will support the growth of biobased products.
4. Congress should provide full funding for the integrated biorefinery solicitation under section 932 of the Energy Policy Act of 2005 - FOA # DE-PS36-06GO96016.
5. The Committee encourages the agencies of the Biomass R&D Board to provide solicitations that support biomass R&D so that a greater number of university faculty members are directly involved in biomass R&D projects. This will advance the influence of the biomass community, facilitate the increase of the biomass workforce, and will encourage cooperation with industry and federal scientists.
6. Increased support should be given for international peer exchange among policy makers and researchers on biofuels and biobased products issues. Supporting a global market for biofuels and biobased products would greatly advance U.S. efforts by facilitating the exchange of complementary cross-border policies, development of joint research projects, and increased understanding of the potential of biofuels and biobased products.
7. Study and test the existing infrastructure to identify methods in which it can be modified or improved to transport and distribute biobased fuels, products and energy.



### **K. Discussion of 2007 Meeting Dates**

The Committee agreed to pursue this discussion via email.

### **L. Adjournment**

Committee Chairwoman Terry Jaffoni noted that her term would end as of close of business on November 30, 2006. She stated that she has enjoyed her six years of service with the Committee, and thanked the other members for their help.

A motion for adjournment was raised. It was seconded. The meeting adjourned.

## **ADDENDUM A – ATTENDEES**

### **Biomass Research and Development Technical Advisory Committee Meeting August 10, 2006**

#### **Committee Members Present**

Butch Blazer  
Ralph Cavaliere  
Doug Hawkins  
John Hickman  
Terry Jaffoni (Vice-chair, acting chairwoman)  
Charles Kinoshita  
Eric Larson  
Jim Martin  
Scott Mason  
Larry Pearce

#### **Committee Members Not Present**

Jim Barber  
Tom Binder  
Jerrel Branson  
Bob Dinneen  
Tom Ewing (Chairman)  
Carolyn Fritz  
Jack Huttner  
Del Raymond  
Edwin White

#### **Federal Employees Present**

William Hagy III - USDA  
Neil Rossmeissl – DOE  
Helena Chum – NREL

**Total Public Attendees – 29**

**Total Attendees – 43**

**Designated Federal Officer – Neil Rossmeissl**

## ADDENDUM B – AGENDA

### **Agenda** **Public Meeting of the** **Biomass R&D Technical Advisory Committee** **August 10, 2006**

**8:00 a.m. – 4:30 p.m.**  
**California Energy Commission**  
**Hearing Room A**  
**1516 Ninth Street,**  
**Sacramento, CA 95814-5504**

#### **Description of subjects for this meeting:**

- Receive update on collaboration with USDA
- Review status of 2005 Annual Report
- Receive an update on the status and awardees of the FY 2006 joint solicitation
- Receive an update on the status of the FY 2007 joint solicitation
- Review status of *Vision* and *Roadmap* updates
- Meet with representatives from California Energy Commission
- Discuss Analysis, Policy, and other subcommittee business
- Receive an update on USDA Performance Measures
- Approve 2006 Recommendations to Secretaries
- Discuss 2007 meeting schedule

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- |             |  |
|-------------|--|
| 8:00 – 8:30 | Continental Breakfast  |
| 8:30 – 8:40 | Welcome from the Host – <i>Jackalyne Pfannenstiel, Chair, California Energy Commission</i>   |
| 8:40 – 8:50 | Overview of Agenda – <i>Acting Committee Chairwoman Terry Jaffoni</i>  |
| 8:50 – 9:30 | Update on Departmental Activities – <i>Bill Hagy III, Office of Rural Development, U.S. Department of Agriculture</i> <ul style="list-style-type: none"><li>▪ Receive an update on the status of the FY 2007 joint solicitation</li><li>▪ Review status of 2005 Annual Report</li><li>▪ Receive an update on the October 2006 USDA – DOE National Bioenergy Conference</li><li>▪ Receive an update on USDA Energy Council activities</li></ul> |
| 9:30 – 9:50 | Update from the Designated Federal Officer - <i>Neil Rossmeissl, Office of the Biomass Program, U.S. Department of Energy</i> <ul style="list-style-type: none"><li>▪ Review status of 2005 Annual Report</li></ul>  |

- Receive an update on the status and awardees of the FY 2006 joint solicitation
- Review status of the Biofuels Initiative
- Receive an update on the status of the *Vision and Roadmap* document updates, solicit invitee names for Eastern *Roadmap* Workshop

9:50 – 10:05 Review of Western *Roadmap* Update Workshop – *Dr. Ralph Cavaliere, Washington State University, Western Roadmap Workshop Chairman*

10:05 – 10:15 Break

10:15 – 11:15 Presentations from California Energy Commission on Current Biomass Efforts

- Bioenergy Action Plan – *Susan Brown, Senior Policy Analyst, California Energy Commission*
- California Biomass Roadmap – *Valentino Tiangco, Senior Technical Lead, Energy Generation Research Office, California Energy Commission, and Bryan Jenkins, Executive Director, California Biomass Collaborative, University of California*

11:15 – 11:30 Discussion of California Area Biomass Efforts

11:30 – 12:15 Update from the Subcommittees

11:30 – 11:45 Policy Subcommittee progress

11:45 – 12:00 Analysis Subcommittee progress

12:00 – 12:15 Discussion of Subcommittees' goals and progress

12:15 – 12:30 Public Comment

12:30 – 1:30 Lunch (*to be provided at CEC*)

1:30 – 2:00 Presentation on Preliminary Analysis of USDA Section 9008 Grants - *Helena Chum, Senior Advisor, National Bioenergy Center, National Renewable Energy Laboratory*

2:00 – 3:00 Discuss 2006 Recommendations to the Secretaries

3:00 – 3:15 Break

3:15 – 4:15 Approve 2006 Recommendations to the Secretaries (*The recommendations are approved by a majority vote*)

4:15 – 4:30 Discussion of 2007 Meeting Dates

4:30 Adjourn

## **Attachment A**

Summary  
Western Region  
Biomass Update Workshop  
August 8-9, 2006

Biomass R&D Technical Advisory Committee

Ralph Cavalieri, Workshop Chair

# Overview

- 30+ expert participants representing diverse fields
  - Forestry
  - Automotive
  - Fuels & Chemicals
  - Thermochemical
  - Academia & laboratories
  - Federal
  - State/regional
- 2-day facilitated workshop
  - Major barriers to achieving goals
  - Policies needed to achieve goals
  - R&D strategies needed to achieve goals
  - Discussion covered all stages of biomass implementation from plant science through end use
  - Focus – western region



# Priority Barriers

- Management of dispersed feedstocks (West)
- Lack of transmission and interconnection (West)
- Water availability (West)
- Lack of long term consistent energy policy and commitment to R&D
- Equipment development costs
- Financial return to farmers
- Capital cost and scale of technology
- Public perception and consumer education
- Workforce education

# Policy Priorities

- Shift incentives to production (away from non-production) (West)
- Consolidate & coordinate permitting process (west)
- Incentives to reduce water consumption (west)
- Incentives for capital investment in biofuels
- Consistent policies for fuels mandates/incentives - federal/state, state/state regional, and regionally.
- Expand graduate training fellowships and expand funding for university research and trade programs for biofuels and bioproducts;
- Require best practices, development as industry grows
- Monetize CO<sub>2</sub> emissions & sequestration

# RD&D Priorities

- R&D that minimizes water & fertilizer input (West)
- Quantify biomass potential in West
- Develop data on feedstock characteristics
- Educational curricula (K – 12 and university level)
- Conversion processes that accept diverse feedstocks
- Develop and use value-added co-products
- Increase integration of national labs w/universities
- Feedstock R&D (yield, harvesting, reducing inputs, densification)
- R&D on harvesting solutions for a variety of forest residues
- Research on national fuel standards

## **Attachment B**

*Biomass R&D Technical Advisory  
Committee Meeting  
Sacramento, California  
August 10, 2006*

*William F. Hagy III  
Deputy Administrator, Business Programs  
USDA Rural Development*

## *USDA'S Energy Council*

- *Purpose: Coordinate Department Collaboration and Leveraging of Resources for Renewable Energy/Energy Efficiency Development.*
- *Under Secretary Tom Dorr – Chair*
- *Co-Vice Chairs:*
  - *Keith Collins – Chief Economist*
  - *Mack Rey – Under Secretary for National Resources and Environment*

## *USDA's Energy Council*

- *Three Committees:*
  - *R&D*
  - *Commercialization*
  - *Outreach/Marketing*
- *Committee Activities*

# *Energy Conference*

## *Joint USDA/DOE Conference*

*October 10-12, 2006*

*St. Louis, Missouri*

*Agenda*



## *FY 07 Joint Solicitation*

- *IAA DOE/NREL*
  - *Administrative Funding*
  - *Funding Availability*
  - *Funding Availability - \$12 Million USDA*  
*\$ ? DOE*
  - *SBIR - 2.5 Percent Set-aside*



## FY07 Solicitation Publication



Committed to the future  
of rural communities.

<b>Event</b>	<b>Completion Date</b>
Draft NOFA completed	August 14, 2006
Draft to DABP	August 15, 2006
Simultaneous clearance (CRS/PSS/RPMB/FO/DOE/Budget)	September 1, 2006
Changes incorporated/Sign-off DABP	September 5, 2006
Clearance RPMB, OGC, OBPA, DOE	September 28, 2006
Clearance/review OMB	October 13, 2006
RPMB sends NOFA to Federal Register	October 16, 2006
NOFA published in Federal Register/ Announcement posted on Grants.gov	October 23, 2006

## FY07 9008 Milestones

<b>Event</b>	<b>Completion Date</b>
NOFA published in Federal Register/Posted on Grants.gov	10/23/2006
Pre-Applications Due	12/15/2006
Pre-Application Merit Review Panel	01/22/2007
Pre-Application Selection approval	02/12/2007
Open Full-Application Submittal/Post on Grants.gov	03/02/2007
Full-Applications Due	04/27/2007
Full-Application Merit Review Panel	05/14/2007
Full-Application Selection approval	06/13/2007
Funding Package approval process completed	07/02/2007
Award Announcement	07/18/2007

# *Questions*

**THE END**

## **Attachment C**



# The Biomass R&D Technical Advisory Committee

## **Update on Action Items**

August 10, 2006

Neil Rossmeissl

- The FY 2005 Report has been approved by USDA Secretary Johanns, and is awaiting DOE concurrence from Secretary Bodman before submission to Congress
- FY 2006 Report, including finalized Committee recommendations, will be compiled by the end of September to begin concurrence before the December 20 deadline for submission to Congress



- 2005 Appointees were informed and announced to the public August 4, 2006

## New Members

**Dr. David Anton**, DuPont

**Dr. Lou Honary**, University of Northern Iowa

**Alan Kennett**, Gay & Robinson Sugar

**Mark Maher**, GM

**Dr. Ed McClellan**, Alston & Bird LLP

**John McKenna**, Hamilton Clark & Co.

**Mitch Peele**, North Carolina Farm Bureau Federation

**Jeffrey Serfass**, Technology Transition Corporation

**Bob Sharp**, Mobile Forest Products

**J. Read Smith**, Agricultural Energy Work Group

**Rod Williamson**, Iowa Corn Marketing Board

- 2006 Nominee information is being compiled, and the nomination package will be in process by the end of September.
- 6 Nominees and a Co-Chair will be needed.
- One Nominee has been submitted for consideration.

- Chairman's Report has been prepared and is under review by Contracts and General Council.
- 19 Proposals have been selected for consideration
  - 2 Feedstock Production
  - 4 Recalcitrance
  - 7 Product Diversification
  - 5 Analysis

- Chairman's Report will be sent to the POC's by August 10, 2006
- All pre-applicants that had some difficulty in the electronic submittals were contacted and offered a chance for submittal.
- Current potential awardees include all recipients who submitted

- Interagency Board comments were incorporated into the final update of the *Vision* during July 2006. It will be made public September/October.
- The Committee has arranged three private regional *Roadmap* update workshops with invited experts from a range of disciplines to discuss Feedstocks, Processing & Conversion, Product Uses & Distribution, and Policy:
  - Central, April 11-12, Chicago, Illinois
  - Western, August 8-9, Sacramento, California
  - Eastern, September 19-20, Syracuse, New York
- The updated *Roadmap* is scheduled for publication in January 2007

- A 30 x '30 workshop was held August 1-2, 2006 in Washington, DC. 170 representatives of industry and Federal observers discussed necessary R&D and policy to achieve 2012 and 2030 goals for biofuel markets

- Board representatives have appointed points of contact from their respective agencies to help develop the **Posture Plan**
- Industry input will be combined with laboratory analysis and interagency contributions to create a Posture Plan in October/November 2006
- **Doug Faulkner** for Rural Development, USDA
- **Neil Rossmeissl** for Energy Efficiency and Renewable Energy, DOE
- **Dr. Bruce Hamilton** for National Science Foundation
- **William Chernicoff** for Department of Transportation
- **Mike Catanzaro** for Environmental Protection Agency
- **Peter Teensma** for Department of Interior
- **Kevin Hurst** for Office of Science Technology and Policy
- **Dana Arnold**, Chief of Staff, OFEE

# Questions?

You can contact the Biomass Initiative at:

[harriet.foster@ee.doe.gov](mailto:harriet.foster@ee.doe.gov)

202-586-4541



## **Attachment D**

# Preliminary Analysis of the USDA Section 9008 Grants

*Requested by William F. Hagy III  
Deputy Administrator, Business Programs  
USDA Rural Development*

Helena Chum, Senior Advisor  
National Bioenergy Center  
National Renewable Energy Laboratory  
Golden, CO 80401

Presented at the  
Biomass R&D Technical Advisory Committee Meeting  
August 10, 2006  
Sacramento, CA

# USDA Request

- Independent Review of FY 2002-2005 grants under Section 9008 for:
  - Outcomes: scientific, technological, technology development and transfer, outreach, training, educational activities, and others
  - Basis for future tracking of grant projects benefits/outcomes
  - Input into the FY07 solicitation – explicit measures
- Basis
  - Report Forms of the Site Visit Peer Reviews conducted for CSREES by the Multi-Regional Project S-1007 academia participants for FY 03 and FY 04 projects completed in 2005 and 2006, respectively
  - Stage Gate Review information from projects evaluated jointly with DOE
  - Telephone interviews and email exchanges with Grant participants and research on the projects

# CSREES Multi-Regional Project S-1007

## Reports and Site Visits

- Led by Dr. Milford Hanna, University of Nebraska.
- 2 academic researchers selected to visit each project site. Reviewers matched with the topics under review.
- Reviewers provided with a form, which USDA modified from OSTP criteria under development specifically to evaluate grant programs.

# USDA Biomass R&D Initiative

## Report Form Contents

- I. Statement of the project objective(s).
- II. Statement of quantifiable progress toward project objective(s) achieved to date.
- III. Key activities remaining between now and the conclusion of the project.
- IV. Problems, obstacles, new developments or market/industry/research changes that effected or may effect the expected outcomes, completion date, cost or scope of the project.
- V. What is the impact of the project?
- VI. Additional reviewer comments and/or technical information (please limit to 1 page):

# Impact of Project - Specific Issues

- What is the impact on the development of the principal discipline(s) of the project?
- What is the impact on other disciplines?
- What is the impact on human resource?
- What is the impact on physical, institutional, and information resources that form infrastructure?
- What is the impact on technology transfer?
- What is the impact on society?

# Review Comments

- Protection of intellectual property and marketing strategies (mostly in Stage Gate)
  - Conflict of Interest for reviewers
  - Open forum
- USDA Review – 1 to 2-day site visit
  - Easier to handle IP (although formal NDAs were not necessary in this round of reviews)
  - General feedback from PIs was that the reviewers were very helpful to their projects and partnerships.
  - Section 9008 projects undergoing a lot of scrutiny (some projects had both Stage Gate and USDA Review).

# Preliminary Analysis of 25% Projects

- 10 Projects funded at \$10.5 Mi in three categories:
  - Thermochemical & Biorefinery Systems
  - Anaerobic Digestion
  - Biodiesel Catalytic Synthesis
- Cost share of projects: \$17.1 Mi!
- Significant potential of fossil energy replacement, local economic development, and environmental improvements
- 38 partner from 15 States
- 20+ graduate and undergraduate research participants
- Major construction project completed accounting for \$13Mi of cost share.



# Stage of Development USDA Section 9008 Projects

	R&D	Demonstration			Market Entry	Market Penetration
		Initial System Prototypes	Refined Prototypes	Commercial Prototypes		
<b>Description of Typical Activities</b>	<ul style="list-style-type: none"> <li>• Research on component technologies</li> <li>• General assessment of market needs</li> <li>• General assessment of magnitude of economics</li> </ul>	<ul style="list-style-type: none"> <li>• Integration of component technologies</li> <li>• Initial system prototype for debugging</li> </ul>	<ul style="list-style-type: none"> <li>• Ongoing development to reduce costs or improve process/prototype</li> <li>• Technology (systems) demonstrations</li> <li>• Some small-scale pre-commercial demonstrations</li> </ul>	<ul style="list-style-type: none"> <li>• Commercial demonstration</li> <li>• Full-size system in commercial operating environment</li> <li>• Program results outreach to early adopters/selected niches</li> </ul>	<ul style="list-style-type: none"> <li>• Initial commercial orders</li> <li>• Early movers or niche segments</li> <li>• Product reputation initially established</li> <li>• Business concept carried out</li> <li>• Market support to decrease cost</li> </ul>	<ul style="list-style-type: none"> <li>• Follow-up orders based on need and product reputation</li> <li>• Broad(er) market penetration</li> <li>• Infrastructure developed</li> <li>• Full-scale manufacturing</li> </ul>

# Stage of Development

## Thermochemical & Biorefinery Systems

Prime/ Project Location	R&D	System Demonstration			Market Entry	Market Penetration
		Initial System/ Prototypes	Refined System/ Prototypes	Commercial Prototypes		
Sebesta (MN)				<ul style="list-style-type: none"> <li>Cogen (gasifier) in existing dry mill</li> </ul>	<ul style="list-style-type: none"> <li>New orders for plans for six dry mills</li> </ul>	
ERI (GA)			<ul style="list-style-type: none"> <li>Tests</li> <li>Business plan litter to energy</li> </ul>	<ul style="list-style-type: none"> <li>Gasifier purchase w/ USDA loan</li> </ul>	<ul style="list-style-type: none"> <li>20 MWe</li> <li>Power purchase agreement</li> </ul>	
Miles Tech Cons., (AL)		<ul style="list-style-type: none"> <li>Business plan dry mill plant thermal host to chicken litter cogen plant</li> </ul>	<ul style="list-style-type: none"> <li>Potential sites identified</li> </ul>			
Local Energy (NM)		<ul style="list-style-type: none"> <li>Business and community plan for district heating</li> </ul>	<ul style="list-style-type: none"> <li>Prototype system design for college in bid phase</li> </ul>	<ul style="list-style-type: none"> <li>Community plan designed</li> <li>Center for Community Sustainability formed</li> </ul>	<ul style="list-style-type: none"> <li>Four mayors request site visits to determine feasibility for their cities</li> <li>2 CO, 2 UT</li> </ul>	



# Sebesta's Cogeneration Assessment and Implementation

Central Minnesota Ethanol Cooperative (CMEC)

## Outcomes:

1. Public business plan
2. Plant in operation
3. 20 jobs added in infrastructure with a 10-yr wood residue contract
4. NG independence projected
5. 3 additional business plan projects for 6 dry mill cogen plants

## Timeline:



**Prime, Location:** Sebesta, Blomberg & Associates, Roseville, MN

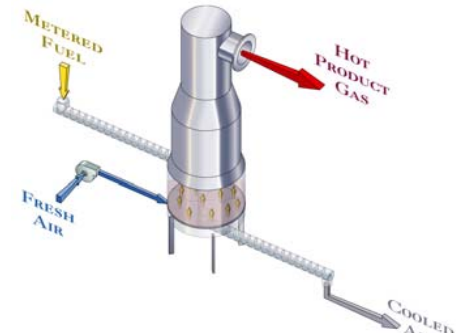
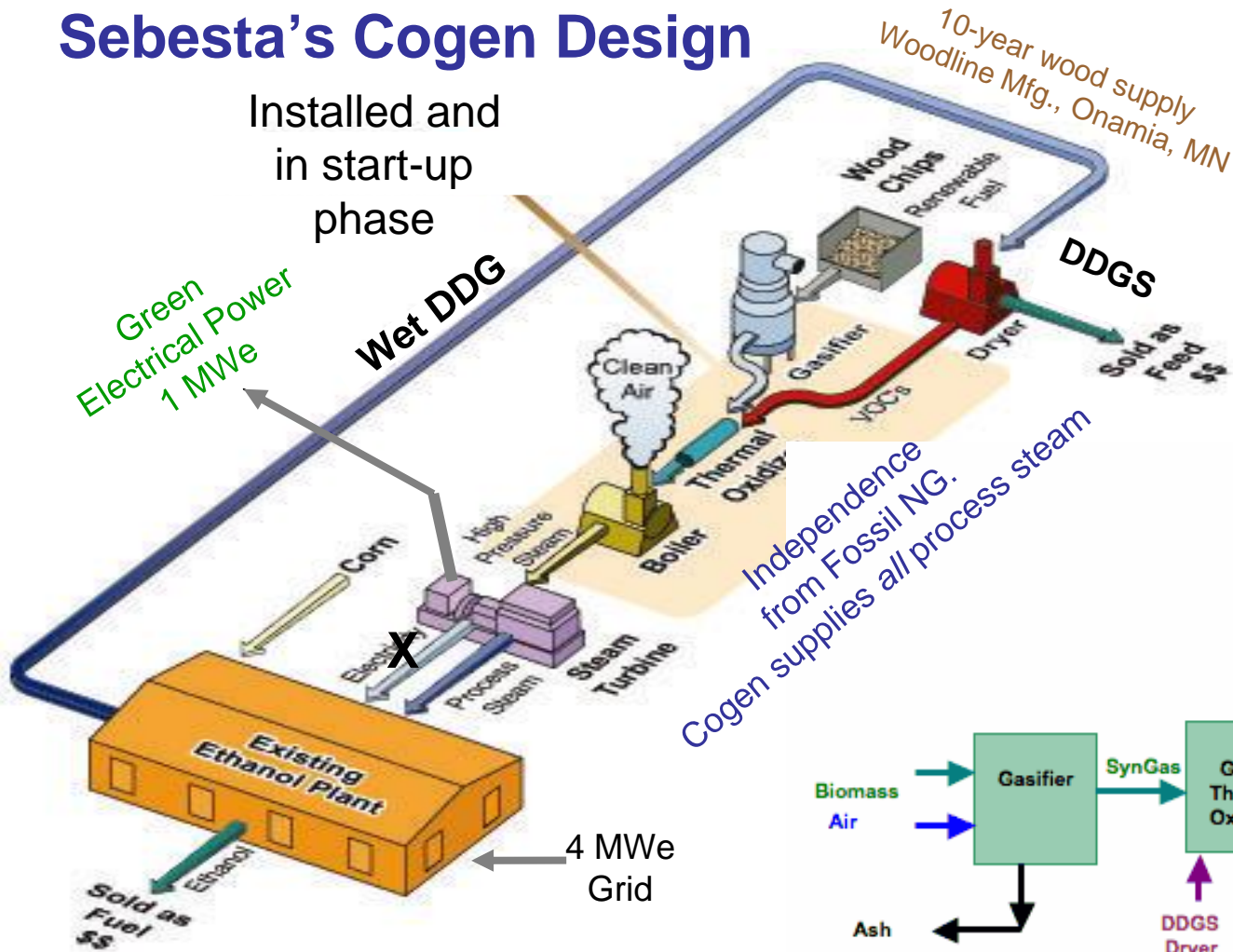
**Participating Orgs:** CMEC, Primenergy, PCL, Dahlen

**Funding:** \$2 M USDA, \$2 M MN/Xcel, \$11 M debt financing CMEC

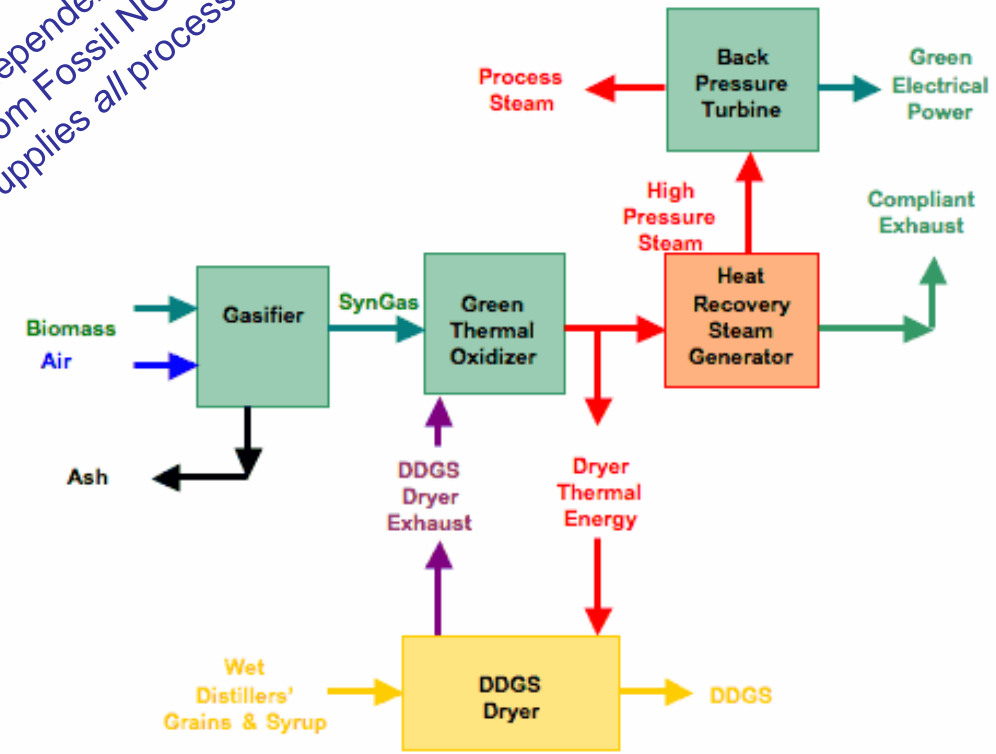
**POP:** Sept 03–Aug 06

**P.I.:** Cecil Massie; [cmassie@sebesta.com](mailto:cmassie@sebesta.com)

# Sebesta's Cogen Design



## Primenergy's Gasifier



Wood Waste Gasification and Thermal Oxidation Draft



# Animal Waste Management

## Chicken Litter to Energy

### Summary:

- Chicken litter and its gasification ash characterized and tested at GTI (fluid bed) and ERI (fixed)
- Selected commercial gasifier
  - Turn-key closely coupled 20-MWe fluidized gasifier/combustor from Babcock & Wilcox Co.
- 15-year power purchase agreement signed with Green Power EMC, GA (plus 2 x 5-year options)
- ERI 500-acre site includes a landfill. A 20-mile radius brings 500 tons/day of chicken litter from 3,900 poultry houses. 50 MW + possible
- ERI: 22 employees; supply contract will add 10 jobs to infrastructure
- Business case made to USDA for gasifier purchase through I&B Loan/RUS. Loan Status: Environmental Assessment.

### Carnesville, GA



ERI is located in the “bull’s eye” of Georgia’s poultry industry.

**Prime, Location:** Earth Resources Inc. , Carnesville, GA

**Participating Orgs:** Gas Technology Institute, University of Georgia

**Funding:** \$1,136,936

**POP:** Oct. 03–Sept 06; 1-yr extension

**P.I.:** Gordon Blyseth; [plantcarl@alltel.net](mailto:plantcarl@alltel.net)



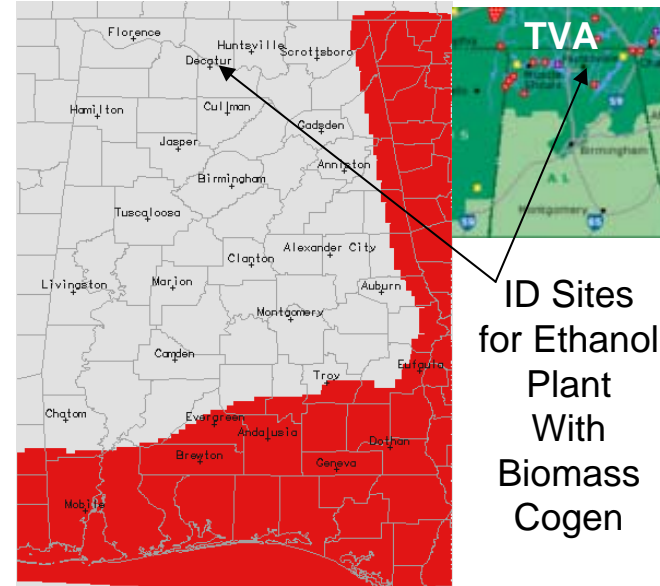


# Integrated Poultry and Ethanol Production in Alabama

**Alabama Animal Waste/Nutrient Land Application Map**  
Issued: Aug 07, 2006 11:19PM Based on Current 72 Hour Forecast  
**Valid Until: 08-08-2006 11:19AM**

## Summary:

- Poultry litter combustion and steam generation system, with poultry litter and ash handling and storage, could be technically and economically feasible and compliant with environmental standards
- Poultry litter supply and use of effluent ash in poultry feed and fertilizers are driving factors
- Current poultry litter disposal by land application, within a 3-day no-rain weather forecast, is a disincentive. More poultry houses areas could be created to increase economic development
- Imported grain for ethanol. Grain used by SE markets.
- Significant outreach



ID Sites for Ethanol Plant With Biomass Cogen

For spreading of waste/nutrients:  
**Red Areas unfavorable**  
**White Areas favorable**

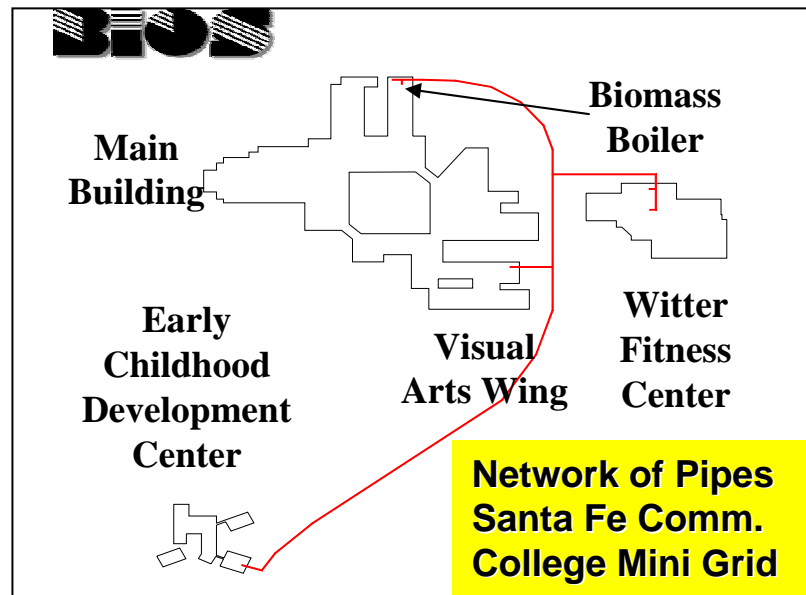
**Prime, Location:** T. R. Miles, Technical Consulting, Portland, OR  
**Participating Orgs:** B.R. Bock Consultants; Informa Economics Inc.; Energy Products of Idaho; Auburn University (Poultry Science); Alabama Mountains, Rivers, and Valleys RC&D  
**Funding:** \$254,274; \$64,449 cost share  
**POP:** Aug 03–July 06

*P.I.: Tom Miles; tmiles@trmiles.com*

# Biomass-Fired District Energy for Economic Development and Energy Security

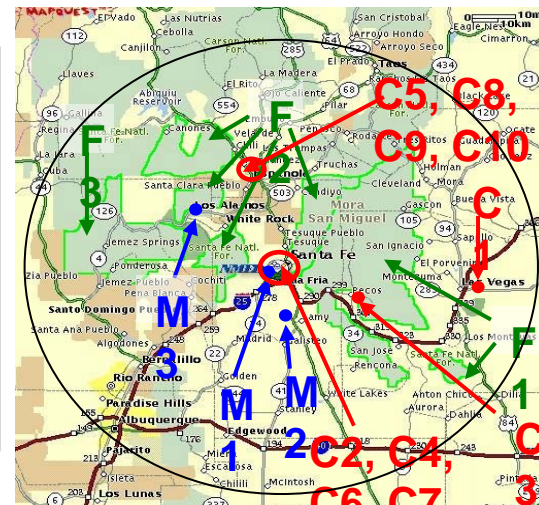
## Summary:

- Assess and implement biomass-fired district heating.
- Contracted with major expert in the area—BIOS (Austria)—to analyze Santa Fe possibilities and smaller grids
- Energy-dollar retention in local economy study completed.
- First pilot at Santa Fe Community College will be operational in 2007
- Launched vocational program on district heating with biomass
- Outstanding outreach: NM, CO, UT, ...



NG heating prices going up at 28%/year  
Wood-based system escalator 5%–6%/year

**Prime, Location:** Local Energy, Tesuque, NM  
**Participating Orgs:** BIOS BIOENERGIESYSTEME GmbH, Santa Fe Community College System  
**Funding:** \$1,286,768 and \$455,522 in-kind cost share  
**POP:** October 2003–September 2006  
*P.I.: Mark Sardella; msardella@localenergy.org*



# EMPOWERING AN EXISTING NETWORK OF CORDWOOD FUEL SUPPLIERS

RAPID DEPLOYMENT → RURAL JOBS → EASY BILLING → LOCAL PROFITS



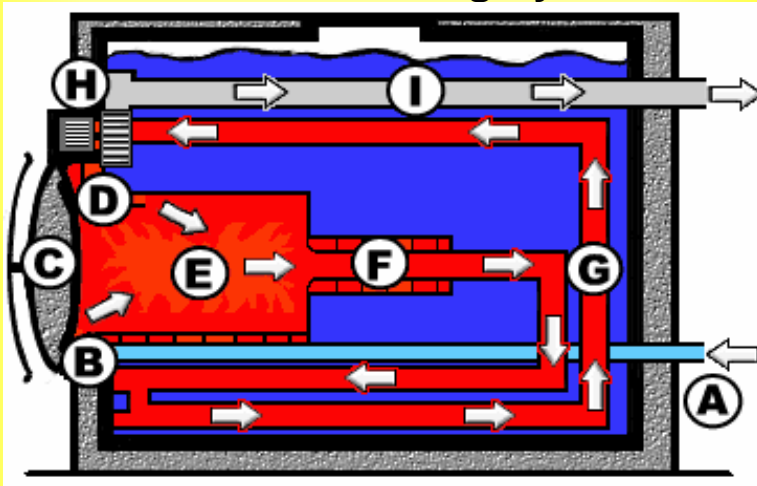
## THE HEAT METER

The **Onicon®** heat meters installed on **GARN®** cordwood heating systems enable heating entrepreneurs to bill their customers for the precise amount of heat delivered by biomass.



- **Utility Grade – 99.3 percent accuracy**
- **Supplier Sells Heat, Not Wood**
- **Customer Purchases Heat, Not Equipment**
- **Monthly Billing Improves Affordability**

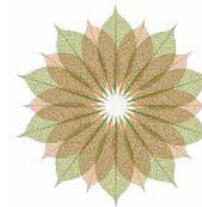
The Biomass Vocations Program at SFCC is built around the **GARN Wood Heating System**



*Patent protected by Dectra Corp.*

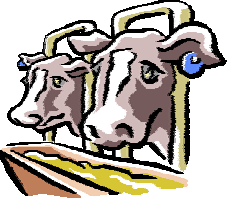
- **84% thermal efficiency (wood to water)**

Draft



LOCAL ENERGY





# Stage of Development Anaerobic Digestion

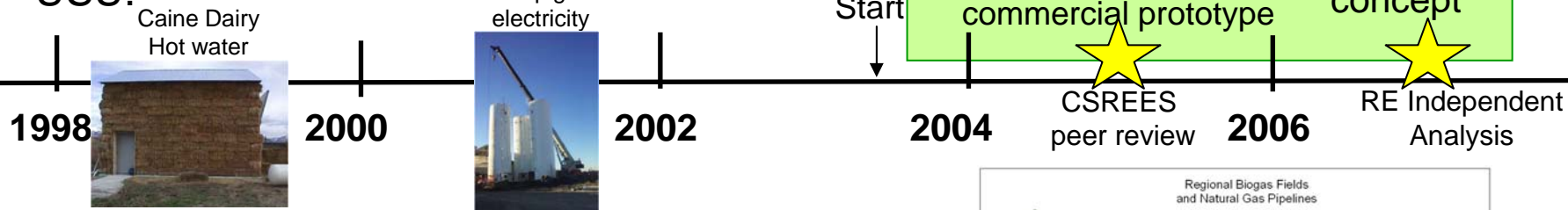
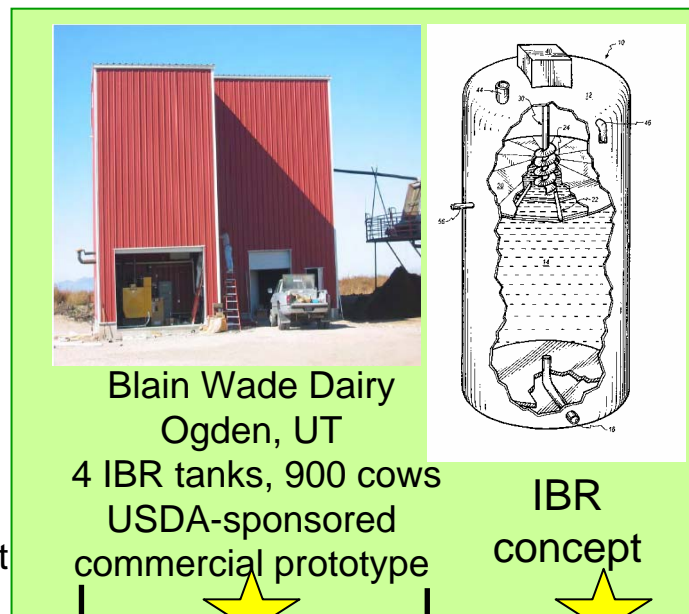
Prime/ Project location	# Animal Units/ Host Farm location	Demonstration			Market Entry	Market Penetration
		Initial System/ Prototypes	Refined System/ Prototypes	Commercial Prototypes		
Utah State University (UT)	650 + Blain Wade, UT			<ul style="list-style-type: none"> <li>Designed, built, and installed new 4-tank digester system based USU concept</li> <li>Andigen spin off</li> </ul>	Andigen Licenses/orders ID # units 5 CA # units 2 4 units set up UT	
VAEC VT	40–160 Foster Brothers, VT	<ul style="list-style-type: none"> <li>Small-scale plug flow with new nutrient management system</li> <li>Biorefinery concepts developed</li> </ul>	<ul style="list-style-type: none"> <li>Digester prototype built</li> <li>Began testing</li> <li>Automation and mass production</li> <li>Community-level biodiesel/AD biorefinery</li> </ul>			
NESI MA (2 projects)	550 + AA Dairy Candor, NY			<ul style="list-style-type: none"> <li>Assembled skid mounted high purity H<sub>2</sub> (or CH<sub>4</sub>) Generator</li> <li>Installation at Dairy</li> </ul>		



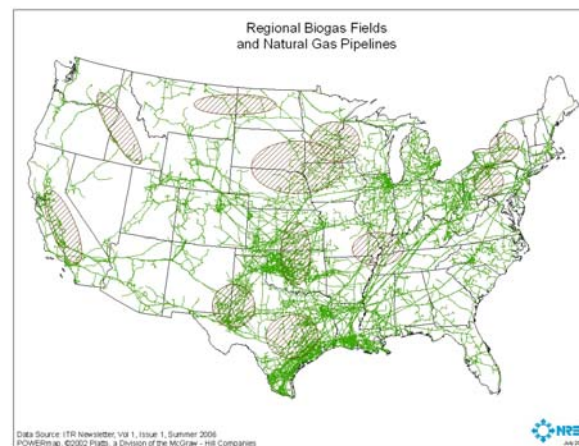
# R&D of Anaerobic System on a Large Dairy Farm in Ogden, UT

## Summary:

- Upflow Anaerobic Sludge Blanket bioreactor advanced with plugging control mechanism with septum in reactor top (pat. pending) to avoid loss of anaerobic bacteria consortium and increase process rate to 1/4 of plug flow
- Induced blanket reactor (IBR) concept scaled up to commercial prototype successfully with Andigen LC, a spin-off of USU.



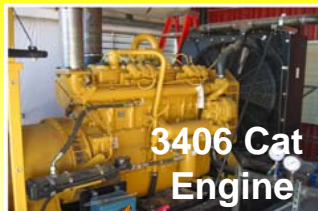
**Prime:** Utah State University, Logan, UT  
**Participating Orgs:** Andigen LC  
**Funding:** \$761,385 USDA; \$400 K UT  
**Timeline:** September 2003–July 2006  
**P.I.:** Conly Hansen; [chansen@cc.usu.edu](mailto:chansen@cc.usu.edu)



# Technical Success in Utah...

...Leads to Initial Market Entry in ID and CA!

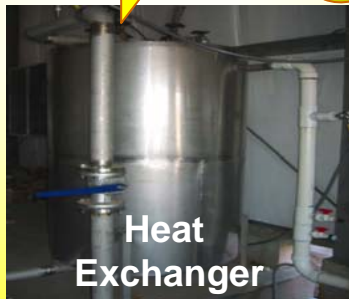
## Wade Dairy, Ogden



3406 Cat Engine



Manure Collection



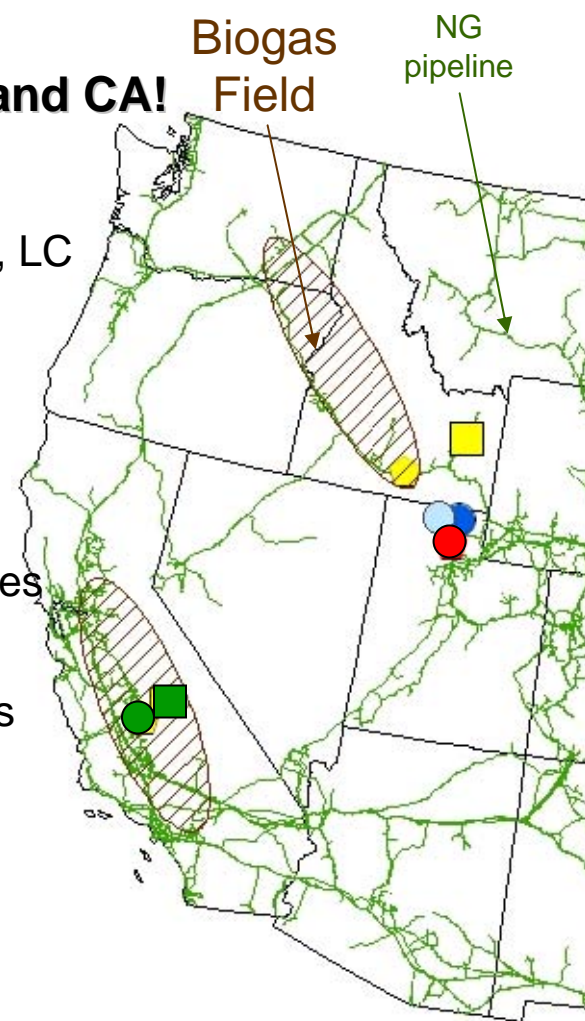
Heat Exchanger



Digester Tank

## USU-Andigen Commercial Prototype

- USU
- Andigen, LC
- Wade Dairy
- Intrepid
- Whitesides Dairy
- AgriMass
- Fletcher Dairy



### Current Andigen State Licensees

★ Intrepid Resources and Tech Inc., Idaho Falls, UT

AgriMass Enviro-Energy Inc., Visalia, CA (Central CA)

### Farm Project

Whitesides Dairy, Rupert, ID

Fletcher Dairy, Tulare, CA

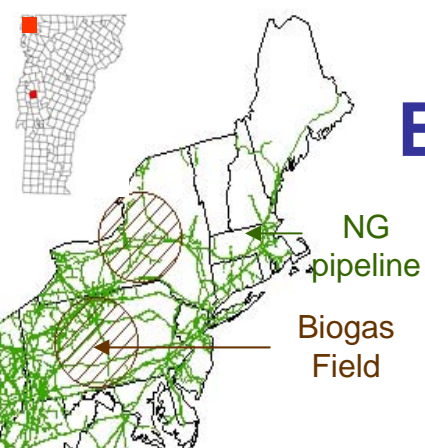
### Project Purpose

5 tanks under construction. Green Renewable compressed CH<sub>4</sub> to feed Intermountain Gas Co. pipeline (15-year contract)

2 tanks under construction for on-farm cogen and multiple fertilizer and other applications

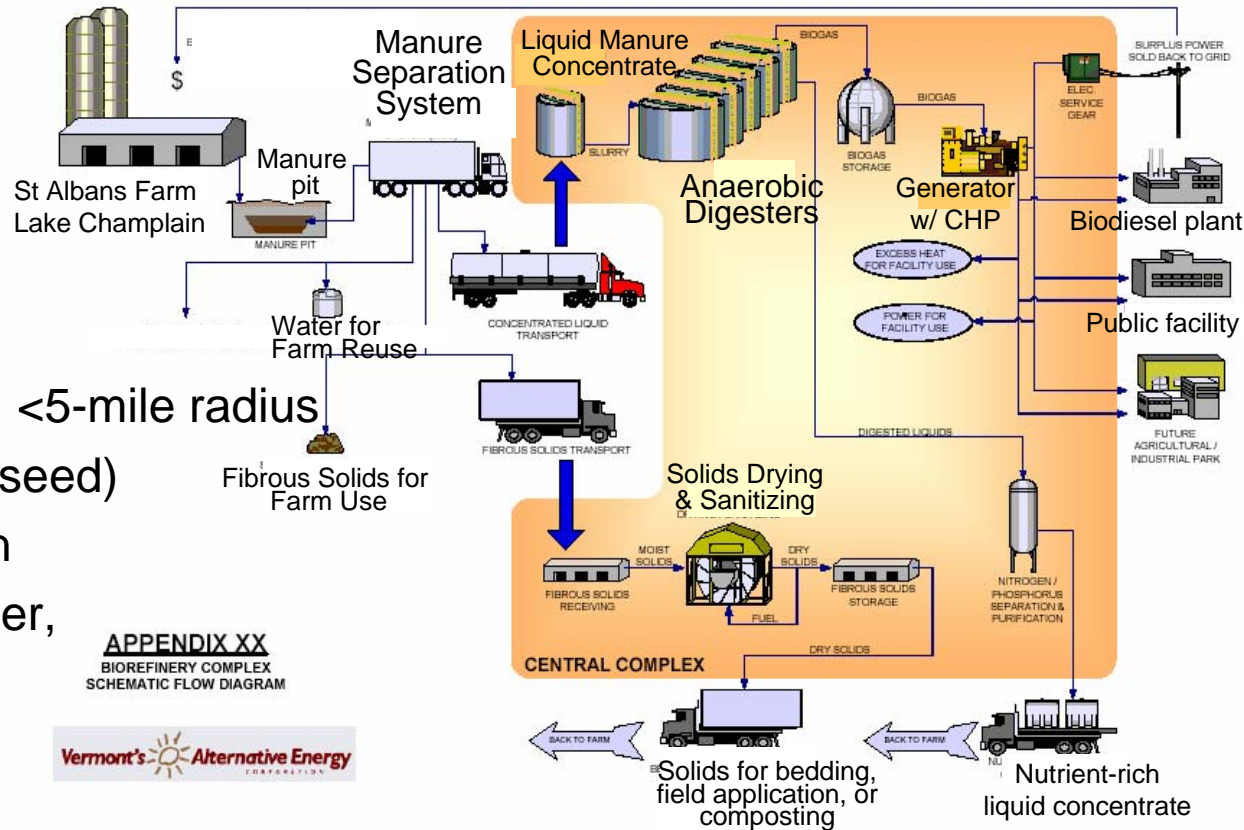


# Steps Toward a Biorefinery Industry in Vermont



## Conceptual Design

- Biorefinery coupled with dairy complex & recycling, <5-mile radius
- Biodiesel addition (import seed)
- IP for manure fractionation
- Recovery of nutrients, water, solids for bedding
- Cogeneration
- Extensive outreach

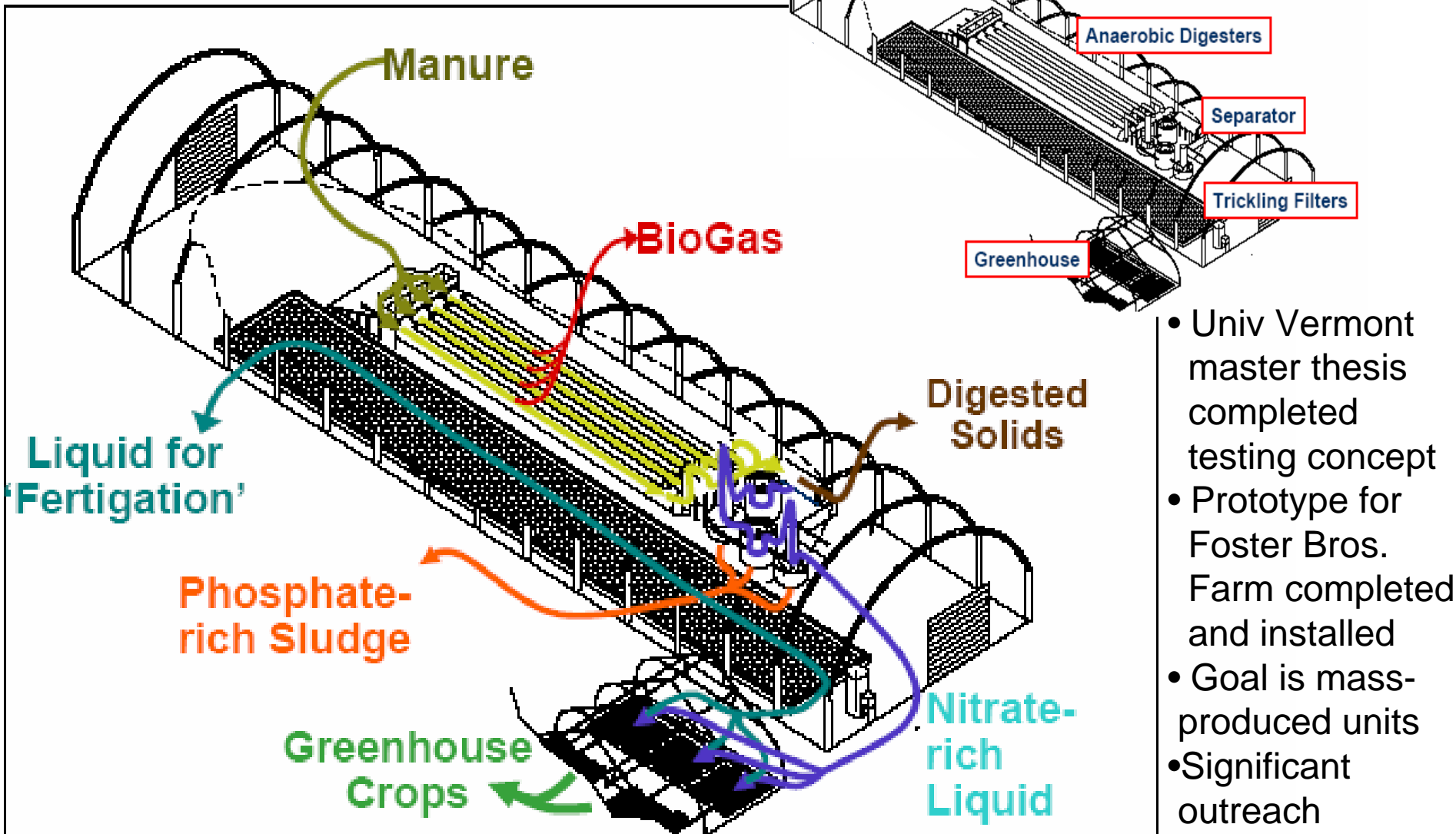


**Prime, Location:** Vermont's Alternative Energy Corporation, Williston, VT  
**Participating Orgs:** Avatar Alternative Energy LLC, Intervale Foundation, Foster Bros. Farms, University of Vermont  
**Funding:** \$746,912 with 30% cost share from VAEC  
**POP:** Sept. 03–Sept. 06; Avatar's portion no cost extension

**P.I.:** Gregory R. Liebert; [gliebert@lieberteng.com](mailto:gliebert@lieberteng.com)

# Advanced Small-Scale Anaerobic Digestion Technology

## Materials Flows





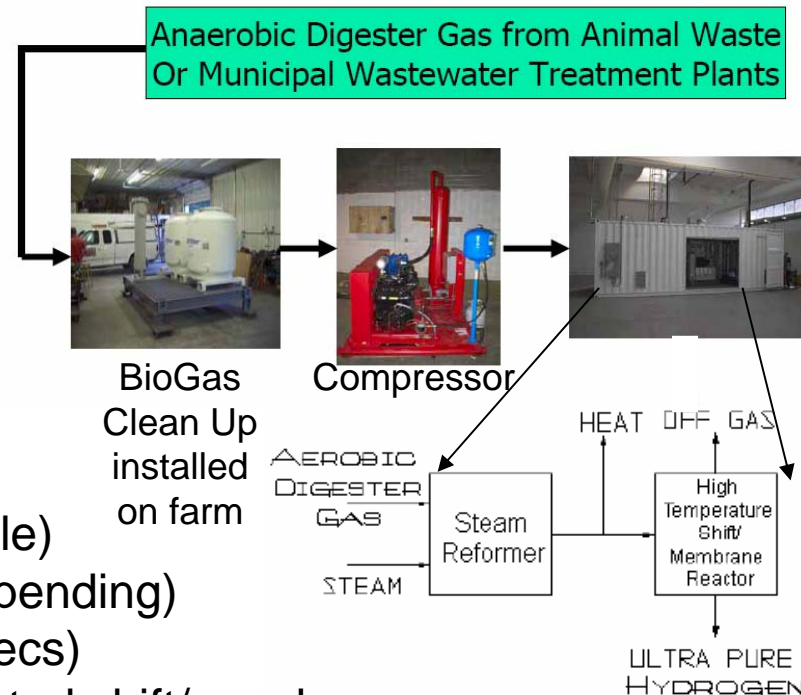
# High Purity Hydrogen from Farm Animal Wastes - Phase I-III



Dairy

## Summary:

- A modular system for purifying anaerobic digestion gas from H<sub>2</sub>S, compress it, and process it to 99.999+% H<sub>2</sub> will be tested on farm.
- Hydrogen Uses Envisioned:
  - Semiconductors, edible oils, float glass, fiber optics, metals
  - Beer- and cheese-making
  - Hydrogen-fueled engine generators, fuel cell power plants (stationary or mobile)
- U.S. Patent 7,033,822, April 25, 2006 (PCT pending)
- H<sub>2</sub> manufacturers assessing quality (met specs)
- Achieved 60+ thermal cycles with the integrated shift/membrane separation step.



**Prime, Location:** New Energy Solutions Inc., Pittsfield, MA

**Participating Orgs:** AA Dairy Inc. (Candor, NY), Cornell Univ, REB Res. & Consulting; Berkshire PowerTech Inc., Spath & Son, & Harvest En. Technology

**Funding:** \$1,661,534; in kind cost share \$550K

**Timeline:** Phase I - 7 months (FY03); Phase II & III – Jan. 04–Dec. 2006

**P.I.:** Val Maston; ValMaston@aol.com

# Stage of Development Biodiesel Catalytic Synthesis

Prime/ Project location	R&D	Demonstration		
		Initial Catalyst/ Process	Refined Catalyst/ Process	Commercial Catalysts/Process
<b>Clemson University (SC)</b>	<ol style="list-style-type: none"> <li>Scholarly review of biodiesel synthesis – winner in citations</li> <li>R&amp;D by post docs, graduate &amp; undergraduate students</li> <li>Concept identification phase</li> </ol>			
<b>West Central/ ISU (IA)</b>	<ol style="list-style-type: none"> <li>R&amp;D by postdocs, graduate &amp; undergrad students</li> <li>Concept identified and tested at bench scale</li> </ol>	Catalysts evaluated. Selected most promising. Achieved 7 mo. of good performance	Process of ID partners for cat development or spin off co.	



# Heterogeneous Catalyst Development for Biodiesel Synthesis

## Summary:

- Current biodiesel synthesis uses homogeneous catalysts which increase cost because of additional separation steps & generate waste products. Goal is to identify heterogeneous catalysts with few reaction steps, continuous production, and few separation steps.
- Obtained baseline kinetic data for catalysts used today (H<sub>2</sub>SO<sub>4</sub> and NaOH) and examined families of catalysts and rationale for use. About 35 catalysts.

### Heterogeneous Acid Catalysts:

- (a) organic resins
- (b) refractory oxide supported organic resins
- (c) modified zirconias
- (d) zeolites
- (e) mesoporous materials reconstituted from zeolites
- (f) sulfonated carburized sugars
- (g) refractory oxide supported sulfonated carburized sugars

### Heterogeneous Base Catalysts:

- (a) zeolites
- (b) metal oxides
- (c) clays (hydrotalcites)
- (d) ammonium functionalized catalysts

Top Downloaded  
Citation

*Ind. Eng. Chem. Res.* 2005, 44, 5353–5363

5353

## Synthesis of Biodiesel via Acid Catalysis

Edgar Lotero, Yijun Liu, Dora E. Lopez, Kaewta Suwannakarn, David A. Bruce, and James G. Goodwin, Jr.\*

*Department of Chemical Engineering, Clemson University, Clemson, South Carolina 29634-0909*

- Research Triangle Park perform technoeconomic analysis.
- 2 Professors, 1 Post Doc, 3 PhD students, 1 res. Underg.
- 11 peer reviewed publications

**Prime, Location:** Clemson University, Clemson, SC

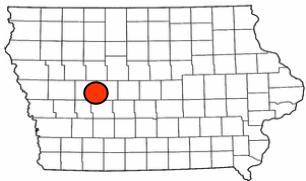
**Participating Orgs:** Research Triangle Park, Sud Chemie, Biodiesel Industries

**Funding:** \$894,203

**POP:** Oct. 03–Sept. 06

**P.I.:** James G. Goodwin Jr.; [james.goodwin@ces.clemson.edu](mailto:james.goodwin@ces.clemson.edu)





# New Technologies for the Production of Methyl Esters

## Summary:

- Base-type catalysts synthesized, mounted on mesoporous solid supports and evaluated for efficiency and recyclability in catalyzing the transesterification of oils with methanol. Acid-type mesoporous solid catalysts synthesized for esterification of various oils and fatty acid feedstocks with methanol.
- Field testing new, recyclable heterogeneous acid and base catalysts for converting various oils and fatty acid oils to methyl esters,
- Fine tuning performance characteristics of the new heterogeneous catalysts,
- Conducting cost analyses using selected heterogeneous catalysts with various oils and fatty acid feedstocks.
- Identified best catalyst; performance held in 7-mo bench scale tests. US Patent filed. PCT in filing process. Partnerships discussions.
- 8 graduate students trained.

**Prime, Location:** West Central Cooperative, Ralston, IA

**Participating Orgs:** Iowa State University

**Funding:** \$1,826,648

**POP:** Oct. 03–Dec. 06

*P.I.: Dan Karl; dwkarl.grainvalue@popp.net*

*P.I.: Victor Shang-Yi Lin; vsylin@iastate.edu*

# Information being collected

Education/ research training			Dissemination of Knowledge			IP Generation		Commercialization			Outreach		Cost Share
PhD/ MSc	Post Docs	Und. Res	Journal Pubs	Citations	Prof society presenta tions	#	Organization generating IP	# Licenses	Partnershi ps	# start up compani es	Interviews (news papers, radios, TV)	Other	

Others?

## **Attachment E**

Harriet,

Here is a copy of the  
partial transcript of  
Aug 10<sup>th</sup> meeting here  
in Sacramento

PUBLIC MEETING

U.S. DEPARTMENT OF ENERGY  
OFFICE OF ENERGY EFFICIENCY and RENEWABLE ENERGY  
BIOMASS RESEARCH and DEVELOPMENT  
TECHNICAL ADVISORY COMMITTEE MEETING

COPY

R&D ROADMAP FOR BIOMASS TECHNOLOGIES  
IN THE UNITED STATES

CALIFORNIA ENERGY COMMISSION

HEARING ROOM A

1516 NINTH STREET

SACRAMENTO, CALIFORNIA

THURSDAY, AUGUST 10, 2006

9:30 A.M.

Recorded by:  
California Energy Commission  
Contract Number: 150-04-002

APPEARANCES

Jackalyne Pfannenstiel, Chairperson  
California Energy Commission

Terry Jaffoni  
Acting Committee Chairperson

Bill Hagy III,  
Office of Rural Development  
U.S. Department of Agriculture

Neil Rossmeissl  
Office of the Biomass Program  
U.S. Department of Energy

Ralph Cavalieri  
Washington State University  
Western Roadmap Workshop Chairman

Susan Brown, Senior Policy Analyst  
California Energy Commission

Valentino Tiangco, Senior Technical Lead  
Energy Generation Research Office  
California Energy Commission

Bryan Jenkins, Executive Director  
California Biomass Collaborative  
University of California

Helena Chum, Senior Advisor  
National Bioenergy Center  
National Renewable Energy Laboratory

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Proceedings

Introductions

Opening Remarks

Chairperson Pfannenstiel

Agenda Overview

Acting Committee Chairperson Jaffoni

Update, Departmental Activities

Bill Hagy III, Office of Rural Development,  
U.S. Department of Agriculture

Update, Designated Federal Officer

Neil Rossmeissl, Office of the Biomass Program,  
U.S. Department of Energy

Review, California Roadmap Update Workshop

Ralph Cavalieri, Washington State University,  
Western Roadmap Workshop Chairman

Presentations - California Energy Commission

Susan Brown, Senior Policy Analyst

Valentino Tiangco, Senior Technical Lead,  
Energy Generation Research Office

Bryan Jenkins, Executive Director, California  
Biomass Collaborative, University of  
California

Discussion - California Area Biomass Efforts

Preliminary Analysis, USDA Section 9008 Grants 1

Helena Chum, Senior Advisor, National Bioenergy  
Center, National Renewable Energy Laboratory 1  
Questions/Discussion 25

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Adjournment	145
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P R O C E E D I N G S

8:30 a.m.

PARTIAL TRANSCRIPT

1  
2  
3  
4 MS. CHUM: I got problems to meet that,  
5 so the problems are also analyzed and  
6 recommendations are done; for instance, they  
7 probably won't make it, you probably need to  
8 extend the period of performance. Or probably  
9 should be less ambitious and try to do something a  
10 little less than what they originally started.

11 Then what's the impact of the project?  
12 And that's really one that we are very interested  
13 in. And I'll tell you what's in this particular  
14 one. And then reviewers feel free to comment.

15 But the important thing is Professor  
16 Hannah matched the reviewers to the topics of the  
17 proposals. So you actually have expert reviewers  
18 talking. And not so much conflict of interest  
19 from any industrial point of view, because those  
20 were academic participants.

21 What were the impact of project  
22 questions. Since this was designed up front to  
23 serve NSF and everybody else, it was very much  
24 disciplinary, okay; impacting disciplines,  
25 multiple disciplines, human resource. This is



1 important for any impact, not that those are not  
2 important, physical institutional formation and  
3 infrastructure, technology transfer and societal  
4 impacts.

5 Our kinds of interests, impact on the  
6 energy, impact on economic development, those  
7 things weren't really quantified at that point.  
8 They were alluded to.

9 Some of the comments that the PIs  
10 mentioned, in the StageGate, for instance, many of  
11 the PIs were very concerned because the  
12 intellectual property protection and sharing  
13 market strategies to a group of reviewers, many of  
14 whom were actually competitors of those particular  
15 subject areas.

16 So that was a problem that they opened a  
17 conflict of interest problem, the fact that there  
18 was no nondisclosure agreement because it was an  
19 open forum.

20 In the case of the USDA, the reviewers  
21 wanted two days onsite, so the reviewers visited  
22 the labs, talked to the -- and saw how the groups  
23 communicated with one another.

24 The general feedback was that they were  
25 afraid of the IP issue, but they were able to

1 handle, without having to sign nondisclosure  
2 agreements, if they had to sign, would have been  
3 in one or two projects and they were prepared to  
4 do that to be able to review.

5 The PIs, who were very very, by and  
6 large, very pleased to have had -- initially they  
7 said, well, this section 9001 is really being  
8 reviewed; some of the people reviewed by  
9 StageGate, by the site review, and now by the last  
10 follow-up to look at what has been accomplished.

11 But, in fact, they have been very  
12 pleased because they got help, okay. Many of them  
13 say that they really had to think about the  
14 projects overall; they had to come up and all  
15 together be talking.

16 What have I done? At this point I'm  
17 presenting on 25 projects. I've analyzed more  
18 than that. But there's ten here that is about  
19 \$10.5 million. And I've categorized for you a  
20 thermochemical biorefinery systems. The word  
21 systems is very important. Most everything here  
22 is a system with the exception of this  
23 biocatalyst, biodiesel catalyst synthesis.

24 You notice that there's a very high  
25 level of cost share. And you'll also see, and I

1 will requantify those more, as we set with the  
2 PIs, what are the numbers that we're going to use  
3 for baseline and we start tracking from that point  
4 on.

5 So, fossil energy replacement, local  
6 economic development are the basis for that in  
7 environment improvements.

8 Thirty-eight partners are involved in  
9 this ten projects in 15 states. They have lost  
10 count of one or two graduate or under-graduate  
11 students, but we're reviewing that, but it's a  
12 large number.

13 And the reason for the 17 million is  
14 there is one construction project commercial  
15 that's an outcome of this project. And that  
16 accounts for 13 million of the cost share.

17 Now I couldn't use StageGate because the  
18 peer review of the U.S. data did not go in that  
19 kind of nomenclature, and only five of the  
20 projects had been through a peer -- a StageGate  
21 kind of peer review. So I ended up resorting to  
22 an (inaudible) definition, or of stages of  
23 development that I'm sure many of you are familiar  
24 with so that they would all be consistently  
25 graded.

1           So, here's where they are. So the R&D  
2 component, and that's for demonstrations and  
3 systems, so the R&D components are assessment of  
4 markets or economics. The initial prototypes  
5 either looking at component technology  
6 integration, getting systems debugged first  
7 prototypes.

8           Then refining the prototypes to reduce  
9 cost or to prove the system. Then the  
10 demonstrations. In some cases, even some small  
11 pre-commercial. The commercial prototypes, we've  
12 had several of those. A commercial demonstration;  
13 a full-size system that's operating in the  
14 environment. Then program results to get to the  
15 early adopters. And we are seeing those kinds of  
16 results, too.

17           We're seeing also some early market  
18 entry, so initial commercial orders; and then  
19 niche segments being developed. And from there  
20 on, so we can track, in the future, how they  
21 continue to move and whether they do what they  
22 were expected to do.

23           The first category, and there are four  
24 projects, in thermochemical biorefinery systems.  
25 The Sebasta (phonetic) project, Sebasta Blomberg

1 and Associates in Minnesota, is your first success  
2 story. This Technical Advisory Committee has a  
3 first plant that has actually been built within  
4 the period of the grant.

5 It is a cogeneration system, a gasifier,  
6 and in an existing dry mill in Minnesota. And  
7 we're talking about efficiency, system  
8 efficiencies of 87 percent cogeneration.

9 Just an example of market entry. After  
10 completing this public business plan and doing a  
11 plant, there are new orders for plans for six more  
12 dry mills. See the beginning of the entry.

13 The second project is from Murth  
14 (phonetic) Resources, Inc. That's in Georgia.  
15 Their first number one poultry producer in the  
16 United States. So obviously this is about chicken  
17 litter and how the management of chicken litter  
18 can be done in step with very high poultry  
19 production state.

20 And so a business plan develop tests  
21 with chicken litter for gasification; and looking  
22 at what would make sense for that particular case.  
23 There's a gasifier purchase with an USDA loan just  
24 in the final stages of approval. And the 20  
25 megawatt electric. There's a 15-year power

1 purchase agreement already. Okay.

2 The Miles technical consultants in  
3 Alabama now, the large group, it's the third state  
4 in the chicken litter business. Again, can we use  
5 the chicken litter, we need a thermal host. Can  
6 an ethanol plant be the thermal host? So it's a  
7 business creation model here. And potential sites  
8 have been identified.

9 One that I find really fascinating is  
10 Luko (phonetic) Energy, looking at district  
11 heating. In Europe, if you go to Austria, go  
12 several places, biomass heating is a very common  
13 feature. And their systems, 97 percent is  
14 actually achieved.

15 What Luko Energy is trying to do is  
16 business in community plan for district heating in  
17 the Santa Fe area. And then there's a prototype  
18 system being built and actually installed in the  
19 college. And then the plans in the community  
20 whose now taking this really pretty seriously. We  
21 have some market entry already. At least a very  
22 large level of interest.

23 Let's look at Sivest (phonetic). And  
24 here's your (inaudible). I like history, so where  
25 do projects come from? I'll spend a little bit.

1                   In 2002 Sivest actually did a project  
2 for the Office of Industrial Technologies on the  
3 3M Hutchinson plant, taking VOCs and actually  
4 using a cogeneration system improving the energy  
5 efficiency of that particular plant and installing  
6 a cogen system that also took care of the volatile  
7 organic compounds.

8                   The problem of this plant here  
9 (inaudible) Cooperative in Little Falls was that  
10 they were already out of compliance in volatile  
11 emissions in the drying part, okay. Drying  
12 distillers dry grains of solubles.

13                   Because they were out of compliance they  
14 were told you have to install a thermal oxidizer.  
15 Okay, if I'm going to install a thermal oxidizer,  
16 I'm going to increase my bill of natural gas. Why  
17 am I going to do that in a state that's charging  
18 an awful lot for natural gas.

19                   So, Sivest came up with figure out that  
20 they could, through the partnerships here, it's  
21 really very interesting, Dawlin (phonetic), who  
22 does the sensors, the controls for this plant, got  
23 in contact with Sivest and said, well, you know,  
24 they are going to do this; doesn't make sense.  
25 Why don't we propose something different than

1 Sivist had already analyzed several cases, and got  
2 an EXEL (phonetic) grant to look at distiller dry  
3 grains as materials for combined cycle,  
4 gasification combined cycle.

5 Partnership formed. The project  
6 started; the USDA funding came in; did the  
7 business plan that's public. And convinced the  
8 partners to actually go after an 11 million debt  
9 financing for the plant.

10 All of this was done starting late in  
11 2004. In July of 2005 they broke ground. In  
12 July, when I called, on July 30th, oh, we're  
13 operating, okay. So in a period of 90 days, or  
14 the shaking down and everything else, it seems to  
15 be working well. Cecil Massey (phonetic) is the  
16 designer of the plant.

17 So, quite a bit of activity. So here  
18 was Sivist's plant. Let's put this gasifier;  
19 let's get them wood chips. We're interested in  
20 using very low cost feedstock that we can  
21 guarantee. Not like natural gas that we can't.

22 And here's the thermal dryer that was  
23 really out of compliance. So we take the gasifier  
24 gases and VOCs. Put through the thermal oxidizer.  
25 And that takes care beautifully of the VOCs sent



1 out to this really high pressure boiler. We have  
2 very clean air. We meet that. We then make all  
3 the steam for this ethanol plant. We have plant,  
4 we can do either electricity here; not  
5 necessarily. And this wet grain was the problem.  
6 So, in the drying part of that particular case.

7 Okay, they went with Prime Energy; and  
8 Prime Energy, the gasifier is an updraft gasifier.  
9 The wood comes in; you have an air entry here.  
10 The gases go up to the top. And the ash is  
11 accumulated, cooled down and collected.

12 Now, so the gasifier basically biomass  
13 in there, catching together with the -- in the  
14 green thermal oxidizer, along with the exhaust.  
15 Very hot recovery steam generator sending the high  
16 pressure steam down to this pressure turbine;  
17 getting the process steam in a very good  
18 reviewable green power, and -- RPS.

19 What would you do with the renewable  
20 clean power. You certainly wouldn't feed it here.  
21 What you do is sell. That's what they're doing.  
22 Not only they don't have to buy now natural gas  
23 because they're making it.

24 But more importantly, their contract for  
25 the next ten years they have wood contract to

1 supply the natural gas equivalent. And they have  
2 less fluctuation, less uncertainty. Commodity  
3 markets are so difficult to handle. And they have  
4 too many parts now. They decrease the amount of  
5 volatility and will be able to run much more  
6 efficiently. I call that a success story.

7           The animal waste management, the chicken  
8 litter, the only point I want to make here is  
9 location, location, location. Kernsville  
10 (phonetic) is located in the bullseye of Georgia's  
11 poultry. Within 20 mile radius they can get 500  
12 tons a day of chicken litter. Those are operators  
13 of a landfill plant. They decided why aren't we  
14 doing something with that. And they decided to  
15 look into gasification for energy, okay.

16           And they made a partnership with GTI,  
17 Gas Technology Institute, in Georgia; looked at  
18 the chicken litter; at the ash. Looking at  
19 various options. And then got this final  
20 selection, a Babcock Wilcox turnkey closed coupled  
21 gasifier combustor. Fifteen-year power purchase  
22 agreement with Fremont (phonetic) Electric, Green  
23 Power EMC, in two-year, five-year options.

24           So we have a nice case. We also have  
25 the follow-up which rural development allows,

1 which is why I think it's a very good place for  
2 9000 (inaudible) with rural development, 9008,  
3 9006, all the laws that are all aligned so we can  
4 take people from the R&D phase, the end part of  
5 the demonstration, all the way to commercial.

6 We'll spend a minute here because third  
7 place in the country making -- in poultry  
8 production has a very different situation.  
9 Biomass is local, local, local. Alabama has -- is  
10 in terrible problems economically, and the area is  
11 highly depressed.

12 Now, if you look at what happens, they  
13 don't have centralized, they don't have a chicken  
14 litter management. Their management is -- look at  
15 this map, the map is at the time that I pulled it  
16 off from the computer. If you are in the red  
17 region you cannot put chicken litter on the  
18 ground. That's how they dispose. They put land  
19 distribution of chicken litter.

20 What does that do? If it rains it does  
21 what we expect it to do, which is to take  
22 (inaudible) and so forth and runoff, and do  
23 whatever it needs to do downstream.

24 If you're in the white zone, yes, you  
25 can do it. That is a guarantee of about three

1 days that it's not going to rain.

2 Now, because of that situation, even  
3 though they have a very nice plant and say, yes,  
4 we can put an ethanol plant here that would take  
5 care of a very large fraction of the poultry  
6 litter. But why would they collect and change  
7 their ways if they don't have to.

8 So, we're still going to see what will  
9 it take for that to change that particular  
10 practice.

11 And the two sites that were selected,  
12 the one is Decatur, and one is Devon on the right  
13 side of the Decatur in the (inaudible) region.

14 District Energy; that's another good  
15 example of thinking outside the box. Mark Sardell  
16 at the PI contracted with BIOS. And BIOS is the  
17 most expert company in the world in district  
18 heating. There are many district heating systems  
19 in Europe and elsewhere that BIOS and BioEnergy  
20 System has designed to work as very high  
21 efficiency production.

22 The study that Mark completed shows a  
23 very high retention of dollars because of that, in  
24 the economy, in the local economy. The first  
25 pilot they did the big grid and they did a few

1 grids like this one for the Santa Fe Community  
2 College.

3 And this pilot is going to operate next  
4 year. They have selected the boiler. They're  
5 doing their contract for biomass. Look at this.  
6 They launched the vocational program on district  
7 heating; were creating a whole set of new  
8 professions, if you will, activities, economic  
9 activities, using either thinnings of forest,  
10 which are very important --

11 (End tape 2B.)

12 MS. CHUM: -- in that area; or using  
13 municipal, green part of municipal waste, or  
14 appropriate residues. Look at how high the  
15 natural gas heating prices are going on a year  
16 basis in New Mexico, 28 percent per year. And  
17 your wood variation is not more than 5, 6 percent.

18 So, here is a new kind of activity that  
19 you're creating for all jobs. This is not --  
20 you're not dealing with cord wood; you have a  
21 whole set of infrastructure that is doing that.  
22 And you're actually having a heat-o-meter, if you  
23 will, and you're paying heat, okay.

24 And they are doing that and training the  
25 people in the college and other places so that

1 they understand how to hook up. So you hook up  
2 one of those, for instance there, using this  
3 Minnesota -- wood heating system. And you  
4 basically are part of a grid. And each heating  
5 system, your house would have a meter, and you buy  
6 and pay monthly billing of heating. Common in  
7 Europe. Eighty-five percent efficiency's not bad.

8 In the anaerobic digestion area very  
9 nice for three projects. This one was first  
10 project feasibility; and then they got a second  
11 project and a second solicitation.

12 The first is another example of how far  
13 some of those are, okay. The state has installed  
14 an anaerobic digester system at the Blanlate  
15 (phonetic) Dairy in Utah. That's a commercial  
16 prototype, all bells and whistles, 14 digesters.  
17 Based on their concept, they spun off a company to  
18 take the technology, move it. Endogen (phonetic)  
19 is the company.

20 Currently they also hired a good  
21 businessperson and the system they're operating is  
22 licensed in the Pacific states, so they have an  
23 Idaho. Intrepid is the Idaho one. And five units  
24 in northern California; two units in (inaudible)  
25 in Utah. I including those units, because this is

1 their baseline. Let's come from here on. Here  
2 how many lines; this is lines come from. Okay, so  
3 that's the basis that we're trying to set up for.  
4 And then I'll tell you more about the energy  
5 portion.

6 Vermont is, as usual, different.  
7 They're much smaller farms, so you have to be able  
8 to do really small farm systems with very good  
9 nutrient management and water management. And  
10 they're looking at biorefinery concepts.  
11 Importance of the name and looking at the project.  
12 The project title is biorefinery concept. You  
13 wouldn't, a priori, know that that complex  
14 actually depended on an anaerobic digester system  
15 and a farm system.

16 There is a digester prototype built, and  
17 they're beginning to test automation and mass  
18 control. Automation is going to be the point here  
19 at the control of the digesters electronic, tied  
20 to central place that can do the control. A lot  
21 of community level involvement.

22 And finally, the new energy solutions is  
23 a very different concept for skid-mounted, high-  
24 purity, either methane high pressure or hydrogen  
25 generation -- and I'll come back to that -- in a

1 dairy.

2 Little bit more history with the Utah  
3 State. Upflow anaerobic sludge blanket  
4 bioreactors have been very good for food-  
5 processing wastes that are low solids content, low  
6 biomass sugars contents. But they have a problem  
7 If you start putting more solids, because you  
8 start clogging the top.

9 So the invention here, the concept here  
10 was the ability to have a control of plugging  
11 mechanism in -- at the top of the reactor. What  
12 that does is you get your thermophylic bacteria,  
13 your co-consortium there, and you're avoiding that  
14 it goes off the top. And more importantly that  
15 the sand and everything else that comes at the  
16 bottom goes up and blocks it, as well. That was  
17 the failure mode of that kind of reactor.

18 So this is called the -- blanket  
19 reactor. The commercial prototype is very  
20 successful. Look at the time, from '98 to the  
21 start of the grant, the first peer review. This  
22 is now complete. And connect with the grid is an  
23 issue, there's a time that it's taking.

24 But, sorry this is small, but just  
25 follow the -- this is the biogas fuel. Okay, look



1 at the California Central Valley biogas fuel.  
2 It's pretty large. There's some places where this  
3 biogas fuels are in very appropriate regions that  
4 have very little. The green lines are the natural  
5 gas pipeline distribution.

6 Relevant. Another hardcore piece of  
7 equipment that (inaudible) has made, and that this  
8 board has overseen. He's in the production of  
9 this commercial prototype. This farm, dairy, the  
10 collection of manure. The heat exchangers, here  
11 it goes to the heat exchangers, so you're in the  
12 mesothelic range.

13 Then what you're doing is it's heated  
14 up; goes to the digesters. There are several  
15 digesters in that housing is that it's pretty  
16 high. And it's this ratio between the diameter  
17 and the length that is key for making them work  
18 reasonably well. In this case we're now 18 months  
19 of tests (inaudible). So, see the gas that's  
20 evolved and goes to the gather (inaudible). The  
21 heat is back into the heat exchanger, so the  
22 system is more efficient.

23 Important is the license. Intrepid is  
24 another spinoff, not from a university, but a  
25 spinoff of (inaudible) National Laboratories. And

1 what they have are technologies to do the  
2 compression and the cleanup of the gas.

3 So the license that they have with  
4 EndoGen (phonetic) has already had in this farm  
5 dairy, the Whitesides Dairy, one digester  
6 operating for 18 months. After the success of  
7 this commercial, now they are getting five tanks  
8 under construction.

9 What is that going to do? Well,  
10 InterMountain Gas Company, a pipeline, has a  
11 contract with Intrepid for 15 years to supply  
12 natural gas to the pipeline. Is that something to  
13 worry about, or is that a lot of energy? Doing  
14 the calculations using Intrepid's figures, that's  
15 10 percent of residential natural gas heating in  
16 the State of Utah -- Idaho. That's significant.

17 The Agrimass is a California example.  
18 The central California licensee is Agrimass Enviro  
19 Energy in Visalia, and the farm that they're  
20 working with is the Fletcher Dairy in Tulare. And  
21 those are the things that are going on. So, we're  
22 going to count kilowatt hours generated. We're  
23 going to count how much natural gas is actually  
24 fed into the pipelines or produced. And how much  
25 cogeneration is they actually go in that

1 direction, further cogeneration. Another success  
2 story.

3 The Vermont story is a small system  
4 study. What was the important thing in this small  
5 system, this is really R&D. The novelty here is a  
6 fractionation process for manure where you get --  
7 to the cleaning of, the separation of the streams,  
8 cleaning of the water, getting fiber solids that  
9 go back to the farm, the water goes back to farm  
10 use. And then the now cleaner fraction that's  
11 suitable for anaerobic digestion that goes in that  
12 direction, you get your biogas; you get  
13 electricity. You can use that in a biodiesel  
14 plant; or you can use the cogen part to heat and  
15 provide electricity to a public facility and to  
16 other things.

17 You can recycle their solids. You can  
18 recycle their nutrients. The solids, it's  
19 interesting because in Vermont the use of wood has  
20 increased so much the cost has increased. So  
21 you're dealing with the farmer actually having to  
22 pay a price for bedding, so this would recycle  
23 materials that they can use for bedding.

24 Extensive outreach and a very  
25 interesting example. I'm not going to spend too

1 much time on this small scale, but to say that  
2 it's a thesis that was defended already on the  
3 concept testing biogas production. And this  
4 strictly filters here allow the ammonia to be  
5 oxidized to nitrate. And this whole system is  
6 what they're still investigating. In the  
7 anaerobic digestion this completes the group.

8 We go now to Massachusetts. You don't  
9 think a lot here that there would be employment  
10 changes, but there have been. Some of the high  
11 tech industries moved out of places, and we have a  
12 lot of people who are actually prior employees of  
13 UTC, like (inaudible), who has actually decided  
14 to, let's go downscale, let's go downscale and see  
15 if we can actually do a biogas cleanup of hydrogen  
16 sulfide compressed to various stages and then  
17 used.

18 What has been tried in the hydrogen  
19 programs in other places, which is steam  
20 generation, shift reaction coupled with a membrane  
21 separator and get very high purity hydrogen. Why  
22 wouldn't you want a high purity hydrogen? Because  
23 they can use in applications that are industrial  
24 where high purity hydrogen has a good price; and  
25 products in -- is already looking, hydrogen

1 manufacturers are assessing the quality. That  
2 would make the distribution a lot simpler.

3 Val has managed to get 60 cycles,  
4 thermal cycles with the system. There is an  
5 important component is the first parts, high  
6 pressure compressed natural gas. The other's the  
7 second part, it's probably (inaudible).

8 The final part, biodiesel catalysts for  
9 synthesis. This is showing two other angles of  
10 some of the project. This is more R&D, although  
11 some of the projects are moved, just initial  
12 phases of catalysts design and catalysts  
13 processes; and beginning the part of refining the  
14 catalysts in the processes.

15 Professor Goodman, Jim Goodman, has done  
16 what I consider the scholarly paper in the field  
17 of biodiesel synthesis. There have been scholar  
18 papers like this. And Industrial -- Chemistry  
19 Research is actually a very good ACS journal.  
20 This article of 2005 is the top-down loaded  
21 citation. They list 100, no, less than that, 20  
22 downloaded citations, and that is one of them.

23 They are analyzing a variety of  
24 different catalysts, because the current methods  
25 are dependent on how much is catalysts. They have

1 a lot of issues between the various degrees of --  
2 5 free fatty acids. They also have problems of  
3 separations of the acids, the bases and so forth.  
4 So that goal of this project is really dealing  
5 with separations.

6 And finally, the West Central  
7 Cooperative for Iowa State are developing  
8 similarly a solid phase (inaudible) solid  
9 supported nanocatalyst. This nanocatalyst,  
10 they've gone through a much more restricted set of  
11 supports and reactive catalysts; and they've  
12 looked at, they found something that they find  
13 interesting. In fact, the data has been filed and  
14 there's a PCT filing in the process.

15 And the partnership discussions are  
16 going on as to now how to take the catalyst, since  
17 this is higher volume, and testing the continuous  
18 process further. Eight graduate students.

19 Collecting lots of information. Some of  
20 them relate to education research training.  
21 Probably will have another component of vocational  
22 education that doesn't necessarily depend on those  
23 things. The dissemination of knowledge and of  
24 publications, citations. This will be hard to do,  
25 but we can just simply take things that are top

1 citations professional society presentations, the  
2 IP generation number of patents.

3 This is one from my spreadsheet because  
4 each project's a line; so there are five, six, ten  
5 organizations. So putting who's generating the IP  
6 and the changes; number of licenses; number of  
7 partnerships; startup companies.

8 The outreach session, you wouldn't  
9 believe how many of those projects have had  
10 articles published in newspapers; have had a lot  
11 of people phone calls. I'd say 40 to 50 a year or  
12 more. And then we have many of the projects that  
13 have obviously had visits by senators and by  
14 members of the House and so forth. So they are  
15 very high visibility.

16 So, your comments on are we capturing  
17 what we need to capture; what other criteria  
18 should we be looking at. Okay, because as this  
19 2007 is rolling for 2008, one of the suggestions  
20 that this Board has had before is let's focus,  
21 let's not open up going to a really huge area.  
22 Focus. There is 50 percent of them; that's one of  
23 the reasons why I focus so much on demonstrations.  
24 Because we have an idea what people can do with 2  
25 million, 1 million, and partnerships that they can

1 do.

2 Frankly, these results are actually very  
3 good. Those were grants that were well selected.  
4 They are meeting their objectives if we go by what  
5 they said they were going to do. Some of them are  
6 surpassing, for instance the Kernsville project in  
7 Georgia wasn't supposed to go all the way to  
8 commercial, yet it has been able to go to that  
9 next phase.

10 So, really, this presentation was  
11 intended to ask you to provide us with comments  
12 and thoughts of how best to measure and establish  
13 this tracking system so that we get, say, five  
14 years of 9008, have generated. When you report to  
15 Congress through the Department of Energy, you can  
16 say here are the things that have been actually  
17 done with the grids.

18 Thank you very much.

19 (Applause.)

20 COMMITTEE CHAIRWOMAN JAFFONI: Thank  
21 you, Helena. Questions on the presentation from  
22 the Committee?

23 UNIDENTIFIED SPEAKER: Thank you very  
24 much. Just a couple of comments. I think the  
25 criterion are excellent that you're using. I



1 would just stress I think overall it would be good  
2 to know how many were funded --

3 MS. CHUM: Oh, okay, --

4 UNIDENTIFIED SPEAKER: -- but I don't  
5 need to know that. But just, of those, how many  
6 reached their targets on time, and then  
7 eventually.

8 MS. CHUM: Okay.

9 UNIDENTIFIED SPEAKER: And knowing that  
10 not all of them will reach their targets, those  
11 that did not, you know, why they did not. And I  
12 think it's always instructive for me to look at  
13 why something did not work, even moreso than why  
14 it worked. And over time may see some commonality  
15 there.

16 MS. CHUM: Thank you. That comment is  
17 excellent. As I finished the 41 I couldn't tell  
18 you that right now. There are two or three that  
19 I've read that aren't really going to meet their  
20 targets. And those will help us basically guide.

21 Some of them is because they distributed  
22 the project into so many pieces, and that was  
23 really difficult to coordinate.

24 But, thank you, I will present that as a  
25 framework at the next stage when we put all the

1 41. Yeah, you've seen the histograms and the  
2 histograms on areas, that the success criteria  
3 will be there, too.

4 COMMITTEE CHAIRWOMAN JAFFONI:  
5 (inaudible).

6 UNIDENTIFIED SPEAKER: I don't know if  
7 it's explicitly one of the targets in any of these  
8 projects, but a lot of the demonstration projects,  
9 I suppose one of the objectives is that the next  
10 plant won't need a grant to be commercially  
11 successful. And that if there's some way to  
12 measure that, or some analysis of, you know,  
13 what's been learned and what cost reductions have  
14 been gained and so on. That would be useful, I  
15 think.

16 MS. CHUM: Thank you, Eric, that's a  
17 very good question and very good comment. We have  
18 been having conversations with the various PIs,  
19 and talking with Cecil, for instance, the cogen  
20 plant. There are few that may not need, that  
21 maybe be a couple projects, if this one works the  
22 way it's supposed to.

23 There are a few more that might, in  
24 fact, meet 9006 or some pieces of -- but you see  
25 that (inaudible) ended up getting just that

1 financing.

2 So there is -- what they need, they  
3 needed that form -- between federal and state to  
4 really have confidence that they could get a loan  
5 for 11. Okay.

6 So what we need is to make sure that we  
7 have enough of those mechanisms for this gives me  
8 the proportion, 4,011,000, and they were happy to  
9 put the return on their investment may be anywhere  
10 between three years and six, depending on how high  
11 the natural gas price goes. And they accepted  
12 that. Okay. And this is a good time to be doing  
13 that.

14 COMMITTEE CHAIRWOMAN JAFFONI: Bill.

15 UNIDENTIFIED SPEAKER: We're very  
16 excited about this study and the results of it.  
17 And for various obvious reasons. You have the  
18 Farm Bill is beginning to be debated. And I think  
19 the Committee members are aware that '07 is the  
20 last year that there is mandatory funding  
21 authorized in the Farm Bill.

22 And as we go into working with Congress  
23 on the coming Farm Bill, we think the results of  
24 this will be very helpful and illustrate results  
25 of the program. And hopefully get continued

1 support for some mandatory funding.

2 I think you're all aware that the EPAC  
3 raised the authorization level from the 14 million  
4 up to 200 million. So there's a lot of potential  
5 here, but when you're competing for mandatory or  
6 discretionary dollars, you've got to be able to  
7 show results of the benefits of the program. And  
8 I think this is a good step in that direction.

9 COMMITTEE CHAIRWOMAN JAFFONI:  
10 (inaudible) yes.

11 UNIDENTIFIED SPEAKER: You asked about,  
12 you know, what you should be thinking about in  
13 this, I guess just in the spirit of the Farm Bill  
14 and creating rural jobs and economic development,  
15 as --

16 MS. CHUM: Yes.

17 UNIDENTIFIED SPEAKER: -- well as the  
18 other goal of energy and petroleum displacement.

19 MS. CHUM: Yes.

20 UNIDENTIFIED SPEAKER: You know, I guess  
21 those would be things that I don't know if you can  
22 do in your analysis at the end. But to say, if  
23 this goes forward, the technology has that  
24 opportunity.

25 MS. CHUM: We have been asking the

1 question, and so far, for instance, in the Sivist  
2 plant, because of the infrastructure, there's ten  
3 jobs created. In the (inaudible) there's ten jobs  
4 created.

5 So what I'm putting is I'm giving them a  
6 sheet of a baseline, here's what happened in 2006,  
7 and that's fall with the categories. And the  
8 number of employees, for instance, the EndoGen  
9 number of employees is what we're going to follow.  
10 Is that going to grow or not.

11 In that case it's the model, the license  
12 has been. What I asked to measure was the natural  
13 gas produced. But there is impact in the farm,  
14 and I'm still trying to analyze with them how we  
15 can actually collect the improvements on the farm  
16 which would be a much broader economic  
17 development. We are trying to think about that.

18 COMMITTEE CHAIRWOMAN JAFFONI: Thanks,  
19 Helena. Okay, --

20 MS. CHUM: Thank you for the extra time,  
21 otherwise it's --

22 COMMITTEE CHAIRWOMAN JAFFONI: Yeah,  
23 that would have been a challenge.

24 Okay, we are now at that point in the  
25 agenda we're going to get an update from our

1 subcommittees, and we'll start out with the  
2 analysis subcommittee. Ralph. We just got a  
3 handout.

4 COMMITTEE MEMBER: Thank you, Terry.  
5 Earlier this year we set up some subcommittees  
6 with assigned tasks. One of those was the  
7 analysis subcommittee. Many members of that  
8 committee are here today. And my arm was twisted  
9 to chair that committee, but actually it's been a  
10 good group to work with.

11 Our task, as the analysis subcommittee,  
12 let me see, maybe I can get this slide down here -  
13 - there's the people that are on the subcommittee.

14 We asked Neil, as the primary contact  
15 the committee has with DOE and with the biomass  
16 program, to help us understand the charge of this  
17 committee.

18 And what we learned was that the office  
19 of the biomass program is developing the 30-by-30  
20 document. And that that document is going to be  
21 very reliant on a number of existing studies and  
22 other analyses performed at DOE labs.

23 And they would like to have someone who  
24 could step back and look at these and provide some  
25 analysis as to the quality of these studies.

1           And so he provided us, on behalf of DOE,  
2 I'll just hold this up; it's a several-page list  
3 of documents. And we looked at that, and we  
4 looked at the timeline, and said, Neil, that's too  
5 long a list; we can't deal with that.

6           So, asked him to go back and identify  
7 the ones that were considered to be foundational  
8 and to get back that list to us. And so we  
9 received that, and we've done a preliminary review  
10 of those. We assigned them to a minimum of two  
11 people from the subcommittee to look at each one.

12           And all I'm presenting today is a rough  
13 collection of those reviews. We've not met --  
14 these were just completed within the last week.  
15 We've not met to discuss any over-arching themes  
16 and things that we might be able to discern from  
17 all of this.

18           So, as we -- this is the list of  
19 documents that we've looked at so far. Those of  
20 you that are familiar with the literature and the  
21 reports in the biomass community will recognize  
22 some of these, perhaps all of them.

23           And so we didn't have time, nor were we  
24 asked to go in and validate the details of each of  
25 these. That would be a monumental undertaking.

1 But what we were asked to do was to look at a high  
2 level.

3 So, among ourselves, we decided that the  
4 kinds of questions we should be asking in our  
5 review were are the basic assumptions valid; was a  
6 suitable and adequate methodology followed; and  
7 then what was our assessment of the quality of the  
8 data that were used in the analysis.

9 And then the conclusions that were  
10 formed at the end of the analysis, are they  
11 justified by the methodology and the data. And  
12 then, finally, was there an adequate review of the  
13 report prior to publication.

14 That's where we are at this time, is  
15 we've completed those steps and that's what I'll  
16 go through here very briefly. We will be meeting  
17 again and talking about these things to come up  
18 with a report. And one of the other things we've  
19 been asked to do is to determine whether or not  
20 there are other analyses that need to be done.  
21 Are there any gaps, and we'll be discussing that,  
22 as well.

23 So, what you're going to see on the  
24 screen are unedited, essentially unedited comments  
25 from the reviewers. And, again, there's at least



1 two reviewers on each of these.

2 So one of the reports was the potential  
3 of thermochemical ethanol biomixed alcohol  
4 production. And so were the assumptions valid was  
5 the question that was asked. And the reviewer's  
6 comment was that the reasons are not adequately  
7 justified; and there are several -- excuse me, the  
8 reasons for the choice of processing techniques  
9 was not adequately justified; and there's several  
10 fundamentally different process designs that could  
11 have been chosen.

12 And then under comment was, an  
13 assumption was made that feedstock would cost \$30  
14 a ton for large quantities. Well, that may or may  
15 not be a valid assumption. So, it's questionable.

16 Was appropriate methodology used in the  
17 analysis; it said yes. The quality of the data,  
18 except for process components for which literature  
19 data are lacking, the authors appeared to have  
20 access to good technical data.

21 Were conclusions justified, generally  
22 yes; the analysis performed justifies the  
23 conclusions.

24 Adequate review. The review was  
25 performed inhouse and one reviewer seems to be one

1 of the authors. I can tell by the reaction most  
2 people understand the implications of that.

3 The next report was the preliminary  
4 screening, technical and economic assessment. The  
5 methodology, well, it's primarily a literature  
6 review, so it's largely well conceived. The data  
7 seem to be the best available. Conclusions are  
8 generally justified. However, we would recommend  
9 that this be updated using today's known facts,  
10 assumptions and projections of future markets and  
11 costs.

12 Again, this question of the feedstock  
13 being assumed to be \$30 a ton. And then on this  
14 one we could not find any documentation of the  
15 nature of any review prior to publication.

16 There's a document about cost of harvest  
17 and storing and transporting corn stover. Were  
18 the assumptions valid. A single feedstock  
19 biorefinery is no longer a valid assumption in our  
20 opinion. And that DOE has moved to recognize  
21 regional feedstocks, also using woody biomass  
22 avoids the problems with short harvest seasons for  
23 ag crops.

24 Was the methodology appropriate. It  
25 seemed to be appropriate for preliminary

1 engineering economic study, which is typically  
2 good for an initial look at competing  
3 possibilities.

4           The data quality. Some data on  
5 operating costs come from a limited set of  
6 experiences, not much is available. Conclusions  
7 seems to be valid, but dated. The authors do not  
8 indicate any confidence level for the numbers  
9 reported in each case. It appears there's no  
10 consideration of variability or the uncertainty in  
11 the data on how that might impact the reported  
12 results. There's no indication of any internal or  
13 other kind of review.

14           Development of a multi-criteria  
15 assessment model. Were the assumptions valid.  
16 The conclusions are highly dependent on criteria  
17 weighting factors, which are presented without  
18 justification.

19           Data quality is difficult to evaluate in  
20 that the majority of the harvest study data are  
21 the output of another model. And that model was  
22 not reviewed as part of this -- in this  
23 manuscript.

24           The methodology for developing the  
25 qualitative data is not described sufficiently.

1 This is a case where the qualitative data, they  
2 used their opinion, or that of colleagues. But  
3 there's no description of how that was vetted for  
4 quality.

5 Were the conclusions justified by the  
6 analysis. Assumptions are that the data created  
7 as the output of another model are of sufficient  
8 quality to conduct the multi-criteria assessment  
9 presented in this report. In our view the author  
10 should have conducted a sensitivity analysis to  
11 see how errors in their inputted data, in quotes,  
12 would affect the results of the study. And, once  
13 again, the internal review status was unclear.

14 Lignocellulosic biomass to ethanol  
15 process. The overall conclusion was at a  
16 production cost of \$1.07 per gallon of ethanol was  
17 possible via this process. The reviewer's  
18 comment, it's more likely that the cost of ethanol  
19 from a corn stover would be substantially higher  
20 than the \$1.07 per gallon figure; more  
21 realistically probably \$1.20 to \$1.25. Based on  
22 the assumptions used by the authors of this  
23 report.

24 The methodology was reasonable and  
25 similar to industry practice. The assumptions

1       seemed to be overly optimistic. Once again, it's  
2       unlikely that corn stover feedstock would cost  
3       more than \$30 a ton.

4               Each of the reviewers was given the  
5       opportunity to add any other comments they might  
6       have wanted. In this one they said the logistical  
7       challenge of collection, storage and handling of  
8       the corn stover presents a very large challenge  
9       that was not covered in this report. And, once  
10      again, the review status, how it was reviewed was  
11      unclear.

12              This report, 2003 state of the  
13      technology and 2002 experimental parameters, the  
14      reviewers found it difficult to read and review.  
15      It appeared that it was an update on a previous  
16      study that should have been provided as part of  
17      the review.

18              The conclusions, were they justified.  
19      The 2002 experimental and 2003 state of the  
20      technology cases produced selling prices in the  
21      range of 2.44 to 2.73. The other conclusion is  
22      that the original case was way too optimistic and  
23      produced an unrealistically low selling price for  
24      ethanol. A few pages of additional discussion  
25      regarding the differences between the original

1 design case assumptions and the state of  
2 technology or experimental conditions would be  
3 helpful. Once again, the review status was  
4 unclear.

5 So, to conclude the update on our  
6 subcommittee's activities, we've reviewed the  
7 assigned documents and have collected those  
8 reviews; compiled the initial comments. Next  
9 we'll be discussing those and coming up with a  
10 report on those. And also to identify gaps in  
11 existing analyses. And then waiting for further  
12 assignments and so forth that have been alluded to  
13 in our charge from Neil.

14 Are there any questions from the  
15 Committee or comments from anyone on the  
16 subcommittee?

17 COMMITTEE MEMBER: I reviewed the two  
18 thermochemical reports, and one question that I ha  
19 as I went through it was how does -- and this is  
20 sort of directed at you, Neil, -- how does DOE use  
21 these reports, when you say they're the  
22 foundational documents? Because commenting on  
23 them depends a little bit on how they use them.

24 MR. ROSSMEISSL: Typically when you do a  
25 state of technology or you do a minimal selling

1 price from a thermochemical process, in other  
2 words we always want to get the market whole of  
3 these technologies, and how they can compete with  
4 the rest of the portfolio from prior year funds;  
5 especially if you're in a situation where you  
6 budget request and it gets earmarked and you have  
7 to make some tough choices of what should you  
8 fund.

9           You will take a look at these documents  
10 and says, well, which one will get me to my end  
11 point more rapidly and more effectively. If you  
12 have a document like on thermochemical technology,  
13 in particular, that has been heavily funded over  
14 25 years of -- investment, and we haven't been  
15 able to make the break-through necessary to allow  
16 it to compete in the commercial marketplace, it  
17 becomes more difficult to keep funding it.

18           So, when you do these assessments, do  
19 you keep hoping that you're going to find, you  
20 know, a break-through or a key element that if you  
21 funded 100 percent it would allow that technology  
22 to start making some penetration.

23           And in particular, two years ago when we  
24 actually had eliminated all funding for  
25 thermochemical technology because we were just --

1 we just weren't meeting any of our objectives or  
2 our milestones. It became very frustrating.

3 COMMITTEE CHAIRWOMAN JAFFONI: Scott.

4 COMMITTEE MEMBER: The issue of the \$30  
5 per ton stover feedstocks come through -- I just  
6 wonder why you felt that was unachievable, or what  
7 basis that you used to look at that. Or did you  
8 have a different number in mind, and where did  
9 that come from?

10 COMMITTEE MEMBER: I'll have to defer to  
11 members of the subcommittee. That's not one that  
12 I reviewed and I don't have a good answer for you.

13 COMMITTEE CHAIRWOMAN JAFFONI: Charles.

14 COMMITTEE MEMBER: The \$30 figure wasn't  
15 universally for corn stover. Actually I think I  
16 made a couple of comments on the thermochemical  
17 conversion side. And if you take a look at the  
18 description here, it doesn't necessarily say that  
19 you can get feedstock for \$30 a ton. I think  
20 we're saying that if you're trying to move your  
21 ton number, eventually at some point you're going  
22 to have to go to dedicated feedstock supplies.  
23 And that's when you might start facing some real  
24 challenges in finding feedstocks that you grow  
25 specifically for energy purposes at \$30 per ton.



1 COMMITTEE CHAIRWOMAN JAFFONI: Eric.

2 COMMITTEE MEMBER: I think one of the  
3 questions that I asked as I was reviewing the  
4 document was what was the underlying analysis that  
5 went into that \$30, and that wasn't present in the  
6 documents. Then perhaps there are other maybe in  
7 some of the other documents that I didn't review  
8 that had that information in it.

9 But it seemed an important enough number  
10 that there needed to be good documentation behind  
11 it.

12 COMMITTEE MEMBER: Again, if I can add,  
13 on the lignocellulosic conversion to sugars, the  
14 report, itself, what we were asked to do was take  
15 a look at the assumptions and ask whether or not  
16 those assumptions were correct.

17 So, you know, just as Eric has said,  
18 this was sort of a given. They chose a number  
19 that appeared in those reports on which they based  
20 a lot of their financials. We weren't tasked to  
21 look back at the next report in that value chain  
22 to say, well, you know, what is the data that say  
23 you can or cannot obtain large amounts of biomass  
24 for that value.

25 But in that particular report there was

1 a bit of an analysis looking at distance of  
2 transport, and how you could, within a certain  
3 radius, be able to collect, harvest and transport  
4 that biomass to the biorefinery. And within that,  
5 the authors were struggling to figure out, you  
6 could almost read between the lines that they were  
7 saying here are some scenarios under which we  
8 think you can achieve certain economics to deliver  
9 the biomass to the plant. And they went ahead and  
10 chose this number, but it was not entire clear  
11 that the data that they were even talking about in  
12 scenarios would support that in all cases, or in  
13 very many cases, as you begin to grow this  
14 biorefinery industry.

15 COMMITTEE CHAIRWOMAN JAFFONI: Did that  
16 answer your question, Scott?

17 COMMITTEE MEMBER: It sure does, thank  
18 you very much.

19 COMMITTEE CHAIRWOMAN JAFFONI: Any other  
20 questions from Ralph or any other Committee  
21 members? Or anyone else on the Committee?

22 COMMITTEE MEMBER: We'll continue our  
23 work and I'm not sure what, we're going to get  
24 back together shortly, then we'll end up with a  
25 report for you. Thank you.

1 COMMITTEE CHAIRWOMAN JAFFONI: Great,  
2 thanks, Ralph. And I guess now we'll hear from  
3 the policy subcommittee.

4 UNIDENTIFIED SPEAKER: Hi. I was asked  
5 to speak on behalf of Jim Barber, who is the chair  
6 of the policy subcommittee, and who unfortunately  
7 is not here today. My name is Mike (inaudible)  
8 from VCS, Incorporated, for those of you who don't  
9 know me. And I've been providing support work for  
10 Dr. Barber on this document. I'll give a brief  
11 update of that.

12 The original document was developed by  
13 Dr. Barber a few months ago. It was sent out to  
14 the policy subcommittee; which, they then provided  
15 edits. At this time we're integrating those edits  
16 into that document. Dr. Barber hasn't seen it  
17 yet. And once that document has been provided to  
18 him, it will be provided to the full (inaudible)  
19 Committee for review and use.

20 So that's basically -- if there's any  
21 questions on that I can answer them.

22 COMMITTEE CHAIRWOMAN JAFFONI: Mike,  
23 could you just go into a little bit more on the  
24 document, itself?

25 UNIDENTIFIED SPEAKER: Yeah. The title

1 of the document is policy gap analysis. And it  
2 basically reviews federal policies. It also  
3 incorporates some state and international policies  
4 related to biomass.

5 COMMITTEE CHAIRWOMAN JAFFONI: Okay.  
6 Any other questions on this from the Committee or  
7 things that the other members would like to add?  
8 Can you also just say who's on the Committee?

9 UNIDENTIFIED SPEAKER: Unfortunately I  
10 don't have the list of members in front of me. I  
11 think there's seven or eight members, Dr. Barber  
12 being one of them.

13 COMMITTEE CHAIRWOMAN JAFFONI: I  
14 actually think I have that one. Does anybody have  
15 that? Doug, do you want to just read that?

16 UNIDENTIFIED SPEAKER: Sure. Yeah, it's  
17 Jim Barber, Gerald Branson, Ralph Cavalieri, --  
18 Ralph, I'm sorry I butchered your name -- Carolyn  
19 Fritz, Jack Hutner, Terry, Scott Mason and Larry  
20 Pearson.

21 COMMITTEE CHAIRWOMAN JAFFONI: Thank  
22 you. Anything else on this? Thanks, Mike.

23 Okay, well, we are six minutes behind  
24 schedule, but we have, and we will take, 15  
25 minutes to get public comment.

1           Looks like the list that I have, looks  
2 like we have six individuals who'd like to --

3           (End tape 3A.)

4           COMMITTEE CHAIRWOMAN JAFFONI: -- make  
5 some comments. We would ask that you step up to  
6 that microphone and identify your organization.  
7 And then your comment. So, if you'd like to get  
8 started with that.

9           The first one I have on my list is Bill  
10 Nicholson. Who, by the way, is an ex-technical  
11 advisory committee member.

12          MR. NICHOLSON: Good morning; my name is  
13 Bill Nicholson. I have a background in the forest  
14 products industry for about 32 years. Spent four  
15 years as a member of this group; enjoyed it  
16 thoroughly.

17          The purpose in wishing to speak to you  
18 is to review some of the attractions of the forest  
19 products industry for development of  
20 biorefineries.

21          And the first thing is to say the  
22 industry is located in many, but not all, portions  
23 of the United States. You'll find it in the  
24 Pacific Northwest from basically northern  
25 California to Montana. In the northern midwest

1 from Minnesota into Ohio. In the south from east  
2 Texas to Virginia and all the way north to  
3 Kentucky. And in the Northeast from Maryland and  
4 Pennsylvania all the way up to Maine.

5 The particular opportunities that exist  
6 there is that they already have a significant  
7 collection system in place for fiber. And so the  
8 additions will be incremental presumably at low  
9 cost.

10 Second, at least in the pulp mill side  
11 of the thing there are two general kinds of  
12 technologies that are going to be applicable. One  
13 is the gasification of black liquor or wood. And  
14 then there's a second one where there's an  
15 extraction of sugars from wood using hot water.  
16 There's some work that's being done up in northern  
17 New York, I think, it's Syracuse, if I'm correct.

18 Third, the last point is that all of  
19 these locations have opportunities for shipment of  
20 product. Clearly they all have rail and road, but  
21 many of them have barge applications. And for  
22 products such as ethanol I'm sure you're all aware  
23 that transportation of this product is not by  
24 pipeline; at least currently. And the opportunity  
25 to use barges and things of this nature, having

1 the industry source spread out all over the United  
2 States is an advantage.

3 That's what I wanted to say to you.  
4 Thank you.

5 COMMITTEE CHAIRWOMAN JAFFONI: Thanks a  
6 lot, Bill. Question?

7 COMMITTEE MEMBER: No, I just wanted to  
8 respond to Bill. Is this on? At the workshop we  
9 just completed, your comments -- and you can hear  
10 me -- were well represented. And that will show  
11 up prominently in our report --

12 MR. NICHOLSON: (inaudible).  
13 (Laughter.)

14 COMMITTEE CHAIRWOMAN JAFFONI: Okay.  
15 Well, next on the list is Michael Theroux, am I  
16 pronouncing that right?

17 MR. THEROUX: Close enough, Theroux.

18 COMMITTEE CHAIRWOMAN JAFFONI: Theroux.

19 MR. THEROUX: Good afternoon. I thank  
20 you for the opportunity to personally listen today  
21 to the amazing work that you're all doing, and to  
22 see how that integrates (inaudible) in California.

23 I'm speaking to you today representing  
24 the U.S. (inaudible) Power Association. We are  
25 seeing in all work the reference to combined heat

1 and power (inaudible) that those that are deeply  
2 involved in distributed gen and CHP are very much  
3 watching what's going on.

4 In fact, at the executive board level of  
5 our organization we're trying to expand our vision  
6 formally to CHP plus fuels. USCHP represents a  
7 collection of the largest (inaudible) amongst all  
8 of the ancillary pieces. I've been asked in  
9 particular to help (inaudible) organization --  
10 energy development.

11 There is a need recognized for very high  
12 cetane fuels and very stable vapor pressure that  
13 will change the base of the ethanol, at least add  
14 on, more bang for the buck among fuels that are  
15 (inaudible) considered.

16 We are working clearly with the American  
17 Council -- Renewable Energy; Bill Homberg says  
18 hello. (inaudible) from the Biomass Coordinating  
19 Council to achieve that growth in our  
20 organization. If you visit our website,  
21 uschpa.org, you will find a regulator's toolbox  
22 that we continue to add to; and you'll find very  
23 very good solid information on how those in the  
24 regulatory community can bring CHP into projects.  
25 And we're at the point, of course, that



1 encouraging biofuels, bioenergy aspects in that  
2 regulatory toolbox at all levels.

3 I would also invite you to our Seventh  
4 Annual Roadmapping Session in Seattle, December  
5 13th and 14th and 15th. That's an excellent  
6 presentation of that. As it is with Washington  
7 State University -- biofuels in the Northwest,  
8 much of the focus of our roadmapping session  
9 (inaudible).

10 If I could help any of you at all  
11 (inaudible) information, USCHPA, work with our  
12 membership, deal with the toolbox, interact with  
13 (inaudible), feel free to contact me.

14 COMMITTEE CHAIRWOMAN JAFFONI: Thank  
15 you, Mike. Any questions for Michael? Comments?

16 Okay, moving along. Now I have Rob  
17 Williams down from UC Davis. Rob, are you going  
18 to be --

19 MR. WILLIAMS: No, (inaudible).

20 COMMITTEE CHAIRWOMAN JAFFONI: Okay,  
21 great. Next then would be Bruce McLaughlin.

22 MR. McLAUGHLIN: Thank you very much.  
23 Very enlightening. I represent four interests, so  
24 I'll brief share what those are. And then I have  
25 one question.

1           First of all, I'm an attorney with a  
2 firm that represents the California Municipal  
3 Utilities Association. This is an association of  
4 the publicly owned electric utilities in the State  
5 of California. We serve about a third of the load  
6 here in the state, so we're an important sector.

7           And we're responsible for guiding these  
8 utilities. We need to know, our firm needs to  
9 know more of the information here and the  
10 opportunities for our members, so that we can  
11 guide them appropriately.

12           Next, from the macro to the micro, I'm  
13 general counsel for the Power and Water Resources  
14 Pooling Authority. That's a joint powers  
15 authority of 15 irrigation districts and water  
16 districts here in the state.

17           End users are agriculture and some of  
18 the cities that have wastewater treatment plants  
19 and, MSW, landfill gas, et cetera. So, again, we  
20 need to know more information there. We were  
21 actually putting together public purpose programs  
22 which are a requirement here in the State of  
23 California. And we're looking at opportunities  
24 for maybe incenting some of the growers to maybe  
25 change crops, whatever. All sorts of things,

1 possibilities there. So we need to know more.

2 Next, I have been involved in an  
3 unofficial group where I live. We call it  
4 Foresthill Divide Biomass Coalition. We came  
5 together as people who live up the hill, along  
6 with California Division of Forestry, the U.S.  
7 Forest Service, Sierra Club and some other folks.  
8 And we are looking at opportunities there for  
9 biomass. We've got tons of it, literally. And  
10 also economic development up there.

11 And then on the micro side, I actually  
12 live off the grid with a few other neighbors.  
13 We've got about 500 acres up there. And I look  
14 out any window I want and I've got more biomass  
15 than I know what to do with.

16 And so things that pop through my head  
17 are CHP, DG, the Rural Electrification Act, R&D,  
18 and also I'm wondering if anybody in this country  
19 has ever looked at possibly using chaparral as a  
20 dedicated energy crop, not just a hassle, okay.  
21 Because looking at some of the policy directives  
22 here I heard this morning, -- taking water is a  
23 weed.

24 Anyway, so all these things are going  
25 through my head, these four important interests

1 that I'm involved in. I would like a touchstone;  
2 I would like to be able to go to somebody and just  
3 pepper them with questions, because right now I'm  
4 just a deer in the headlights. There's so many  
5 places I could go, but if I could concentrate my  
6 effort, and maybe that person could direct me to  
7 help guide all these clients and personal  
8 interests. Who might that be? Who might that be?

9 COMMITTEE CHAIRWOMAN JAFFONI: Any  
10 volunteers?

11 MR. McLAUGHLIN: To get with a telephone  
12 call, possibly they could direct me. But, I  
13 really -- I need some guidance.

14 COMMITTEE CHAIRWOMAN JAFFONI: I would  
15 suggest just the working with the points of  
16 contact to both of the agencies, USDA and DOE.  
17 Certainly going to the websites and using the  
18 resources that are available there.

19 MR. McLAUGHLIN: Yeah, and the reason  
20 I'm here right now at the podium is because  
21 certainly those are diverse; there's a lot of  
22 names, a lot of things. But if -- is there  
23 possibly one name that could just volunteer for me  
24 to at least be a connection to?

25 COMMITTEE CHAIRWOMAN JAFFONI: Ralph?

1 UNIDENTIFIED SPEAKER: I don't know that  
2 it's one name. There is an energy information  
3 clearinghouse funded by DOE through Washington  
4 State University Energy Extension.

5 MR. McLAUGHLIN: Okay.

6 UNIDENTIFIED SPEAKER: -- website for  
7 them. If they don't know the information they  
8 probably know who to contact with any of your  
9 questions.

10 MR. McLAUGHLIN: Okay.

11 UNIDENTIFIED SPEAKER: That's a national  
12 clearinghouse, it's not just for our state.

13 MR. McLAUGHLIN: Okay, thanks very much.

14 COMMITTEE CHAIRWOMAN JAFFONI: Is  
15 Bruce -- no, is that Sharon or Shannon Shoemaker?

16 MS. SHOEMAKER: (inaudible).

17 COMMITTEE CHAIRWOMAN JAFFONI: Sorry,  
18 couldn't read somebody's handwriting.

19 MS. SHOEMAKER: That's all right, thank  
20 you. And thank you for allowing public comment.  
21 And it's great to hear and see the progress and  
22 the integration of the federal agencies, as well  
23 as the state agencies, on this important and  
24 critical topic.

25 I came to the podium just to -- I'm

1 Sharon Shoemaker, I'm at the University of  
2 California Davis. I've been engaged, involved in  
3 this field for many many years, since the mid  
4 '70s. And think it is a serious one at this  
5 point. And I wanted to offer a couple comments  
6 and ask a question.

7           Comments are that the field is, the  
8 scientific base, the knowledge base and  
9 everything, as I imagine all of you are aware, it  
10 is moving very fast. And I was in Toronto; I  
11 don't know if any of you were in Toronto, at the  
12 World Congress Industrial Biotechnology Meeting.  
13 And it was a happening.

14           And there was a lot, and there is a lot  
15 going on to dislocate some of these technologies,  
16 I'd say, in a way that you can measure kind of, in  
17 an attitude manner, but that are going to be --  
18 that are moving and are continuing very quickly.  
19 And will impact, in my opinion.

20           Yet, today I did not hear much about the  
21 approach being taken. I've heard biorefinery, but  
22 in terms of from the plant, crop side, existing  
23 and the like, and the conversion side, that would  
24 be integrated with thermochemical.

25           I heard a lot about thermochemical, but

1 from the biological process and the like, I  
2 didn't. So I do hope, and I know DOE, and I've  
3 been a recipient of funds from Department of  
4 Energy on this. And I've been active with the  
5 USDA on this, also. So hope that that will be a  
6 topic that isn't like the last speaker, which went  
7 through the projects, and one of them was, you  
8 know, sugars from lignocellulose. I couldn't make  
9 heads or tails out of where that was. You get a  
10 single sample, so to speak, of technology.

11 I just want to offer that it's changing  
12 fast. And it's kind of like going to China every  
13 six months. It changes so fast from the last time  
14 that you were there, to recognize that the field  
15 is changing.

16 A couple other real quick comments. We  
17 talk -- many people talk about the regional, the  
18 local, the west is the west. It's not corn. Corn  
19 is king, and corn is coming into California,  
20 massive amounts. Refineries are being built.

21 But in California we have a very  
22 extensive agricultural industry. And it's one  
23 that offers a great deal of potential in perhaps  
24 using a model of regional industry clusters. I  
25 don't know if that terminology resonates, or

1 that's something that the Committee is looking at,  
2 but that's going in a lot of parts of the world.

3 And thinking in terms of cooperatives,  
4 if you will, mixed biomass going in. And really  
5 kind of putting some of this together, I think  
6 could prove very useful.

7 And my question is, in the context of  
8 beyond our borders, and kind of outside the box,  
9 it's not only in the USA, it's not only in  
10 California, it's everywhere. And it's not  
11 something that really, I mean this area of  
12 biofuels, bioenergy is something that helps all of  
13 us, as a society.

14 And I was curious to what extent the  
15 Technical Advisory Committee is taking the  
16 knowledge base that is being put together in other  
17 parts of the world, for example Germany, and other  
18 parts, India, China, that's moving also very fast.  
19 And I think that's our challenge, as all of us, is  
20 trying to just keep up with things going on, and  
21 then trying to think new and differently and  
22 beyond, and locally what makes sense practically,  
23 to align with what are the requirements; what are  
24 the expectations; and how can we align with the  
25 existing industry to make a difference.



1           So, I'm also at the University of  
2 California. We have wonderful, as Washington  
3 State and other land grant and other academic  
4 places, to really try to help in the small ways  
5 that we can.

6           Thank you for your work.

7           COMMITTEE CHAIRWOMAN JAFFONI: Thank you  
8 for those comments. Those are great comments.  
9 And I'm sure you were looking at the uniqueness of  
10 the west, and addressing a whole range of issues  
11 that you raised in your comments. Thank you.

12           Would anyone on the Committee or the  
13 representatives from DOE and USDA like to comment  
14 on the question about international?

15           UNIDENTIFIED SPEAKER: Specifically  
16 speaking for USDOE, and that is that we have had  
17 very active programs with the IEA in insuring  
18 technologies we have actually been involved in  
19 collaborative projects (indiscernible) each fund,  
20 basic R&D as well as demonstration activities.

21           Recently we have been asked to consider  
22 doing a bilateral agreement with Brazil.  
23 Unfortunately, in that case we're not quite sure  
24 exactly how much advanced R&D the Brazilians will  
25 be able to add to our own (inaudible) programs

1 because of the variety of feedstocks that we are  
2 faced with using here in the United States.

3 Also we were -- we have completed a  
4 memorandum of agreement with Sweden, also using  
5 ethanol. And we're going to be sharing a lot of  
6 R&D projects back and forth.

7 So, we understand how fast everything's  
8 moving. Part of our concern is the fact that, you  
9 know, we set a very aggressive target for 2012 for  
10 a cost of ethanol, whether it's a thermochemical  
11 process, a biochemical process or potentially an  
12 integration of the two, maybe, to get maximum  
13 utilization of resources.

14 But by and large, you know, we believe  
15 that, you know, we'll share information and  
16 collaborate, but we really have to solve our own  
17 problems.

18 COMMITTEE MEMBER: We have -- rural  
19 development missionary of the USDA is really just  
20 beginning to get involved in international  
21 community and looking at possible programs we can  
22 get involved in.

23 There's a G8 conference that's coming up  
24 on bio-based energy that we're going to be  
25 involved in. There's a comment change process

1 that we're getting involved in. But there's other  
2 parts of USDA, the Forest Service in particular,  
3 the -- agriculture service that is engaged in some  
4 of those activities.

5 But I'm not totally up to speed on what  
6 the Department's doing, as a whole.

7 COMMITTEE CHAIRWOMAN JAFFONI: Any other  
8 comments from Committee members?

9 It's interesting, this question actually  
10 came up at dinner last night, just an awareness on  
11 the part of many of us, of things that are going  
12 on in the international community, and possible  
13 sharing of information and experiences and ideas  
14 around programs and policies, initiative and so  
15 forth, as well as R&D.

16 And there's certainly no shortage of  
17 activity. And we do need to be thinking beyond  
18 the borders of just, you know, this country, as to  
19 how this kind of crosses over. Because obviously  
20 we're not just an island. We have to, just as  
21 petroleum is an international commodity, we have  
22 to look at this on a global basis, because the  
23 problems are global.

24 So, thank you for your comments.

25 Yes?

1                   COMMITTEE MEMBER: I'd just add I've  
2                   been to a couple of the world biomass conferences;  
3                   they're normally held in Europe. And at every one  
4                   of those there's several DOE people that are on  
5                   the boards of that that are helping with those  
6                   meetings, coordinating (indiscernible) information  
7                   on IEA.

8                   Attended a couple, a lot more of the  
9                   thermochemical type of research and activities  
10                  when you go to the European -- from the European  
11                  groups. And normally we've, in our group we're  
12                  not challenged with too much of the thermochemical  
13                  area; it's just the opposite of that.

14                  So you've kind of seen that maybe today,  
15                  but it's probably not reflective. And on the  
16                  basic science of genomes and plant sciences and  
17                  other things, is pretty adequately represented in  
18                  our roadmaps. And certainly there were high  
19                  amounts of discussion yesterday, as well.

20                  So, probably something you missed from  
21                  today's, but it's very much a part of our  
22                  roadmaps.

23                  COMMITTEE CHAIRWOMAN JAFFONI: Thank  
24                  you, John.

25                  Okay, I think we have one last comment

1 from Bill Schneider.

2 MR. SNYDER: Thank you very much. Bill  
3 Snyder with the Department of Forestry and Fire  
4 Protection here, Deputy Director for Resource  
5 Management.

6 It is really encouraging to see the  
7 level of the commitment you folks have to some of  
8 the issues we've been struggling with here in  
9 California recently.

10 From the Department's perspective this  
11 certainly is both a utilization issue, in terms of  
12 the landscapes we deal with having a lot of  
13 potential to supply woody biomass. And it's also  
14 a forest health issue as we look forward to some  
15 of the things that are anticipated in terms of  
16 climate change, how those are going to overlay  
17 ecosystems that we deal with.

18 A lot of challenges before us.  
19 Fortunately, Governor Schwarzenegger has taken a  
20 very aggressive role in terms of setting some  
21 targets for all the state agencies to strive to  
22 achieve. I think the challenge before us is how  
23 we move research and development into technology  
24 transfer and basically attract the capital and  
25 market investment in order to get these things

1 moving forward on a scale that's going to allow us  
2 to achieve our goals.

3 Here in California the goals are very  
4 ambitious. And if you look at the amount of  
5 additional infrastructure and production capacity  
6 that is going to have to come online in a  
7 relatively short period of time, we really do have  
8 some challenges in how to transfer the technology  
9 into a relatively high level of production.

10 So, your efforts in terms of identifying  
11 those potential technologies, I think, are going  
12 to dovetail well with the efforts going forward  
13 here in California. Particularly as we look at  
14 the biomass roadmap, which I think was laid out  
15 very clearly. Also the Climate Action Team. A  
16 lot of stuff moving here; glad to see that lots of  
17 thought is being given to how to integrate the  
18 efforts both at the national level and state level  
19 to see that we can achieve the goals and targets  
20 that have been set.

21 Thank you very much.

22 COMMITTEE CHAIRWOMAN JAFFONI: Thank  
23 you. Well, why don't we break for lunch. The  
24 good thing is now we really have the remainder of  
25 the afternoon when we return from lunch to focus

1 on the recommendations.

2 So, why don't we take -- can we do it in  
3 45 minutes? I think that should be enough time,  
4 get back here by 1:30. Or do you -- it's being  
5 provided. It's right here.

6 Okay, why don't we shoot for 1:30 to get  
7 back here. Thank you.

8 (Whereupon, the morning session of the  
9 Public Meeting was adjourned, to  
10 reconvene at 1:30 p.m., this same day.)

11 --o0o--

12 (End tape 3B.)

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1 document, we can choose to discuss and vote on  
2 them. But then the problem is we're really not  
3 giving the rest of the Committee member, the other  
4 five or six individuals, a chance to have it put,  
5 be part of that discussion. So that is the  
6 disadvantage of doing it that way.

7 But we can certainly electronically  
8 solicit that. But we're going to have to turn  
9 that around very quickly because we really are up  
10 against the buzz saw in terms of our timing on  
11 this, as was mentioned earlier, the accelerated  
12 schedule this year.

13 So, that's one part of this.

14 The second part, of course, is just  
15 looking at the annual recommendations already  
16 submitted. I believe you've got another, I think  
17 that was enclosed with the package, one pager with  
18 all of that -- all that listed. I'm sure we're  
19 well familiar with those recommendations already.

20 So we need to vote on those and decide  
21 whether on those we want to further solicit voting  
22 from the members who aren't here. Or whether the  
23 votes that we have of the nine members who are  
24 here constitute final approval, and we jus move  
25 forward with those.

1           So, I don't know if maybe that's clear  
2 as mud, but that's how I'm seeing our work going  
3 forward through the afternoon. And I also want to  
4 ask momentarily here, Harriet to just quickly  
5 review the approval process that I think we're all  
6 familiar with. But I think it's just a good thing  
7 to do before we get into a discussion on the newly  
8 submitted recommendations, so we're all familiar  
9 with that approval process. That we get that  
10 fresh in our minds.

11           So, with that, I see two cards are up.  
12 And I think, Jim, you were first, so you have the  
13 floor.

14           COMMITTEE MEMBER: What you have in  
15 front of you is not worded as formal  
16 recommendations. Initially I sent an email around  
17 with more formal recommendations, one of which was  
18 discussed on our June 6th conference call. And  
19 with rewording, was resubmitted.

20           The other recommendations were intended  
21 to address the issues, the underlying issues that  
22 are on the handout that you have in front of you.

23           So, those recommendations that I made  
24 earlier are withdrawn, and I'm not asking the  
25 Committee to consider a specific recommendation

1 for inclusion this year.

2 I would like the Commission's awareness  
3 of, and if the Committee feels appropriate,  
4 discussion of some of the issues that are outlined  
5 here so that we can set a path forward for  
6 recommendations in the future. But the  
7 recommendations that were initially put forward  
8 and lost in the administrative effort there, are  
9 withdrawn, and there are no formal recommendations  
10 that I'm making at this time.

11 COMMITTEE CHAIRWOMAN JAFFONI: Okay.  
12 Ralph, did you have a comment?

13 COMMITTEE MEMBER: Yes, about the  
14 process. I'm finding it difficult to deal with  
15 the recommendations. We don't know (inaudible)  
16 previous recommendations. And I'd like just  
17 something, have we received (inaudible). Did I  
18 miss something?

19 COMMITTEE MEMBER: (inaudible).

20 COMMITTEE MEMBER: That's one I wasn't  
21 at, I don't think --

22 COMMITTEE MEMBER: (inaudible).

23 COMMITTEE CHAIRWOMAN JAFFONI: That's  
24 the comments from the Secretaries and their  
25 review.

1 (Exhibit 2 was marked for  
2 identification.)

3 COMMITTEE MEMBER: Okay, I'll have to  
4 look at that.

5 COMMITTEE CHAIRWOMAN JAFFONI: Okay.

6 COMMITTEE MEMBER: So, I'd better get  
7 busy.

8 COMMITTEE CHAIRWOMAN JAFFONI: All  
9 right. Any other comments before we move forward?  
10 Harriet, maybe you just want to go  
11 through the process real quick for us?

12 UNIDENTIFIED SPEAKER: Sure, thanks,  
13 Terry. As I've been in touch with most of you,  
14 early by email, we've had a process set out since  
15 we first raised it in November of last year, to  
16 try and accelerate and make more transparent the  
17 process for approving recommendations.

18 This year, as the '05 report was already  
19 submitted, the Committee moved on to discussing  
20 recommendations during our actual public meetings  
21 on April 13th. And they had an administrative  
22 conference call on June 6th. And these calls were  
23 advertised to the full Committee via email.

24 And the recommendations were submitted  
25 by email, via fax, could have been via regular

1 mail, though no one did that. And, as usual, we  
2 used the three topic areas that have been used in  
3 previous reports.

4 Recommendations regarding the  
5 distribution and use of initiative funds.  
6 Recommendations on the solicitation and proposal  
7 review process. And then overall recommendations  
8 to the Secretaries.

9 And these three topics come out of the  
10 Biomass R&D Act, which is the formal legislation  
11 which created the Committee.

12 After the June 6th conference call,  
13 which had a pretty substantive discussion of  
14 language and the recommendations which had already  
15 been submitted, I sent out again to the Committee  
16 and asked that all recommendations be submitted by  
17 July 21st. And these deadlines had been laid out  
18 in the 2006 Committee workplan, which I believe is  
19 in your folders, which is available online.

20 And as per discussion in previous  
21 meetings, the workplan set out very clear  
22 deadlines for the submission dates; the return of  
23 those recommendations for comment to the  
24 Committee; and then final absolute deadlines. The  
25 workplan's also available on the table outside.

1           And then the list we are discussing  
2 today was distributed for comment and revision for  
3 this meeting. It was actually sent out July 21st,  
4 I believe. And today we hope to discuss all the  
5 recommendations in that list individually. And  
6 then approve them, as is normal process, by a  
7 majority vote.

8           And that's all I have for now. After  
9 the recommendations are approved, they do go on to  
10 be included in the annual report, which is the  
11 whole point of this exercise, which goes to the  
12 Secretaries of Energy and Agriculture; and then on  
13 to Congress. And they do respond, as Ralph  
14 mentioned, in that report.

15           And we hope to, after these  
16 recommendations today are formally approved,  
17 actually make them public via the newsletter of  
18 the Committee which would be a more timely manner  
19 to get them out.

20           COMMITTEE CHAIRWOMAN JAFFONI: Thanks,  
21 Harriet. Okay, -- sure, Art.

22           COMMITTEE MEMBER: I don't see the  
23 (inaudible).

24           COMMITTEE CHAIRWOMAN JAFFONI: We  
25 would --

1 COMMITTEE MEMBER: -- response

2 (inaudible) --

3 COMMITTEE CHAIRWOMAN JAFFONI: You were?

4 COMMITTEE MEMBER: That doesn't have the  
5 response on it, does it?

6 COMMITTEE MEMBER: (inaudible).

7 COMMITTEE MEMBER: Because of the fact  
8 that it was not, did not formally signed off, gave  
9 everybody copies of it as (inaudible). That was  
10 how we did it. (inaudible).

11 COMMITTEE MEMBER: Not to belabor it,  
12 but I had recommended that we put -- that we look  
13 at the ones from the last time in moving forward  
14 this time. I put one in there from the previous  
15 one. But if it was appropriately addressed in the  
16 response, then I don't need to put it in there  
17 this time.

18 COMMITTEE MEMBER: Yeah, I don't have a  
19 copy of the annual. Harriet, do you have a copy  
20 of the annual report?

21 UNIDENTIFIED SPEAKER: I do. Not a hard  
22 copy, just electronic.

23 COMMITTEE CHAIRWOMAN JAFFONI: The 2005.

24 COMMITTEE MEMBER: (inaudible).

25 COMMITTEE MEMBER: -- if you would, when

1 we get to the end of the recommendations, the ones  
2 I put in there, if you could share (inaudible)  
3 because it's identical, what I put in is identical  
4 to what we put in last year.

5 COMMITTEE MEMBER: Can you pull it up?

6 COMMITTEE MEMBER: No point in putting  
7 it in there again.

8 COMMITTEE CHAIRWOMAN JAFFONI: All  
9 right.

10 (Pause.)

11 COMMITTEE CHAIRWOMAN JAFFONI: Well,  
12 while we're waiting for Harriet to -- get this  
13 quicker than I -- she's fast.

14 COMMITTEE MEMBER: It's the one on the  
15 research at the universities and industry --  
16 second page here. It would be in the overall  
17 recommendations category.

18 UNIDENTIFIED SPEAKER: Is this it?

19 COMMITTEE MEMBER: No.

20 UNIDENTIFIED SPEAKER: This is not it?

21 COMMITTEE MEMBER: Yeah, that one.

22 COMMITTEE CHAIRWOMAN JAFFONI: So  
23 there's the response.

24 UNIDENTIFIED SPEAKER: Would you like me  
25 to read that?



1 COMMITTEE CHAIRWOMAN JAFFONI: Yeah, can  
2 you read that, because I can't see it from here.

3 UNIDENTIFIED SPEAKER: It's the Italics.  
4 (Parties speaking simultaneously.)

5 COMMITTEE MEMBER: A little bit  
6 narrower.

7 (Pause.)

8 COMMITTEE MEMBER: -- language of the  
9 grants for the university faculties so they can be  
10 (inaudible) area of research. They responded by  
11 saying they can't (inaudible). Doesn't even  
12 answer the question.

13 UNIDENTIFIED SPEAKER: (inaudible).

14 COMMITTEE MEMBER: I think you're right.

15 COMMITTEE CHAIRWOMAN JAFFONI: Well, it  
16 does say the Committee recommends providing  
17 funding for top-down education of academia. So,  
18 in any case, Ralph, maybe we need to resubmit that  
19 and reword it.

20 COMMITTEE MEMBER: Reword it, yeah.

21 COMMITTEE CHAIRWOMAN JAFFONI: And that  
22 is on a list, but -- so maybe you want to --

23 COMMITTEE MEMBER: -- submit it, I think  
24 I'd want to reword it.

25 COMMITTEE CHAIRWOMAN JAFFONI: Yeah.

1 Right.

2 COMMITTEE MEMBER: Now that I see the  
3 response.

4 COMMITTEE MEMBER: The question really  
5 doesn't lead to funding, per se, as it's written  
6 up there. So, --

7 COMMITTEE MEMBER: Yeah, what it shows  
8 is -- it shows that they don't understand what it  
9 takes to get the faculty of our nation's  
10 universities engaged in an issue. You got to put  
11 money on the table; that's how you get them  
12 engaged. I'll try to (inaudible).

13 COMMITTEE CHAIRWOMAN JAFFONI: No, we're  
14 not going to drag out 2005.

15 COMMITTEE MEMBER: Are there any others?

16 COMMITTEE CHAIRWOMAN JAFFONI: Probably  
17 for the future as we, you know, do this next year,  
18 it would be good for staff to have the previous  
19 year's recommendations, responses, in addition to  
20 the list of recommendations for the current year,  
21 just so that's a point of reference that we can  
22 have readily available.

23 COMMITTEE MEMBER: (inaudible). Why  
24 does one (inaudible) -- that's part of their  
25 response, (inaudible). Our goal (inaudible).

1                   COMMITTEE MEMBER: No, no. And no one  
2 wants an advantage or disadvantage. That's not  
3 the point. The point is there appears to be a  
4 failure to understand if we're going to educate  
5 the next generation of people we have to have the  
6 faculty of our universities engaged in this issue.

7                   And the data that I've seen shows that  
8 there's not a very high probability of grants  
9 going to universities from this program and  
10 several other programs.

11                   COMMITTEE MEMBER: Maybe a preamble sets  
12 the point first.

13                   COMMITTEE MEMBER: It got modified  
14 (inaudible).

15                   COMMITTEE MEMBER: -- last sentence,  
16 (inaudible).

17                   COMMITTEE MEMBER: Yeah, I'll --

18                   COMMITTEE MEMBER: -- like that  
19 sentence.

20                   COMMITTEE CHAIRWOMAN JAFFONI: That  
21 needs to be up at the top.

22                   COMMITTEE MEMBER: I'll work on it.

23                   COMMITTEE CHAIRWOMAN JAFFONI: All  
24 right. While we're getting that reconfigured,  
25 maybe in light of what Jim Martin has said on his

1 recommendations, which he is withdrawing, is there  
2 anything further that we need to do at this point  
3 on his materials here? Do we want to discuss  
4 those, or do we just want to table it and make  
5 sure that we have this for discussion at future  
6 meetings and for consideration next year? John.

7 COMMITTEE MEMBER: One of the things  
8 that did come out of workshops --

9 COMMITTEE CHAIRWOMAN JAFFONI: We're on  
10 the next bullet.

11 COMMITTEE MEMBER: We're back at the  
12 last two of the --

13 COMMITTEE CHAIRWOMAN JAFFONI: Yeah, top  
14 of the page, back of the page.

15 COMMITTEE MEMBER: So design for  
16 conversion plans and infrastructure should address  
17 the issues of collection of diverse feedstocks  
18 from multiple sources.

19 COMMITTEE CHAIRWOMAN JAFFONI: We said  
20 that already.

21 COMMITTEE MEMBER: I think that's  
22 covered in number 6 as modified.

23 COMMITTEE CHAIRWOMAN JAFFONI: Yeah.

24 COMMITTEE MEMBER: Okay. All right.

25 The ownership and control of conversion plants and

1 infrastructure should be diverse to promote  
2 greater competition in the market for finished  
3 products, and to encourage the participation of  
4 more stakeholders, particularly among feedstocks,  
5 feedstock providers, so that farm groups,  
6 municipalities, agricultural processors, forest  
7 owners and wood products processors.

8 COMMITTEE CHAIRWOMAN JAFFONI: Eric.

9 COMMITTEE MEMBER: I'm not sure that  
10 this is an appropriate category for R&D Advisory  
11 Group, unless I'm missing something.

12 COMMITTEE MEMBER: I would support Eric  
13 on that; I don't think it's appropriate.

14 COMMITTEE CHAIRWOMAN JAFFONI: No, I  
15 don't -- I agree. I don't see where we can  
16 comment on who owns conversions plants.

17 COMMITTEE MEMBER: -- for  
18 recommendations regarding distribution and use of  
19 (inaudible).

20 COMMITTEE CHAIRWOMAN JAFFONI: Well, --

21 COMMITTEE MEMBER: It might belong down  
22 in overall recommendations.

23 COMMITTEE CHAIRWOMAN JAFFONI: All  
24 right, well, Doug, sounds like some of us want to  
25 get rid of it completely and some -- one of us

1 wants, or maybe more than one wants to keep it and  
2 put it in a different place. Let's get some other  
3 comments. Ralph.

4 COMMITTEE MEMBER: Just a practical  
5 question. If this were to be embraced, does that  
6 mean that they would set up quotas on how they  
7 would distribute grant moneys, or -- they would  
8 require some kind of geographic or -- I don't  
9 know. I don't know what they would do with it.

10 So, in addition to the comments, I don't  
11 think it belongs in the R&D. I'm sure that it's  
12 more of a policy issue.

13 COMMITTEE MEMBER: I agree that it is  
14 more of a policy issue. Each of us wear multiple  
15 hats when we come to this Committee, so this  
16 represents a constituency.

17 This follows in many ways with the other  
18 recommendations that were included as sub-points.  
19 When pulled apart from the whole idea of  
20 diversified feedstocks, scalable technologies, it  
21 will not stand alone as a part of an R&D  
22 recommendation. I accept that.

23 So, having pulled it apart I can  
24 understand the Committee's desire to eliminate  
25 this from the Committee's sets of recommendations.

1 I still believe that this is a worthy goal, and if  
2 it can be considered under C, overall  
3 recommendations, --

4 COMMITTEE MEMBER: Well, can I make a  
5 suggestion. You've wordsmithed other ones. If  
6 you just change a few words and you say that in  
7 any solicitation, okay, that is issued by the  
8 Departments under the initiative that you're  
9 looking for teaming of partners, partnerships for  
10 that include farm groups, municipalities,  
11 agricultural processors, forest owners, in other  
12 words.

13 Okay, and you look at it, this is really  
14 a demonstration kind of activity, okay, that  
15 fosters partnerships to show, you know, commercial  
16 viability, then that might solve your problem and  
17 get to the same end point.

18 COMMITTEE MEMBER: I somehow have a  
19 feeling it's not going to solve the problem --

20 COMMITTEE CHAIRWOMAN JAFFONI: Scott.

21 COMMITTEE MEMBER: I kind of feel that  
22 if we stray too far from our stated purpose that  
23 we -- the legitimacy of this group becomes  
24 suspect. So, I would not want to stray over the  
25 edge, I guess.

1 COMMITTEE CHAIRWOMAN JAFFONI: Bill.

2 COMMITTEE MEMBER: For (inaudible), any  
3 time you try to restrict competition you're  
4 (inaudible).

5 COMMITTEE CHAIRWOMAN JAFFONI: Other  
6 comments? Let's vote.

7 All those in favor, raise your hand.

8 All those opposed to this one.

9 COMMITTEE MEMBER: I understand, no  
10 biggie.

11 COMMITTEE CHAIRWOMAN JAFFONI: You know,  
12 your name wasn't even on this. Nobody knew it was  
13 you.

14 COMMITTEE MEMBER: Yeah, --  
15 (Laughter.)

16 COMMITTEE MEMBER: -- we know where it  
17 came from.

18 COMMITTEE MEMBER: -- supported Jim, you  
19 know. We certainly like to make sure that for  
20 (inaudible) all advantages of that, and some of  
21 the returns come back to the rural areas. So, not  
22 all, Scott and others, and our company, as well.  
23 But there are benefits (inaudible).

24 COMMITTEE CHAIRWOMAN JAFFONI: And this,  
25 I don't think, is even directed so much -- I mean



1 rural is good, but I think your idea was just to  
2 have lots of diverse entities participating, so  
3 you get lots of different perspective and inputs.  
4 And it's a stronger effort.

5 Okay. Next one.

6 COMMITTEE MEMBER: All right, Committee  
7 strongly endorses USDA efforts to review their  
8 previously awarded R&D biomass grants for  
9 technical program alignment across all federal  
10 biomass activities; and asks that such reviews be  
11 continued in the future.

12 COMMITTEE MEMBER: -- communicated to  
13 the Committee.

14 COMMITTEE CHAIRWOMAN JAFFONI: Do we  
15 need to say that? Eric.

16 COMMITTEE MEMBER: This program is a  
17 DOE/USDA --

18 COMMITTEE CHAIRWOMAN JAFFONI: Process.

19 COMMITTEE MEMBER: -- combined biomass  
20 activity. Should we say something about DOE, as  
21 well? Does DOE do this the same way USDA  
22 (inaudible)?

23 COMMITTEE MEMBER: There's a process,  
24 but it's the same objective.

25 COMMITTEE MEMBER: It's a peer review.

1 COMMITTEE MEMBER: Yeah, so we don't  
2 need to -- this is new for USDA, essentially, is  
3 that what that means? Is that why it's important  
4 to stay in here?

5 COMMITTEE MEMBER: (inaudible).

6 COMMITTEE MEMBER: As a Committee, we  
7 have had struggles over the years -- way USDA's  
8 been organized and other factors that are getting  
9 the same level of coordination and review as a  
10 group as we have with some of the DOE -- and so  
11 this is a good attempt to start doing that.

12 COMMITTEE CHAIRWOMAN JAFFONI: But does  
13 that belong in our recommendations to the  
14 Secretaries? Kind of just saying we give kudos to  
15 USDA for finally getting this thing together? I  
16 mean I don't know, it just seems to me like it  
17 shouldn't be a recommendation. We're just -- just  
18 great.

19 COMMITTEE MEMBER: We have recommended  
20 the task, that we wanted better USDA review of the  
21 programs (inaudible).

22 COMMITTEE MEMBER: (inaudible).

23 COMMITTEE MEMBER: So if we think that's  
24 covered, I'm more than happy to withdraw it.

25 COMMITTEE MEMBER: Or maybe it could be

1 included in the -- reports rather than a  
2 recommendation.

3 COMMITTEE MEMBER: We appreciate their  
4 feedback or something like that, a comment --

5 COMMITTEE CHAIRWOMAN JAFFONI: Why don't  
6 we just say something like, you know, in  
7 particular we recognize the efforts of USDA in  
8 helping us to do our job this year and providing  
9 information that we need, support.

10 Charles.

11 (Parties speaking simultaneously.)

12 COMMITTEE MEMBER: If we could just add  
13 a couple of words at the beginning acknowledging  
14 USDA's effort and encourage that to continue.

15 COMMITTEE CHAIRWOMAN JAFFONI: I think  
16 we just put it in the text; we don't include it as  
17 a recommendation. But that's just my view. Doug,  
18 do you --

19 COMMITTEE MEMBER: Yeah, I was just  
20 going to point out we have a recommendation down  
21 in the next section that says, provide support for  
22 ongoing review and analysis of awards made to  
23 determine the impact of the funded programs.

24 And I don't know if you could link these  
25 two together and say, you know, what we heard

1 today was USDA struggled a little bit because they  
2 didn't have the money to administer and have some  
3 do the analysis. They had to kind of scramble to  
4 find the funds to make that happen.

5 So, in a way this is tying it together  
6 to say, yeah, we applaud them in doing this  
7 analysis work, and we're making a recommendation  
8 that they be given some support to do that  
9 analysis work in the future.

10 COMMITTEE CHAIRWOMAN JAFFONI: John.

11 COMMITTEE MEMBER: So I'd be more than  
12 happy to withdraw this recommendation. Maybe it  
13 could be put in the text like we've talked about.  
14 And then keep Doug's in in this next section down  
15 there. It's more succinct.

16 COMMITTEE CHAIRWOMAN JAFFONI: Everybody  
17 okay with that? Okay, so we're going to withdraw  
18 this one.

19 COMMITTEE MEMBER: All right, this is  
20 the second category. Recommendations on the  
21 solicitation of proposal review process. First  
22 recommendation is that the 2007 USDA/DOE joint  
23 solicitation be issued in a timely manner, by  
24 October 1, 2006.

25 (Parties speaking simultaneously.)

1 (Laughter.)

2 COMMITTEE MEMBER: You got your  
3 response.

4 COMMITTEE MEMBER: -- these  
5 recommendations aren't going to anybody formally  
6 until the December 20th --

7 COMMITTEE MEMBER: -- given to the  
8 Secretaries beforehand, and then you'll be meeting  
9 with the Board Members --

10 COMMITTEE MEMBER: Okay, so it's  
11 relevant to have it (inaudible).

12 COMMITTEE MEMBER: I mean I think our  
13 Committee, in the past, has (inaudible) worked  
14 hard to try to get (inaudible) time to do it. And  
15 it gets done in the time. And even though we  
16 didn't quite meet it this time around, an attempt  
17 was made. There's some reasons why. They can  
18 explain those reasons why. And I think we can  
19 address them. So I'd like to leave it in. As our  
20 Committee states, we should try to do this as  
21 early as possible in the fiscal year and get it  
22 out and around. I think we --

23 COMMITTEE CHAIRWOMAN JAFFONI: Is your  
24 (inaudible)?

25 COMMITTEE MEMBER: Well, I think this is

1 fine. I think that this is the issue, that the  
2 issue is going to be RFP -- sufficient amount of  
3 time to contemplate the RFP and respond with well  
4 thought out proposals.

5 COMMITTEE MEMBER: That's what I was  
6 going to (inaudible).

7 COMMITTEE CHAIRWOMAN JAFFONI: Do we  
8 want to augment this statement and say something  
9 about additionally the RFP is to get out by such-  
10 and-such a date?

11 COMMITTEE MEMBER: -- whatever the  
12 (inaudible), and if everybody has sufficient time  
13 to be able to review and submit (inaudible). It's  
14 more a matter of, in our case it's a matter of  
15 when the dollars are available. The reason we  
16 said early October is because it's the beginning  
17 of the fiscal year. That way you can still issue  
18 funds to the recipients within that fiscal year.  
19 So don't miss that point.

20 So if the solicitation came out in mid  
21 December, everybody would still have the same  
22 amount of time, but then the awards wouldn't be  
23 made until the next fiscal year.

24 COMMITTEE MEMBER: (inaudible) I  
25 apologize for that. Always concerns when there's,

1 let's say, 30 days from issuance of an RFP, and  
2 when you have to reply. That's almost an  
3 instantaneous response; the time is really short.

4 COMMITTEE MEMBER: Well, what is the  
5 timeline?

6 COMMITTEE MEMBER: (inaudible) days, and  
7 you got to remember, the first submission is a  
8 pre-ap; it's a one- or two-, two- or three-page  
9 document. It's not much detail. And once it goes  
10 through initial screening, then the full  
11 application (inaudible) for the ones that make it  
12 through.

13 COMMITTEE MEMBER: -- then did you say  
14 that's going to be issued this year?

15 COMMITTEE MEMBER: Well, it's around the  
16 end of October -- solicitation. -- 45 days for  
17 the pre-ap thing. Last year I think it was  
18 December when it was published, so --

19 (Parties speaking simultaneously.)

20 COMMITTEE MEMBER: -- earlier, or at  
21 least two months earlier.

22 COMMITTEE CHAIRWOMAN JAFFONI: What's  
23 the advantage of being early, though?

24 COMMITTEE MEMBER: You don't want the 45  
25 days to encompass the holidays. That's a problem.

1 COMMITTEE CHAIRWOMAN JAFFONI: Right.

2 COMMITTEE MEMBER: -- end of October.

3 COMMITTEE CHAIRWOMAN JAFFONI: Yeah.

4 COMMITTEE MEMBER: -- don't have to  
5 worry about that.

6 COMMITTEE MEMBER: -- Christmas.

7 COMMITTEE CHAIRWOMAN JAFFONI: But you -  
8 - if you got it November 1, then you go to the  
9 middle of December.

10 COMMITTEE MEMBER: December, yeah.

11 COMMITTEE MEMBER: That's fine.

12 COMMITTEE CHAIRWOMAN JAFFONI: Other  
13 comments?

14 COMMITTEE MEMBER: -- progress over the  
15 years, Jerry and I were first on this Commission,  
16 come out in the summer (inaudible). We were  
17 planning things, getting all the program dollars  
18 mixed up, carry-over funds, (inaudible).

19 COMMITTEE CHAIRWOMAN JAFFONI: Okay.  
20 What I hear you saying is let's stay with the date  
21 that's there, and we'll get as close to it as we  
22 can. But we want to leave this as is.

23 COMMITTEE MEMBER: I'd recommend that.

24 COMMITTEE CHAIRWOMAN JAFFONI: No other  
25 changes, no additions. We don't want to say



1 anything about RFPs. So, okay, so let's go ahead  
2 and vote on this one.

3 All those in favor?

4 Opposed?

5 Okay, it carries.

6 COMMITTEE MEMBER: The budgeted funding  
7 for the initiative should be subject to fewer  
8 Congressionally directed projects and provide a  
9 greater proportion of discretionary amounts to  
10 pursue projects that are measured by documented  
11 milestones.

12 COMMITTEE MEMBER: Talked about  
13 incorporating somehow our roadmap process. Maybe  
14 that's what we mean by documented milestones.

15 COMMITTEE CHAIRWOMAN JAFFONI: So we  
16 want to say the roadmap, for example, the roadmap?  
17 Is that what you're suggesting?

18 COMMITTEE MEMBER: I'd like to see us do  
19 some (inaudible).

20 COMMITTEE CHAIRWOMAN JAFFONI: Or  
21 measure by documented milestones, e.g., Technical  
22 Advisory (inaudible) document. Or consistent with  
23 the roadmap, okay. Which reflect the Committee's  
24 roadmap, vision of roadmap documents, or roadmap,  
25 I guess. Yeah.

1 COMMITTEE MEMBER: To whom are these  
2 recommendations directed? I mean if DOE or USDA  
3 don't have any control, why are we complaining  
4 about Congressionally directed mandates?

5 COMMITTEE CHAIRWOMAN JAFFONI: Well,  
6 this goes to Congress.

7 COMMITTEE MEMBER: So we'll see the  
8 satisfaction with that.

9 COMMITTEE CHAIRWOMAN JAFFONI: Okay.  
10 All right. Any other comments? All right.

11 All those in favor of adopting this?  
12 Any opposed?

13 Okay, the recommendation carries.  
14 Number 3.

15 COMMITTEE MEMBER: Support ongoing  
16 review and analysis of awards made to determine  
17 the impact of funded programs.

18 COMMITTEE CHAIRWOMAN JAFFONI:  
19 Discussion on this? Jim.

20 COMMITTEE MEMBER: The point was made, I  
21 think, -- I'm good with it.

22 COMMITTEE CHAIRWOMAN JAFFONI: All  
23 right, if there are no other comments, we can just  
24 move to vote.

25 All those in favor?

1 All those opposed?

2 Recommendation carries. That was a  
3 simple one.

4 COMMITTEE MEMBER: This is the next  
5 category, overall recommendations to the  
6 Secretaries.

7 The first one is that opportunities for  
8 workforce development and outreach in biomass  
9 sciences be pursued.

10 COMMITTEE CHAIRWOMAN JAFFONI: Okay.  
11 Eric.

12 COMMITTEE MEMBER: Overall I agree to  
13 it. Do we need to include more than just  
14 sciences, though? Should there be things like  
15 technology and policy and, I don't know, agronomy?  
16 I don't know what all might include there.

17 COMMITTEE MEMBER: Sciences and  
18 engineering cover about everything.

19 COMMITTEE CHAIRWOMAN JAFFONI: Why don't  
20 we just say development and outreach in biomass  
21 related career opportunities?

22 COMMITTEE MEMBER: (inaudible).

23 COMMITTEE CHAIRWOMAN JAFFONI: Or  
24 disciplines.

25 COMMITTEE MEMBER: That opportunities

1 for workforce development and outreach in biomass-  
2 related disciplines be pursued.

3 COMMITTEE CHAIRWOMAN JAFFONI: Is  
4 everybody okay with that?

5 COMMITTEE MEMBER: -- what's the word  
6 outreach mean in the context of the rest of that  
7 sentence?

8 COMMITTEE MEMBER: -- would be public  
9 education.

10 COMMITTEE MEMBER: -- clarification,  
11 these are other recommendations, so they're not  
12 necessarily reverted back to our solicitation.

13 COMMITTEE CHAIRWOMAN JAFFONI: I don't  
14 know if the wording on that is exactly right,  
15 but -- what it says. What it really says is  
16 opportunities for workforce development in  
17 biomass-related career opportunities, and outreach  
18 to the public to education them of biomass issues.

19 Yeah, is that two separate things? I  
20 mean one is, you know, developing a workforce  
21 that's trained; and the other one is a whole big  
22 area which is educating the public. Is that two  
23 separate things?

24 COMMITTEE MEMBER: They should both be  
25 in there one way or another.

1 COMMITTEE CHAIRWOMAN JAFFONI: They  
2 should both be in there, no doubt. But, I almost  
3 think that that outreach one is such a major  
4 issue; it came up in the roadmap time and time  
5 again. I think that should be a separate  
6 recommendation.

7 COMMITTEE MEMBER: -- talk about  
8 outreach.

9 COMMITTEE CHAIRWOMAN JAFFONI: Oh,  
10 outreach is gone?

11 COMMITTEE MEMBER: Yeah, we're going to  
12 split it. We're going to put --

13 COMMITTEE MEMBER: So that's all right.

14 COMMITTEE CHAIRWOMAN JAFFONI: Sounds  
15 good.

16 COMMITTEE MEMBER: Okay.

17 COMMITTEE CHAIRWOMAN JAFFONI: Everybody  
18 want to vote on this, raise your hand. Yes.

19 Any opposed?

20 (Pause.)

21 COMMITTEE MEMBER: (inaudible).

22 COMMITTEE CHAIRWOMAN JAFFONI: Should be  
23 pursued.

24 (Pause.)

25 COMMITTEE CHAIRWOMAN JAFFONI: Eric.

1 COMMITTEE MEMBER: Are we talking here  
2 about developing some type of public information  
3 program, not just outreach opportunities?  
4 Shouldn't we be a little more definitive about  
5 what our expectations are?

6 Direct, something like --

7 COMMITTEE CHAIRWOMAN JAFFONI: Doesn't  
8 say opportunities any more; they changed that.

9 COMMITTEE MEMBER: Should say --  
10 (Parties speaking simultaneously.)

11 COMMITTEE MEMBER: Well, -- DOE or USDA  
12 should develop a public information program --  
13 biomass technologies. Something a little more  
14 definitive.

15 COMMITTEE CHAIRWOMAN JAFFONI: Scott.

16 COMMITTEE MEMBER: Well, we struggled  
17 with this in the 3530 workshop last week. You  
18 know, this is, without defined goals with this, we  
19 use this kind of like motherhood and apple pie. I  
20 mean nobody's going to be against this, but, so  
21 what.

22 It doesn't feel like research and  
23 development in biomass to be -- but if we put some  
24 goals up there, then make it a little more  
25 definitive, then that's exactly what we struggled

1 with last week. People were passionate about  
2 this, but they didn't know what they wanted. So  
3 we put some things up there.

4 COMMITTEE CHAIRWOMAN JAFFONI: Do we  
5 want to be more specific? What would we include?  
6 I mean we could suggest that market research be  
7 conducted to understand what the sections are of  
8 where the gaps are where people need more  
9 information. Because we're just assuming they  
10 need more information. I think we all agree they  
11 do, but -- what does everybody think?

12 Well, I like what's here. I think  
13 people will know what that means. And I think  
14 people who are familiar with this issue certainly  
15 know what the -- that there is a perception issue  
16 related to a whole range of bio-based products,  
17 not just fuels.

18 Eric?

19 COMMITTEE MEMBER: It's getting on in  
20 the afternoon, and delayed reaction to Scott's  
21 comment, but I mean one thing we could say is that  
22 a program be created for public education and  
23 leave it at that. That's sort of a more concrete  
24 activity than --

25 COMMITTEE MEMBER: Is there one already?

1 COMMITTEE MEMBER: There has been  
2 (inaudible).

3 COMMITTEE MEMBER: So if the Committee  
4 recommends to expand it or continue to support,  
5 that might help generate some funds to do it.

6 COMMITTEE CHAIRWOMAN JAFFONI: All  
7 right, --

8 COMMITTEE MEMBER: (inaudible)? -- give  
9 the Secretaries broader authority to do something  
10 about it without tying their hands.

11 COMMITTEE MEMBER: That they will  
12 respond to this --

13 COMMITTEE MEMBER: Yes. I don't know  
14 what their response will be --

15 (Laughter.)

16 COMMITTEE CHAIRWOMAN JAFFONI: Show me  
17 the money.

18 (Laughter.)

19 COMMITTEE MEMBER: Can we think about  
20 instead of pursue say expanded (inaudible).

21 COMMITTEE MEMBER: Well, I certainly  
22 don't have any problem with this the way it is.

23 COMMITTEE CHAIRWOMAN JAFFONI: All  
24 right.

25 All those in favor of adopting this



1 raise their hands.

2 Opposed?

3 Okay.

4 (End tape 4A.)

5 COMMITTEE MEMBER: That incentives for  
6 biobased products be created.

7 COMMITTEE CHAIRWOMAN JAFFONI: That's  
8 brief enough. -- some discussion, Eric.

9 COMMITTEE MEMBER: It seems a little too  
10 specific to products as opposed to what I would  
11 suggest, if we're going to include something like  
12 this, that it be both biofuels and biobased  
13 products.

14 COMMITTEE MEMBER: -- disagree, but I  
15 think the rationale here was there already  
16 (inaudible) fuel types -- for biofuels, but to say  
17 products sold for a nonfuel application don't  
18 qualify for similar incentive.

19 COMMITTEE CHAIRWOMAN JAFFONI: Maybe we  
20 can word it then, we can say in order to  
21 facilitate the growth of biobased products, we  
22 need to look at, or research needs to be done to  
23 evaluate the best policy and issues that could  
24 stimulate such growth, or something like that.  
25 Keep it more open rather than just say

1 specifically incentives, you know. Not that  
2 that's a bad idea, but it's so many times with  
3 these things we just meeting the goal, incentives  
4 and mandates, and we can keep it broader that way.  
5 More creativity.

6 Scott.

7 COMMITTEE MEMBER: Will the recipients  
8 of this know what biobased products, what would we  
9 have in mind? If we -- you know, ethanol,  
10 biodiesel or biobased products. But I know it's  
11 not what we intended.

12 COMMITTEE CHAIRWOMAN JAFFONI: Right.  
13 Good comment. Yeah, Eric.

14 COMMITTEE MEMBER: Are you going to  
15 respond to --

16 COMMITTEE MEMBER: I was.

17 COMMITTEE MEMBER: Yeah, go ahead,  
18 because I had a little bit different.

19 COMMITTEE MEMBER: Well, the response  
20 would be that under Title 9, the Farm Bill,  
21 there's the specific definition of biobased  
22 products, which exclude biofuels in that  
23 definition.

24 So, yeah, I think it would be a  
25 recognition in the legal language that already

1 exists for this.

2 That does provide a set of incentives in  
3 the form of preferred procurement, which has  
4 hardly had an impacts since we're still trying to  
5 explain what qualifies as biobased products in  
6 cases for the federal purchasing.

7 I think, Terry, that the words -- by  
8 itself, is too broad. I'd rather be more specific  
9 and more illustrative. And I think in this case,  
10 I think some verbiage which says the fuel tanks  
11 abatement incentives provided for biobased fuels  
12 have been extremely effective; launch an expanded  
13 sales for ethanol and biodiesel. And similar  
14 financial incentives should be provided to  
15 accelerate growth and adoption of nonfuel biobased  
16 products.

17 COMMITTEE CHAIRWOMAN JAFFONI: -- I  
18 think that's good.

19 COMMITTEE MEMBER: That says what is  
20 what.

21 COMMITTEE CHAIRWOMAN JAFFONI: That's  
22 good.

23 COMMITTEE MEMBER: We don't have a fuel  
24 tanks debate, biobased products. So it's more to  
25 define exactly what that financial incentive would

1 be.

2 COMMITTEE CHAIRWOMAN JAFFONI: Um-hum.  
3 Eric, do you have your card up to make a comment  
4 or --

5 COMMITTEE MEMBER: I guess we have  
6 plenty of time to address our new non-oxygenated  
7 fuels when they get around to develop --

8 (Laughter.)

9 COMMITTEE MEMBER: Why are you gesturing  
10 to me?

11 (Laughter.)

12 COMMITTEE MEMBER: That's correct.

13 COMMITTEE MEMBER: -- the language of  
14 the Comprehensive Energy Act, if a diesel  
15 replacement product were available today  
16 commercially, not biodiesel but a green diesel  
17 were available, it would qualify for the same fuel  
18 tanks abatement as biodiesel is defined  
19 (inaudible), and so if you had green diesel today,  
20 it would get the same tax treatment and tax  
21 abatement as biodiesel. But if it were used as a  
22 solid instead of a fuel there would be no  
23 incentive.

24 COMMITTEE CHAIRWOMAN JAFFONI: Eric.

25 COMMITTEE MEMBER: I like the additional

1 wording that was jus put in; but I also like the  
2 second part that you had suggested, that an  
3 evaluation be conducted rather than just promoting  
4 incentives sort of blindly.

5           And this ties in a little bit with Jim,  
6 the other comment that you withdrew as a  
7 recommendation. And I think where you had some  
8 suggestion of analysis to understand, it was more  
9 maybe on the agricultural side on what kinds of  
10 incentives and what kinds of programs would be  
11 needed. But a more comprehensive sort of  
12 understanding of what the impacts are going to be  
13 of putting in incentives, I think, is important  
14 before you just start -- one just starts putting  
15 in incentives.

16           So that's why I wouldn't bring back in  
17 the -- either bring back in the evaluation wording  
18 or take this and put it in with the other  
19 recommendations that have been tabled for the time  
20 being.

21           COMMITTEE CHAIRWOMAN JAFFONI: Yeah, and  
22 what you could do is just after the first  
23 sentence, just say, an evaluation should be  
24 conducted to identify policy, identify similar  
25 incentives, or the optimal -- to identify

1 incentives which would support, which would also  
2 support that growth. Is that what you're saying,  
3 Eric? Is that -- not having the second sentence  
4 that's there now.

5 COMMITTEE MEMBER: There's nothing wrong  
6 with the sentence (inaudible).

7 COMMITTEE MEMBER: You did say you  
8 should have such things, and order to get there  
9 you should do an evaluation to figure out what  
10 they should be?

11 COMMITTEE MEMBER: Get back to the --

12 COMMITTEE CHAIRWOMAN JAFFONI: Right.

13 COMMITTEE MEMBER: Yeah, I'll do that.

14 COMMITTEE CHAIRWOMAN JAFFONI: Yeah,  
15 okay. All right. Vote.

16 Everybody in favor?

17 Opposed?

18 It carries.

19 Larry, did you vote?

20 COMMITTEE MEMBER: Yeah.

21 COMMITTEE CHAIRWOMAN JAFFONI: Okay.

22 COMMITTEE MEMBER: There are no opposed  
23 votes?

24 COMMITTEE CHAIRWOMAN JAFFONI: Okay.

25 COMMITTEE MEMBER: That Congress

1 provides full funding for the integrated  
2 biorefinery solicitation under section 932 of  
3 EPAC.

4 COMMITTEE MEMBER: At the time we were  
5 at the last meeting that was still undecided  
6 whether or not Congress was (inaudible).

7 COMMITTEE CHAIRWOMAN JAFFONI: -- still  
8 a good recommendation, even if they've already  
9 done it.

10 COMMITTEE MEMBER: Is that one the --  
11 section A, or is this -- place for it. Section A  
12 was the distribution -- funds.

13 COMMITTEE MEMBER: (inaudible).

14 COMMITTEE MEMBER: Okay.

15 COMMITTEE MEMBER: I think this is the  
16 right place.

17 COMMITTEE MEMBER: For the Secretaries -  
18 -

19 COMMITTEE CHAIRWOMAN JAFFONI: Um-hum.  
20 Okay, Eric, do you have a comment?

21 COMMITTEE MEMBER: No, (inaudible).

22 COMMITTEE CHAIRWOMAN JAFFONI: Okay.  
23 Other comments or discussion on this?

24 Okay. All in favor of adopting this  
25 recommendation?

1 Any opposed?

2 Okay, it carries.

3 Looks like we're on the last one.

4 COMMITTEE MEMBER: I have (inaudible).

5 COMMITTEE CHAIRWOMAN JAFFONI: Um-hum.

6 Yes.

7 COMMITTEE MEMBER: It's shorter.

8 (Laughter.)

9 COMMITTEE CHAIRWOMAN JAFFONI: Good.

10 COMMITTEE MEMBER: Hopefully it's to the  
11 point.

12 COMMITTEE CHAIRWOMAN JAFFONI:

13 Absolutely.

14 COMMITTEE MEMBER: I'll read it. The  
15 Committee recommends structuring grant  
16 opportunities that support biomass R&D so that a  
17 greater number of university faculty members are  
18 directly involved with better refunded biomass  
19 projects. This will insure that a fuller scope of  
20 our nation's intellectual capacities engaged in  
21 advancing this program, will increase the size of  
22 the biomass professional community, will  
23 facilitate the education of the biomass industry  
24 workforce and will encourage cooperation with  
25 industry and federal scientists.



1 COMMITTEE MEMBER: I thought that's what  
2 we said last year.

3 COMMITTEE MEMBER: What I wanted to  
4 say --

5 COMMITTEE MEMBER: So you're saying that  
6 the clarification --

7 COMMITTEE CHAIRWOMAN JAFFONI: Yes.

8 COMMITTEE MEMBER: -- that they involve  
9 more or they involve equally?

10 COMMITTEE MEMBER: So they deliberately  
11 attempt to make sure that more university faculty  
12 are involved in this area of R&D so that we end up  
13 with -- the way it works, real simply, is  
14 (inaudible) free agents that work on whatever is  
15 there with development. Those are the examples  
16 they're going to use in their classroom. That's  
17 what their graduate students are going to learn.  
18 Those are the industries they're going to work  
19 with.

20 So, you've got to put, the federal  
21 government's got to put money out there, either  
22 through (inaudible) or through grant opportunities  
23 or whatever, to engage the nation's university  
24 faculty in this.

25 COMMITTEE MEMBER: Let me ask a question

1 of Bill, then. The solicitations went out. We  
2 had some solicitations in the past that were  
3 deliberate towards universities (inaudible).  
4 Trying to see how it works with being open to it,  
5 not --

6 COMMITTEE MEMBER: I'm not clear. Are  
7 you advocating that they be recipients on the  
8 grant opportunities? Or could it be in terms --

9 COMMITTEE MEMBER: (inaudible).

10 COMMITTEE MEMBER: -- engagement in the  
11 process like it said in the part up here --

12 COMMITTEE MEMBER: No, no, no, no. No,  
13 no. You won't engage them if you don't put money  
14 there.

15 COMMITTEE MEMBER: It's their research  
16 getting funded.

17 COMMITTEE MEMBER: Which means that is  
18 providing (inaudible) in the solicitations and  
19 awards?

20 COMMITTEE MEMBER: No. No one's saying  
21 that.

22 COMMITTEE MEMBER: That's the way I  
23 understand it.

24 COMMITTEE MEMBER: Do you want to re-  
25 read it? I can get it up here so that we can

1 see --

2 COMMITTEE CHAIRWOMAN JAFFONI: Yeah,  
3 that would help.

4 COMMITTEE MEMBER: The Committee  
5 recommends structuring grant opportunities to  
6 support biomass R&D so that a greater number of  
7 university faculty members are directly involved  
8 in federally funded biomass projects.

9 COMMITTEE CHAIRWOMAN JAFFONI:  
10 University faculty members are directly involved.

11 COMMITTEE MEMBER: Is this accurate?

12 COMMITTEE MEMBER: Do you want the rest  
13 of it?

14 COMMITTEE MEMBER: Yeah.

15 COMMITTEE MEMBER: This will insure to  
16 the fuller scope of our nation's intellectual  
17 capacity is engaged in advancing this program,  
18 will increase the size of the biomass professional  
19 community, will facilitate the education of the  
20 biomass industry workforce. It would encourage  
21 cooperation and the industry and federal  
22 scientists;

23 COMMITTEE MEMBER: Did I get that last  
24 part, industry instead of university?

25 COMMITTEE CHAIRWOMAN JAFFONI: Eric, do

1 you have your card up? Go.

2 COMMITTEE MEMBER: My recollection is on  
3 the fossil side of DOE they have, often have  
4 specific university programs that are maybe  
5 (inaudible) where you have expressed some concern  
6 about it being, showing preference, but I wonder  
7 how that works if there are specific university  
8 programs, and whether that's not something that  
9 should be considered.

10 COMMITTEE MEMBER: What I'm trying to do  
11 is get the Secretaries to understand --

12 COMMITTEE MEMBER: I understand.

13 COMMITTEE MEMBER: -- don't engage  
14 university faculty ultimately some of the things  
15 won't happen.

16 COMMITTEE MEMBER: Suggestion. The  
17 Committee encourages Departments to provide  
18 solicitation for university-funded R&D to, and  
19 then you can keep some of your words there.

20 Yes, Eric, you are correct that the  
21 Department has a mandate, okay, and there are  
22 provisions that they can run solicitations that are  
23 targeted for universities, okay, with the specific  
24 missions.

25 Just like we do with industry. In other

1 words, where we can have gas teams, we were a team  
2 -- well, for instance, we just did one, okay,  
3 where we required universities to team together,  
4 required three to five universities all to team to  
5 do this very thing.

6 So we have the ability to do that, and  
7 we can do it in our fundamental R&D activities.

8 COMMITTEE MEMBER: -- number of faculty  
9 members we need a greater number of university  
10 faculty members (inaudible).

11 COMMITTEE MEMBER: That's a good  
12 question. I'm not sure that it's simply one or  
13 the other. The goal is to have more of the  
14 nation's scientists concentrated at fewer  
15 universities or more, doesn't really matter too  
16 much, to be engaged.

17 Now, if they're concentrated in a fewer  
18 number of universities, the same number, then  
19 you're more likely to have very powerful graduate  
20 programs. But you'll have fewer students that'll  
21 be engaged in that. The goal is to get more of  
22 the nation's intellectual capacity engaged in this  
23 issue.

24 COMMITTEE MEMBER: I've got to tell you  
25 that the reaction to this, this will insure that

1 the full scope of -- intellectual capacity is  
2 engaged, I would say that private industry might  
3 consider that they have some participation --

4 (Laughter.)

5 (Parties speaking simultaneously.)

6 COMMITTEE MEMBER: You're absolutely  
7 right. But this -- a whole part, a large section  
8 that is not being fully engaged --

9 COMMITTEE MEMBER: I know what you're  
10 trying to say, but I see the language here as  
11 being incorrectly interpreted --

12 COMMITTEE MEMBER: How about a full  
13 scope of --

14 (Laughter.)

15 COMMITTEE CHAIRWOMAN JAFFONI: Why don't  
16 we just hold that --

17 (Parties speaking simultaneously.)

18 COMMITTEE MEMBER: I would eliminate  
19 that section in there. I like what you're saying  
20 about increasing the biomass workforce, I think  
21 some -- if we carry this forward more to, I think,  
22 what is the core of your idea is to involve  
23 students in training those workers and scientists  
24 of tomorrow in this region.

25 If we can get more to the core of that

1 idea --

2 COMMITTEE MEMBER: Okay, I --

3 COMMITTEE MEMBER: -- I could support  
4 it.

5 COMMITTEE MEMBER: How about just  
6 changing it this will increase the size of  
7 (inaudible) -- no offense was intended --

8 COMMITTEE CHAIRWOMAN JAFFONI: The  
9 wording here at the bottom of the original, it  
10 just says the Committee recommends providing  
11 funding for a top-down education of academia about  
12 the technological opportunities available in  
13 biomass, I thought that that long sentence was  
14 pretty good.

15 COMMITTEE MEMBER: Well, that sentence  
16 was just copied from last year's.

17 COMMITTEE CHAIRWOMAN JAFFONI: Yeah, I -  
18 -

19 COMMITTEE MEMBER: Last year we got the  
20 wrong response from the Secretaries -- intended  
21 response, --

22 COMMITTEE CHAIRWOMAN JAFFONI: Well, it  
23 was more, it was expanded, though, it was more in  
24 it than just that one sentence. I think the  
25 response we got was not because of this sentence

1 here, it was the rest of it that might have --

2 COMMITTEE MEMBER: Well, --

3 COMMITTEE CHAIRWOMAN JAFFONI: -- that  
4 response, but --

5 COMMITTEE MEMBER: As modified, that's  
6 what I'm proposing.

7 COMMITTEE CHAIRWOMAN JAFFONI: Bill,  
8 you've been patient here.

9 COMMITTEE MEMBER: Question, answer  
10 (inaudible). You say solicitations. I would  
11 interpret that's more than just (inaudible)  
12 biomass (inaudible).

13 COMMITTEE MEMBER: (inaudible) everybody  
14 that has a part of the national biomass program.  
15 That was --

16 COMMITTEE MEMBER: You're referring to  
17 the Board -- biomass --

18 COMMITTEE MEMBER: That's correct.

19 COMMITTEE MEMBER: -- program.  
20 (inaudible).

21 COMMITTEE MEMBER: You remember this is  
22 to -- this is beyond the 9008.

23 COMMITTEE MEMBER: I just want to make  
24 sure that I understand.

25 COMMITTEE MEMBER: That is definitely



1 the intention. Some of the language that was  
2 (inaudible) longer version did talk about --

3 COMMITTEE CHAIRWOMAN JAFFONI: Right.

4 COMMITTEE MEMBER: -- just trying to  
5 make it more succinct.

6 COMMITTEE MEMBER: Then I don't have as  
7 much problem (inaudible) biomass, I think we would  
8 have a problem (inaudible). (inaudible) report  
9 and I don't have a problem with it.

10 COMMITTEE MEMBER: No, it's definitely  
11 in general. And it's mainly to challenge, to  
12 alert the Secretaries to pay attention to all of  
13 this if they want to have a workforce for the  
14 future.

15 COMMITTEE CHAIRWOMAN JAFFONI: Scott.

16 COMMITTEE MEMBER: Well, I was going to  
17 comment kind of along Bill's line there, but is  
18 the goal to get them funded? Or is the goal,  
19 would an action item be to do some action to make  
20 sure they are aware of the solicitations, they're  
21 free to respond then.

22 Because, to me, as a recipient of that,  
23 that I'm looking at, I kind of understand why we  
24 got the response we did last year. They're going  
25 to say, well, gee, they're free to respond just

1 like anybody else. And they're judged on the  
2 merits, right.

3 But, maybe there's an action here  
4 somewhere that people are more proactive in making  
5 sure they know about the solicitations, or they're  
6 free to respond, or facilitate their response  
7 somehow. Take away barriers.

8 I mean if that's your idea --

9 COMMITTEE MEMBER: We've talked about  
10 this for a few years, and the issue gets down to,  
11 and I'm trying to reflect input from universities  
12 all across the country, that there are inadequate  
13 grant opportunities to get their faculty engaged  
14 in this area of research. And therefore, there  
15 are inadequate numbers of faculty who have the  
16 background to be involved in the education of the  
17 next generation.

18 It's kind of a chicken-and-the-egg  
19 thing. If you don't have the faculty who are  
20 experienced in the research, you're not going to  
21 have the faculty, then your people teaching,  
22 interested in teaching theory.

23 COMMITTEE MEMBER: So I think you have  
24 this -- you want to start with what's on the  
25 bottom, talk about your goal here (inaudible).

1 The purpose issue will be problematic. I think  
2 the industry deserves, if you only have \$14  
3 million for a solicitation (inaudible) --

4 COMMITTEE MEMBER: I know it's not jus  
5 commented on this one.

6 COMMITTEE MEMBER: It can be definitely  
7 taken that way.

8 COMMITTEE MEMBER: But, believe me, it  
9 will not because where this one is falling, for  
10 instance the reason I bring this one up, and I  
11 apologize if -- out of line, is that you're doing  
12 the roadmap vision. That roadmap vision that gets  
13 published, okay, has a number of these points in  
14 it. So this reinforces your roadmap vision needs.

15 I think this is important to get out  
16 there, because you see, at DOE, we have a  
17 different responsibility than USDA. We can go and  
18 do more on the educational side. And it's just a  
19 matter of whether it's a priority, again, in the  
20 fact that the recommendations made by the  
21 Committee. It becomes more of a priority for  
22 consideration. That's my take.

23 COMMITTEE CHAIRWOMAN JAFFONI: Ralph.

24 COMMITTEE MEMBER: If Tom (inaudible)  
25 were here, he would probably repeat what he said

1 last year. You can't hire a carbohydrate chemist  
2 because the nation's universities aren't producing  
3 enough of them. It gets back to this issue.

4 And he, last year, basically cosponsored  
5 this recommendation.

6 COMMITTEE CHAIRWOMAN JAFFONI: Okay.  
7 Eric.

8 COMMITTEE MEMBER: Ralph had indicated  
9 it wasn't just DOE and USDA, it was also NSF and  
10 the others, so I just put in the agencies of the  
11 Board, or the interagency R&D Board. Is that what  
12 you were intending?

13 COMMITTEE MEMBER: So that's clear.

14 COMMITTEE CHAIRWOMAN JAFFONI: Yeah,  
15 yeah, I think it's better if you say the  
16 interagency R&D Board.

17 COMMITTEE MEMBER: (inaudible) of  
18 solicitations, that gives everybody more chances  
19 within the universities. And I have -- we've also  
20 (inaudible) more money to do this, all the way  
21 around. Industry also needs money, demonstration  
22 phase, make this stuff. (inaudible).

23 I keep looking at it, though, as you're  
24 not going to be happy, Ralph, until the  
25 universities getting 50 percent of the dollars or

1 whatever that I didn't want to have happen.

2 COMMITTEE MEMBER: And that's not the  
3 intent at all, although the reaction from the  
4 universities is very little of it has gone to the  
5 universities.

6 COMMITTEE MEMBER: Very little is not  
7 very little.

8 COMMITTEE MEMBER: No, I mean across the  
9 board, not just from the initiative, but just in  
10 general. It's very difficult to go to NSF with an  
11 applied project in biomass and get any money.  
12 That's just, you know, there's very little in the  
13 USDA NRI in this area. They've got one category  
14 with about 1.5 million in it or something like  
15 that for non-bio products.

16 COMMITTEE MEMBER: (inaudible) by  
17 solicitation support biomass R&D, that's what  
18 you're looking for. If you do that, then more  
19 university people will be directly involved; I  
20 would assume more (inaudible). And that that  
21 helps to do those next steps, I could be more  
22 accepting of (inaudible).

23 So, that's fine, I can understand. It's  
24 taken awhile, but, you know, -- so, --

25 COMMITTEE MEMBER: In other words, you

1 wouldn't like it if it said to provide  
2 solicitations targeted at universities' biomass  
3 R&D?

4 COMMITTEE MEMBER: No, (inaudible).

5 COMMITTEE MEMBER: I'm not sure that  
6 anybody in the university would like that --  
7 (Parties speaking simultaneously.)

8 COMMITTEE MEMBER: -- almost requires a  
9 general partnership with industry --

10 COMMITTEE CHAIRWOMAN JAFFONI: Do we  
11 have any other discussion on this? All right.  
12 All those in favor?

13 COMMITTEE MEMBER: -- leave it open to  
14 some wordsmithing may help it, as well --

15 COMMITTEE CHAIRWOMAN JAFFONI: Yeah.  
16 Anyone that's opposed?

17 Okay. Recommendation carries. And I  
18 think that's our last one.

19 Now, as we look back on Larry's  
20 recommendations, the ones, are there any there  
21 that anyone feels very strongly that need to be  
22 somehow incorporated maybe into some of these  
23 existing recommendations, or is there -- is the  
24 concern about the wordsmithing and the broadness  
25 of it, or lack of broadness something that we need

1 to wait on and refine for next year?

2 COMMITTEE MEMBER: I think (inaudible)  
3 by adding the roadmap section (inaudible) takes  
4 care of a lot. (inaudible).

5 COMMITTEE CHAIRWOMAN JAFFONI: Right.

6 COMMITTEE MEMBER: -- address this  
7 question. .

8 COMMITTEE CHAIRWOMAN JAFFONI: Good,  
9 okay.

10 COMMITTEE MEMBER: Can I ask a quick  
11 question? I'm sorry.

12 COMMITTEE MEMBER: I don't know in the  
13 roadmapping sessions if we did much on this last  
14 one with regard to international -- exchange.

15 COMMITTEE MEMBER: No.

16 COMMITTEE MEMBER: That was one that I'm  
17 not sure that I heard coming out in the roadmap.

18 COMMITTEE CHAIRWOMAN JAFFONI: It was  
19 there, but I don't think we prioritized it. There  
20 weren't that many red dots on it.

21 COMMITTEE MEMBER: The spirit of number  
22 4.

23 COMMITTEE CHAIRWOMAN JAFFONI: Right.

24 COMMITTEE MEMBER: The spirit of number  
25 4 here, developing greater collaboration and

1 partnership between states and the federal  
2 government -- concept. We don't recognize in our  
3 recommendations. I hope that we recognize it in  
4 our roadmap. I think that it is a very important  
5 element within these recommendations.

6 I think true partnership (inaudible) is  
7 a very good concept. I understand that concept  
8 beyond just states and federal government, but to  
9 include various organizations and industries and  
10 (inaudible) as we can. And more grassroots  
11 support.

12 I'm not sure with this language that I  
13 can support it as stated here, (inaudible). I  
14 like what's there.

15 COMMITTEE MEMBER: Well, (inaudible) --

16 COMMITTEE CHAIRWOMAN JAFFONI: Yeah.

17 COMMITTEE MEMBER: -- and the reason we  
18 put that language in was just to get to the last  
19 sentence, is that we don't like earmarks, and this  
20 is one way that we thought we could eliminate some  
21 of those by more cooperative partnerships.

22 COMMITTEE CHAIRWOMAN JAFFONI: The  
23 language is good, though, I agree with Jim on  
24 that. It's too bad there wasn't some way to get  
25 some of that text into the text.



1 COMMITTEE MEMBER: (inaudible) opponents  
2 state how can we address this earmark issue -- did  
3 you raise that be closer partnerships between the  
4 states (inaudible) up front, eliminate states  
5 going back and addressing (inaudible).

6 COMMITTEE CHAIRWOMAN JAFFONI: Well, can  
7 we get it into the recommendation we're making on  
8 the earmarks? Can we just take some of that  
9 language and meld the two together? We have one  
10 here.

11 COMMITTEE MEMBER: Perhaps that's a  
12 (inaudible) language appropriate --

13 COMMITTEE CHAIRWOMAN JAFFONI: Yeah,  
14 maybe we should just leave it to staff to try and  
15 kind of make sure we capture succinctly in the  
16 first sentence what we're trying to accomplish  
17 with the wording that's already here. But then  
18 maybe we could add some of the language contained  
19 in this other recommendation.

20 Who was first, Jim or Eric? I don't  
21 know. Oh, Eric.

22 COMMITTEE MEMBER: Just in the rewording  
23 I would recommend that we replace the word ethanol  
24 with biofuel.

25 COMMITTEE CHAIRWOMAN JAFFONI: Yes.

1 Everybody agree with that? Or biomass.

2 COMMITTEE MEMBER: Whatever's  
3 appropriate.

4 COMMITTEE MEMBER: Biofuels and  
5 bioproducts, bioenergy.

6 COMMITTEE CHAIRWOMAN JAFFONI: Whatever  
7 this Committee's about, all of it. Bio-all of it.

8 What about that last recommendation on  
9 international? I actually really like that one,  
10 but it's not a research recommendation, but how  
11 does the rest of the Committee feel about that?  
12 Well, it could be.

13 COMMITTEE MEMBER: Policy --

14 COMMITTEE CHAIRWOMAN JAFFONI: It's  
15 calling for more cooperation. We want to just  
16 take that and include it, as is, or how does  
17 everybody feel?

18 COMMITTEE MEMBER: Where are we --

19 COMMITTEE CHAIRWOMAN JAFFONI: On this,  
20 number 7. Increased support should be given for  
21 international peer exchange from policymakers and  
22 researchers on biomass issues. Supporting the  
23 growing global market for biomass would greatly  
24 advance U.S. efforts by facilitating exchange of  
25 complimentary cross-border policies, development

1 of joint research projects and increase  
2 understanding of the potential of biofuels and  
3 bioproducts.

4 COMMITTEE MEMBER: This doesn't suggest  
5 that we do anything like recommend the Kyoto  
6 protocol or anything like that --

7 (Laughter.)

8 COMMITTEE MEMBER: Just so long as we're  
9 not into that.

10 (Parties speaking simultaneously.)

11 COMMITTEE CHAIRWOMAN JAFFONI: I don't  
12 think so. Ralph.

13 COMMITTEE MEMBER: Question. Does the  
14 enabling legislation provide authority with  
15 respect to money?

16 COMMITTEE CHAIRWOMAN JAFFONI: Overall  
17 recommendation to Secretaries, yeah. Um-hum.

18 COMMITTEE MEMBER: (inaudible).

19 COMMITTEE CHAIRWOMAN JAFFONI: Yeah.

20 COMMITTEE MEMBER: (inaudible).

21 COMMITTEE CHAIRWOMAN JAFFONI: Right.

22 COMMITTEE MEMBER: -- if authority  
23 exists somewhere that (inaudible).

24 COMMITTEE MEMBER: Yeah, that's  
25 important.

1 COMMITTEE MEMBER: Number 3 in the  
2 overall recommendation addresses infrastructure.  
3 We all recognize that that is a very important  
4 (inaudible) a lot of time on that --

5 COMMITTEE CHAIRWOMAN JAFFONI: You  
6 talking about these?

7 COMMITTEE MEMBER: The Governor's --

8 COMMITTEE CHAIRWOMAN JAFFONI: Okay,  
9 number 3.

10 COMMITTEE MEMBER: We don't have a  
11 specific recommendation on infrastructure  
12 (inaudible) R&D --

13 COMMITTEE CHAIRWOMAN JAFFONI: Right.

14 COMMITTEE MEMBER: -- oriented  
15 Committee, but it certainly is a very important  
16 area. And I'm not sure we want to -- I wouldn't  
17 mind seeing us adopt a rewritten recommendation  
18 around infrastructure -- replace ethanol with  
19 biofuels.

20 COMMITTEE CHAIRWOMAN JAFFONI: Well, I  
21 think what we could say to make it more of a  
22 research recommendation is that we need to do some  
23 research to evaluate various infrastructure  
24 approaches to accommodate biomass products.  
25 Addressing distribution issues around biomass,

1 biofuels and bioproducts, mainly biofuels.

2 Larry. You got to get into the card  
3 thing.

4 COMMITTEE MEMBER: Oh, I'm sorry. It  
5 just may be interpreted as a step backwards. I  
6 think what we're talking here about is this is  
7 going to Congress and saying, you know, --

8 (Parties speaking simultaneously.)

9 COMMITTEE MEMBER: -- infrastructure  
10 development; we don't need to look at it; we don't  
11 need to study it. We need to do it.

12 COMMITTEE CHAIRWOMAN JAFFONI: Yeah, but  
13 what are we doing? We need to know how to do it.

14 COMMITTEE MEMBER: Yeah. I guess what I  
15 was thinking is that, you know, without the  
16 infrastructure in place where is the new capacity  
17 going to be used; where are the -- how is the  
18 product of all the research money put into this  
19 technology or enhancing the technology. How is  
20 that going to be used.

21 It seems like a natural thing that the  
22 Committee would suggest --

23 COMMITTEE CHAIRWOMAN JAFFONI: Well,  
24 infrastructure, to me, means distributing the  
25 product from where it's produced through, you

1 know, wide geographies to terminals, perhaps; from  
2 there distributing it out to individual service  
3 stations or smaller terminals. And then to  
4 individual service stations.

5 And then having units at the service  
6 stations to dispense that product into vehicles.  
7 It's not just the pumps, themselves, it's a whole  
8 array of things. And, you know, there's a -- you  
9 know, I've always been under the impression that  
10 there was no technical reason why you could not  
11 put ethanol into existing product pipelines.

12 However, I have heard the opposite, as  
13 well, saying that that is problematic, can be  
14 problematic for a variety of reasons.

15 So there's some debate around that; and,  
16 you know, perhaps there needs to be something to  
17 look at that, to resolve that issue one and for  
18 all.

19 Other comments? I think, Ralph, you  
20 were next.

21 COMMITTEE MEMBER: Just reflecting on  
22 one thing. At the workshop, and we did have a  
23 category on that wall right over there about  
24 distribution and R&D needs and, as I recall, it  
25 was product end uses, distribution --

1 COMMITTEE CHAIRWOMAN JAFFONI: Well,  
2 there was a reason for that.

3 COMMITTEE MEMBER: Well, in the --  
4 people from Chevron and so on, --

5 COMMITTEE CHAIRWOMAN JAFFONI: Yes.

6 COMMITTEE MEMBER: On the other hand,  
7 maybe that's the reason -- on the other hand I'm  
8 not sure, based on reviewing some of these  
9 analysis documents, that it's accurate to state  
10 that we know what do to, we just need the money to  
11 do it. Seems like it's not clear what to do.

12 COMMITTEE CHAIRWOMAN JAFFONI: Right.

13 COMMITTEE MEMBER: What the (inaudible).

14 COMMITTEE CHAIRWOMAN JAFFONI: Just to  
15 respond a little bit, Ralph, what we said then in  
16 that group, because of some inputs from Chevron,  
17 frankly, was that we need to look at it to decide  
18 once and for all what using the infrastructure can  
19 work, what doesn't work; and then what kind of  
20 infrastructure.

21 There were really two things. One  
22 addressing the use of existing infrastructure; but  
23 then another one that was addressing what does  
24 infrastructure look like for some future product  
25 that we don't even know, like bio-whatever.

1 But it's an important issue.

2 COMMITTEE MEMBER: Terry, in that  
3 context, I would agree. I mean I was unaware of  
4 the discussion yesterday till late last night.  
5 But if that's something that needs to be shot  
6 down, or examined, then -- do you want to modify  
7 this to look at infrastructure in the very broad  
8 sense, I think that's a good idea.

9 COMMITTEE MEMBER: I see us (inaudible)  
10 starting to add a lot of additional  
11 recommendations now (inaudible) -- wonder how much  
12 more of this (inaudible).

13 (Laughter.)

14 COMMITTEE MEMBER: There's nine of us  
15 here, and --

16 COMMITTEE CHAIRWOMAN JAFFONI: Well, no,  
17 I mean that was the question that we, you know,  
18 said originally we wanted to talk about. Ralph.

19 COMMITTEE MEMBER: Just very briefly.  
20 This stuff is covered in the existing roadmap as a  
21 research need, and I'm certain it'll be in the  
22 revised roadmap. So I'm sure that'll be covered  
23 in the solicitation. I don't know that we need to  
24 (inaudible).

25 COMMITTEE CHAIRWOMAN JAFFONI: Neil, you



1 have something to say, your card --

2 COMMITTEE MEMBER: That's true. Anyway,  
3 the suggestion again is to turn it in to R&D  
4 activity (inaudible). IF the feeling is that in  
5 the end we should do something, turn your  
6 recommendation into an R&D program that could  
7 accelerate the development of infrastructure. But  
8 once you had industry -- be able to get funding to  
9 some of -- was recommended (inaudible), then a lot  
10 of your issues will get addressed that way.

11 COMMITTEE MEMBER: Appreciating all the  
12 comments that were made, and agreeing that we're  
13 late and I don't want to do this, but I would  
14 point out R&D does include a D. It's not just  
15 research, it is development. And what's called  
16 for here is the development of infrastructure in  
17 support of an industry. And that is very much  
18 within the charge of the research and development  
19 Advisory Committee.

20 So, our charge goes beyond just  
21 research.

22 COMMITTEE CHAIRWOMAN JAFFONI: Yeah. I  
23 think, you know, we have a couple of things that  
24 we want to add here. One is up there already;  
25 it's the one on international. And the other one

1 is something around infrastructure. We're still  
2 discussing that.

3 But I think the point that -- or the  
4 question now that I'd like to get some consensus  
5 around is we're not --

6 (End tape 4B.)

7 COMMITTEE CHAIRWOMAN JAFFONI: -- we  
8 shouldn't even be discussing these if we're not  
9 going to include them. I mean, I feel that even  
10 though the deadline was there and it was clearly  
11 communicated, the fact is we have this meeting  
12 here now. And we said that we were going to let  
13 the Committee decide whether we wanted to consider  
14 any of these additional recommendations.

15 So I would like to get some -- is  
16 anybody opposed to considering these two  
17 additional recommendations. And does anybody want  
18 to stick with that original deadline?

19 Because these do seem like pretty  
20 important -- especially the infrastructure one  
21 seems like it should be taken into account even  
22 though it's after the fact.

23 But I'd like to just -- what does  
24 everybody else think?

25 COMMITTEE MEMBER: I'm the one --

1 address -- I'm fine with continuing on in  
2 addressing these. Raising the point that they are  
3 kind of -- from what we told everybody in June we  
4 were going to do --

5 COMMITTEE CHAIRWOMAN JAFFONI: Right. I  
6 think we realize that. All right, if there aren't  
7 any objections from the rest of the Committee I  
8 think we've got a recommendation up there. And if  
9 we can vote on that. And then I think what we  
10 should do is make sure really quickly, you know,  
11 this gets out in email to the rest of the  
12 Committee so the rest of the Committee also can,  
13 you know, have their input on this.

14 COMMITTEE MEMBER: Right. Their point  
15 of saying --

16 COMMITTEE CHAIRWOMAN JAFFONI: These are  
17 the new ones. Yeah. Okay, so has everybody had a  
18 chance? Ken, do you want to just read this again?

19 COMMITTEE MEMBER: Sure. Increased  
20 support should be given for international peer  
21 exchange among policymakers and researchers on  
22 biofuels and bio-based products issues.  
23 Supporting a normal market for biofuels and bio-  
24 based products would greatly advance U.S. efforts  
25 by facilitating the exchange of complimentary

1 cross-border policies, development of joint  
2 research projects and increased understanding of  
3 the potential of biofuels and bio-based products.

4 COMMITTEE CHAIRWOMAN JAFFONI: Any  
5 further discussion on this? All right, let's vote  
6 on it.

7 Everyone in favor of adopting this  
8 recommendation?

9 Any opposed?

10 Okay, this one carries.

11 COMMITTEE MEMBER: I had one question.  
12 Back in category A under recommendations regarding  
13 -- no, yeah, recommendations regarding the  
14 distribution and use of an issue of funds.

15 After editing 4, and then editing number  
16 5, bullet 1, the two ended up pretty similar. I  
17 just wanted the Committee to take a look at those  
18 and see if they're not duplicative.

19 Number 4 reads, in order to convert  
20 biomass into transportation fuels R&D should be  
21 pursued to develop liquid transportation fuels in  
22 addition to ethanol and biodiesel for multiple  
23 biomass feedstocks.

24 And number 5 reads, fund R&D to develop  
25 technologies capable of processing multiple and

1 mixed feedstocks into biofuels and bioproducts to  
2 the extent possible.

3 COMMITTEE MEMBER: Yeah, R&D in the  
4 first one, Ken, would be -- is the addition to  
5 ethanol and biofuels --

6 COMMITTEE MEMBER: Okay. All right.

7 COMMITTEE CHAIRWOMAN JAFFONI: -- like  
8 the wording on that one, though.

9 COMMITTEE MEMBER: I don't -- yeah, I  
10 was thinking we just start that one with R&D --

11 COMMITTEE CHAIRWOMAN JAFFONI: Yeah, R&D  
12 should be pursued to develop liquid transportation  
13 fuels in addition to ethanol and biodiesel.

14 Yeah, you may lose a multiple; I think  
15 they want to capture multiple biomass feedstocks.

16 R&D should be pursued to develop liquid  
17 transportation fuels from multiple biomass  
18 feedstocks in addition to ethanol and biodiesel.  
19 Does that sound better? No.

20 (Laughter.)

21 COMMITTEE CHAIRWOMAN JAFFONI: Okay,  
22 never mind.

23 COMMITTEE MEMBER: Just take out  
24 multiple, just make it from --

25 (Telephone interruption.)

1 COMMITTEE CHAIRWOMAN JAFFONI: Yeah.

2 Scott, are you okay with that?

3 COMMITTEE MEMBER: Yes.

4 COMMITTEE CHAIRWOMAN JAFFONI: He's worn  
5 down.

6 (Laughter.)

7 COMMITTEE MEMBER: You're not going to  
8 get a lot of argument out of anyone at this point.

9 COMMITTEE MEMBER: That's right.

10 (Parties speaking simultaneously.)

11 COMMITTEE MEMBER: Question. You were  
12 talking about what on infrastructure. I never  
13 typed that up. Did you want to have that or not?

14 COMMITTEE MEMBER: Well, can I go back?

15 COMMITTEE CHAIRWOMAN JAFFONI: Yes.

16 COMMITTEE MEMBER: That still doesn't  
17 read right. Something wrong there at the end of  
18 that.

19 COMMITTEE MEMBER: How about putting  
20 from biomass after liquid transportation fuels?

21 COMMITTEE MEMBER: Yeah.

22 COMMITTEE CHAIRWOMAN JAFFONI: Yeah,  
23 perfect.

24 COMMITTEE MEMBER: Okay.

25 COMMITTEE CHAIRWOMAN JAFFONI: Is that

1 good?

2 COMMITTEE MEMBER: Yes.

3 COMMITTEE CHAIRWOMAN JAFFONI: Okay. So  
4 we're all okay, we're not going to re -- this one.  
5 Okay.

6 We just need one on infrastructure. And  
7 I think what we were saying before is that  
8 additional, or research needs to -- R&D needs to  
9 happen on infrastructure. I don't know how you  
10 want to word that.

11 How did we say it before? Scott.

12 COMMITTEE MEMBER: I should go back  
13 here. Don't we have something on infrastructure  
14 already? It doesn't use the word infrastructure,  
15 but it doesn't use the word logistics and  
16 handling.

17 COMMITTEE MEMBER: We've got this one,  
18 to (inaudible) support R&D capable of handling and  
19 converting. And it goes into harvesting,  
20 handling, transporting, preparing and storing  
21 feedstocks.

22 COMMITTEE MEMBER: Okay, (inaudible).  
23 Yeah, it does say that.

24 COMMITTEE CHAIRWOMAN JAFFONI: Yeah, but  
25 that's on feedstocks, though. We're talking

1 about --

2 (Parties speaking simultaneously.)

3 COMMITTEE MEMBER: Research that  
4 endeavors to provide technologies which can be  
5 practiced on a local basis, and first geographies  
6 utilizing readily available feedstocks in order to  
7 reduce the concentration of plant divisions in an  
8 area, reduce the transportation requirements for  
9 inbound feedstocks and outbound finished products;  
10 and provide the economic benefits of resulting  
11 jobs through locations.

12 COMMITTEE CHAIRWOMAN JAFFONI: Neil.

13 COMMITTEE MEMBER: The only reason I  
14 bring this up is because the recommendation you're  
15 talking about are a part of the condition -- and I  
16 think you really need something that is a general  
17 recommendation covering the Departments outside of  
18 conditioned funds.

19 I know it's a moot point, but I mean it  
20 really comes down to how much money could be  
21 available.

22 COMMITTEE MEMBER: Would you like to  
23 discuss going after DOD money and making this a  
24 Homeland Security issue, as well?

25 COMMITTEE MEMBER: No. Basically what



1 I'm talking about is if we are successful with the  
2 -- plan, over the biofuels initiative, the  
3 recommendation to the Secretary on infrastructure  
4 R&D will have to be handled using that condition,  
5 and that's opposed to what is currently required  
6 or mandated by the four categories of the R&D  
7 (inaudible). That's what I mean.

8 COMMITTEE CHAIRWOMAN JAFFONI: Do you  
9 know, we had trouble with this one -- no, not this  
10 one. The one that you had up there just before,  
11 Ken. The research should endeavor to provide  
12 technologies --

13 COMMITTEE MEMBER: Okay.

14 COMMITTEE CHAIRWOMAN JAFFONI: That one.  
15 We had trouble with this one before with the  
16 wording, and we kind of made a note that we were  
17 going to work on wordsmithing this.

18 The thing that I don't like about this  
19 one is that it seems to cram in an awful lot of  
20 stuff into one recommendation. And I mean I  
21 personally would like to see one recommendation  
22 that simply focuses on the need for R&D to develop  
23 infrastructure. Either to use existing  
24 infrastructure or to develop new infrastructure as  
25 needed.

1 COMMITTEE MEMBER: Product  
2 distribution --

3 COMMITTEE CHAIRWOMAN JAFFONI: For  
4 finished product distribution.

5 COMMITTEE MEMBER: How about something  
6 along the lines of -- I'm sorry.

7 COMMITTEE CHAIRWOMAN JAFFONI: Larry.

8 COMMITTEE MEMBER: -- something along  
9 the lines of study of the way -- study existing  
10 infrastructures to see ways in which it can be  
11 modified or improved to facilitate the  
12 transportation and there's another word after  
13 that --

14 COMMITTEE CHAIRWOMAN JAFFONI:  
15 Distribution.

16 COMMITTEE MEMBER: -- transportation and  
17 distribution of bio-based fuels.

18 COMMITTEE CHAIRWOMAN JAFFONI: That's  
19 great.

20 COMMITTEE MEMBER: We talked about  
21 putting this into the -- section --

22 COMMITTEE MEMBER: Right.

23 COMMITTEE CHAIRWOMAN JAFFONI: Right.  
24 Ralph, then Scott.

25 COMMITTEE MEMBER: I think that would be

1 even better if it limited to biofuels.

2 COMMITTEE MEMBER: Workshop  
3 distribution, products of biomass in general, be  
4 they energy, electricity or other products than  
5 fuel came up.

6 COMMITTEE CHAIRWOMAN JAFFONI: Yeah,  
7 yeah.

8 COMMITTEE MEMBER: But that was my first  
9 choice, but I edited myself to get to where I am.  
10 Bio-based fuels, products and energy.

11 COMMITTEE CHAIRWOMAN JAFFONI: That's  
12 good. All right.

13 (Parties speaking simultaneously.)

14 COMMITTEE CHAIRWOMAN JAFFONI: Well, and  
15 the question is does this Committee just want to  
16 see a paper study; does it want to also see a  
17 demonstration or some type of -- scale work, or  
18 what.

19 COMMITTEE MEMBER: This is a first step.

20 COMMITTEE CHAIRWOMAN JAFFONI: Jim.

21 COMMITTEE MEMBER: I'd go back to  
22 Larry's point that another paper study made. The  
23 improvements that need to come more rapidly. I  
24 would like, if possible, to reference the  
25 Governor's ethanol coalition and just say that if

1 any supports the Governor's ethanol coalition  
2 recommendation for improvement of existing  
3 infrastructure and we further recommend this study  
4 on methods by which it may be better utilized,  
5 better improved.

6 Are we allowed to reference other groups  
7 like that, show our support?

8 COMMITTEE MEMBER: We can do that, yes.

9 COMMITTEE MEMBER: Could I (inaudible).

10 COMMITTEE MEMBER: Yeah, yeah.

11 COMMITTEE CHAIRWOMAN JAFFONI: Scott, I  
12 think you had your card up.

13 COMMITTEE MEMBER: Thank you. Bill just  
14 said what I was thinking. Very specific to  
15 ethanol. And the reason we're having so much  
16 trouble here is because we're trying to morph the  
17 fact that ethanol doesn't go easily in the  
18 pipeline into something much broader than the  
19 intended, I think. It's written, so --

20 COMMITTEE CHAIRWOMAN JAFFONI: I think  
21 we're trying to broaden it.

22 COMMITTEE MEMBER: Yeah, which it -- you  
23 know, it's a worthy cause. What should be done,  
24 that's -- but, yeah, I don't know that I would --  
25 this Governor's ethanol coalition is very

1 specific. Don't know that I could support that.

2 COMMITTEE CHAIRWOMAN JAFFONI: Yeah.

3 Well, if we reference the Governor's ethanol  
4 coalition recommendation we'd have to take that  
5 recommendation verbatim, rather than a modified  
6 one. That's the difficulty there. You have to  
7 take it -- that's an all-specific recommendation,  
8 because that's what came out of there.

9 Ralph, I believe you were next.

10 COMMITTEE MEMBER: I'd just like to  
11 point out to the Committee that we are closer to  
12 meeting the biofuels rules than we are to meeting  
13 the bioenergy rules. And a very-often-heard issue  
14 is (inaudible) getting the power onto the grid.

15 So I really think that's a good idea to  
16 talk about how we distribute the products. And  
17 whether we need demonstrations or policy, I'm not  
18 sure. I'm sure we -- some study.

19 COMMITTEE CHAIRWOMAN JAFFONI: There has  
20 been a change up there that can make study and  
21 test to see infrastructure, to identify methods  
22 which can be modified or -- transport, distribute  
23 biobased fuels products and so it's broadened; and  
24 it's also broadened to not only a paper study, but  
25 testing, as well.

1 Larry.

2 COMMITTEE MEMBER: (inaudible) I  
3 appreciate Jim's suggestion that it probably  
4 wouldn't be appropriate, and just may get confused  
5 with new recommendations of the Governor's  
6 (inaudible) Congress, the Administration. And,  
7 frankly, they're very more interested in just  
8 getting an appropriation for this work right now  
9 without other studies.

10 But a broader study, I think, makes  
11 sense as a recommendation from this Committee.

12 COMMITTEE CHAIRWOMAN JAFFONI: Such as  
13 what we have --

14 COMMITTEE MEMBER: Exactly, yeah.

15 COMMITTEE CHAIRWOMAN JAFFONI: All  
16 right. Any other comments on this or can we vote  
17 on it? Vote on it.

18 All those in favor of adopting that  
19 recommendation raise your hand.

20 Anyone opposed?

21 Okay, it carries.

22 I think that's it.

23 COMMITTEE MEMBER: That should be marked  
24 as (inaudible).

25 COMMITTEE CHAIRWOMAN JAFFONI: Yeah.

1 And, Ken, you'll get those out to --

2 COMMITTEE MEMBER: Yeah.

3 COMMITTEE CHAIRWOMAN JAFFONI: -- to  
4 everyone, including members that aren't here. And  
5 specifically to them, just have them give their  
6 approval and note that those two are new.

7 COMMITTEE MEMBER: Okay. And we'll go  
8 through it if there's any more wordsmithing to do.

9 COMMITTEE MEMBER: On that point, just  
10 (inaudible).

11 COMMITTEE CHAIRWOMAN JAFFONI: We have  
12 one more agenda item, and that is discussion of  
13 2007 meeting dates.

14 COMMITTEE MEMBER: (inaudible)

15 COMMITTEE CHAIRWOMAN JAFFONI: So,  
16 maybe -- Harriet just suggested that we do that  
17 over email, and I don't care, because I won't be  
18 here.

19 (Laughter.)

20 (Parties speaking simultaneously.)

21 COMMITTEE CHAIRWOMAN JAFFONI: Have fun.

22 COMMITTEE MEMBER: Seriously, that's a  
23 good idea because we have --

24 COMMITTEE MEMBER: Yeah.

25 COMMITTEE MEMBER: -- the eight of us or

1 so and only about half of us here --

2 COMMITTEE CHAIRWOMAN JAFFONI: Okay, for  
3 whatever it's worth, I really enjoyed the six  
4 years that I spent working with this group. The  
5 faces have changed, but it's been fun. And a  
6 privilege and a pleasure, so thank you, everybody.

7 COMMITTEE MEMBER: Is this your last  
8 meeting?

9 COMMITTEE CHAIRWOMAN JAFFONI: No, I  
10 will be here in November, and that's it. Or, not  
11 here, I'll be in Washington.

12 COMMITTEE MEMBER: -- be in Washington.

13 COMMITTEE CHAIRWOMAN JAFFONI: Right,  
14 actually that's better.

15 All right, do I hear a motion we adjourn  
16 the meeting?

17 COMMITTEE MEMBER: Yes.

18 COMMITTEE CHAIRWOMAN JAFFONI: Second?

19 COMMITTEE MEMBER: Second.

20 COMMITTEE CHAIRWOMAN JAFFONI: Thank  
21 you. Meeting adjourned.

22 (Whereupon the Public Meeting was  
23 adjourned.)

24 --o0o--

25



CERTIFICATE OF TRANSCRIBER

I certify that the foregoing is a correct transcript, to the best of my ability, from the electronic sound recording of the proceedings in the above-entitled matter.

Margo Hunt

September 20, 2006

## **Attachment F**



# California Bioenergy Action Plan

***Biomass R&D Technical Advisory Committee  
Sacramento, California  
August 10, 2006***

***Susan J. Brown  
Senior Policy Analyst  
California Energy Commission***



# Strategic Value of Bioenergy

- **California has large, diverse and untapped biomass resources which can support greater use in electric power, fuels and chemicals.**
- **Biomass is an energy resource capable of achieving state petroleum reduction, climate change, renewable energy and environmental goals.**
- **Use of biomass for energy production can address California's waste disposal and environmental problems, while creating local jobs.**
- **Other public benefits include improving forest health and human and animal health, while avoiding catastrophic wildfires.**



# Bioenergy Interagency Working Group

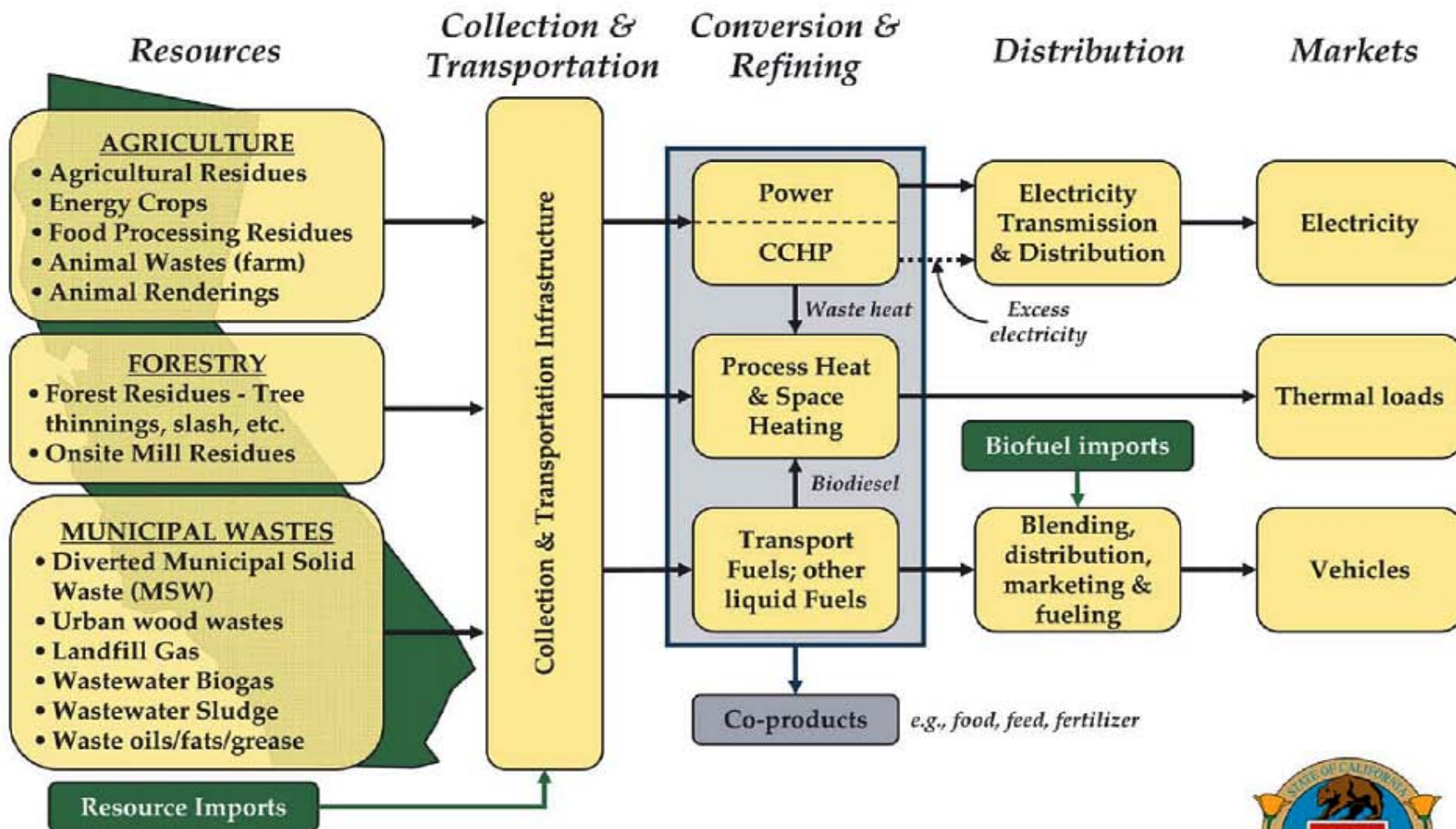
- **August 2005: Governor Schwarzenegger directed the Bioenergy Interagency Working Group to develop a comprehensive state policy for bioenergy**
  
- **Member agencies include:**
  - **Air Resources Board**
  - **California Energy Commission**
  - **California Environmental Protection Agency**
  - **California Resources Agency**
  - **Department of Food and Agriculture**
  - **Department of Forestry and Fire Protection**
  - **Department of General Services**
  - **Integrated Waste Management Board**
  - **Public Utilities Commission**
  - **State Water Resources Control Board**



# Working Group Policy Objectives

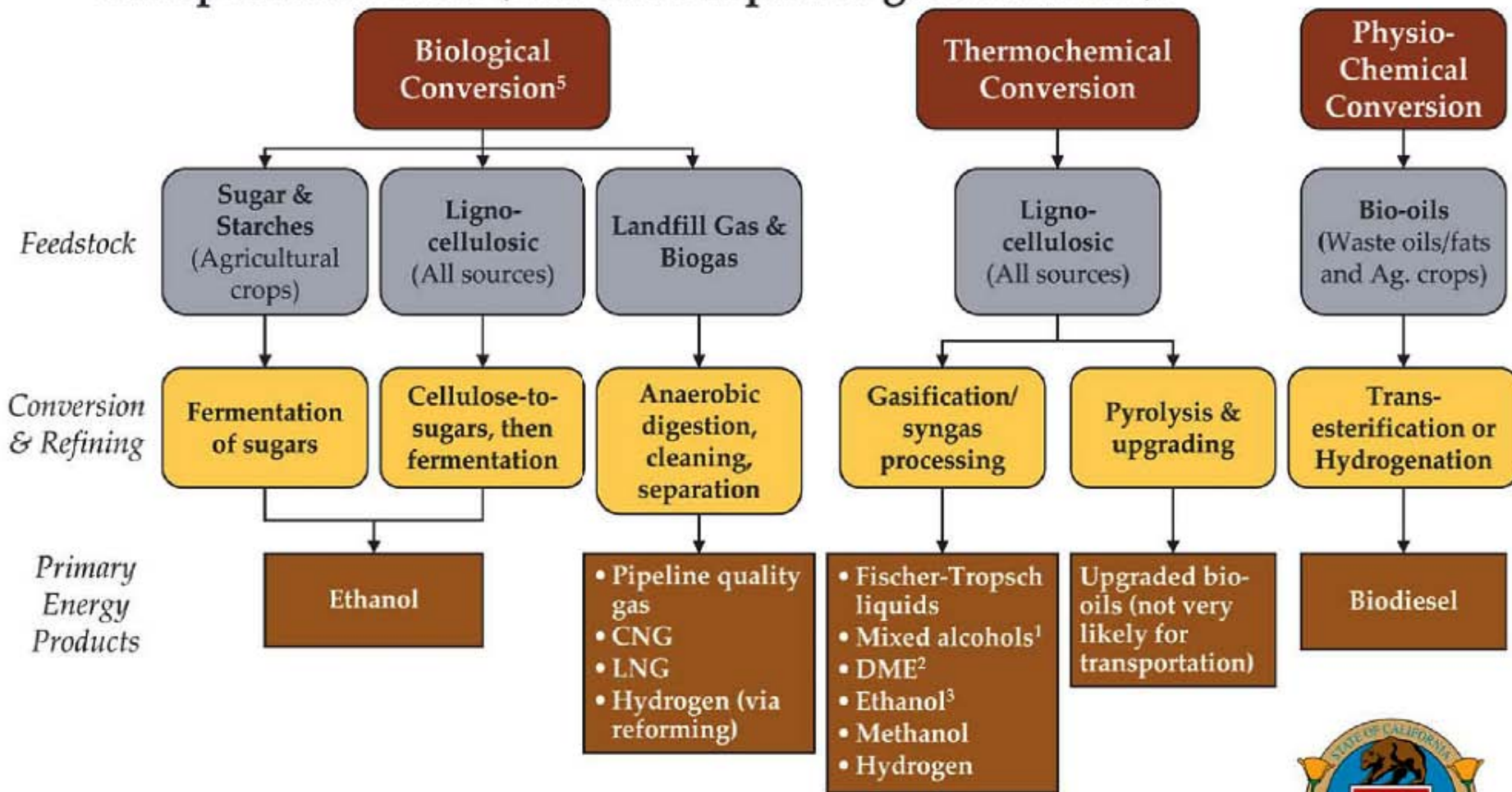
- **Maximize the contributions of bioenergy toward achieving the state's petroleum reduction, climate change, renewable energy, and environmental goals.**
- **Establish California as a market leader in technology innovation, sustainable biomass development, and market development for bio-based products.**
- **Coordinate research, development, demonstration, and commercialization efforts across federal and state agencies.**
- **Align existing regulatory requirements to encourage production and use of California's biomass resources.**
- **Facilitate market entry for new applications of bioenergy including electricity, biogas, and biofuels.**

The focus of this analysis was on power and fuels.





Using the four major feedstocks there are multiple pathways to create transportation fuels (and other liquid & gaseous fuels).







# Objective of the Bioenergy Plan – Turning Policy into Action

The Action Plan is designed to translate overarching policy objectives into specific actions for bioenergy.

Overarching State Policy Objectives*	Objectives for Bioenergy Plan	Supporting Actions
<ol style="list-style-type: none"><li>1. Reduce year 2010 CA emissions of GHG to 2000 levels</li><li>2. Achieve maximum feasible reduction of GHGs from autos</li><li>3. Increase use of non-petroleum based transportation fuels to 20% by 2020, 30% by 2030</li><li>4. Generate 20% of electricity from renewable resources by 2010, 33% by 2020</li></ol>	<ol style="list-style-type: none"><li>1. Create a positive environment for bioenergy; establish biopower and biofuels targets</li><li>2. Position CA as a leader in developing &amp; deploying effective new technologies</li><li>3. Remove existing regulatory and market barriers; recognize full value of bioenergy</li><li>4. Promote public awareness</li></ol>	<ul style="list-style-type: none"><li>• Administrative</li><li>• Legislative</li><li>• Regulatory</li></ul>



# Bioenergy Plan Elements » Challenges and Impediments

Despite the benefits, bioenergy must overcome a range of challenges and impediments to further development.

Policy/Regulatory	Market	Technical
<ul style="list-style-type: none"><li>• Fragmented state-level policies that do not recognize the full benefits of bioenergy</li><li>• Non-optimal state and federal financial incentives</li><li>• Complex and time-consuming permitting process</li><li>• Environmental justice concerns</li></ul>	<ul style="list-style-type: none"><li>• Cost of harvesting, collecting and delivering feedstock</li><li>• Capital market issues (risk vs. return)</li><li>• New distribution and end use infrastructure for certain biofuels</li><li>• Need for better public perception</li><li>• Need for cross-industry collaboration</li></ul>	<ul style="list-style-type: none"><li>• Cost competitiveness of existing technology (including impacts of incentives)</li><li>• Need to commercialize new technology</li><li>• Inconsistent feedstock quality</li></ul>



# Bioenergy Plan Status

- **March 2006: Bioenergy Working Group delivered its Recommendations for a Bioenergy Plan for California to the Governor.**
- **April 25, 2006: Governor Schwarzenegger issued Executive Order S-06-06 on Biomass.**
- **July 2006: Governor released the Bioenergy Action Plan for California, committing state agencies to a series of actions and timelines to carry out the Executive Order.**
- **June 2007: Energy Commission deadline for the Alternative Fuels Plan required by Assembly Bill 1007.**



# Gov. Schwarzenegger's Executive Order S-06-06

- **Establishes targets to increase in-state production and use of bioenergy, including ethanol and bio-diesel fuels made from renewable resources:**
  - **For biofuels, the state shall produce a minimum of 20 percent of its biofuels within California by 2010, 40 percent by 2020, and 75 percent by 2050.**
  - **For biomass for electricity, the state meet a 20 percent target within the established state goals for renewable generation for 2010 and 2020.**



# Executive Order S-06-06

(continued)

- **Directs the Energy Commission to coordinate work among state agencies to promote the use of biomass resources, including:**
  - **Continue the work of the Bioenergy Interagency Working Group, chaired by the Energy Commission**
  - **Identify and secure federal and state funding for research, development and demonstration projects to advance the use of biomass resources for electricity generation and biofuels for transportation**
  - **Complete a comprehensive “road map” to guide future RD&D through the California Biomass Collaborative.**



# Additional information

**The Energy Commission's web site has extensive information on the ongoing bioenergy work in California at:**

**[http://www.energy.ca.gov/bioenergy\\_action\\_plan](http://www.energy.ca.gov/bioenergy_action_plan)**

## **Attachment G**

# California Biomass Roadmap

**Collaborative Planning for a Sustainable Future**

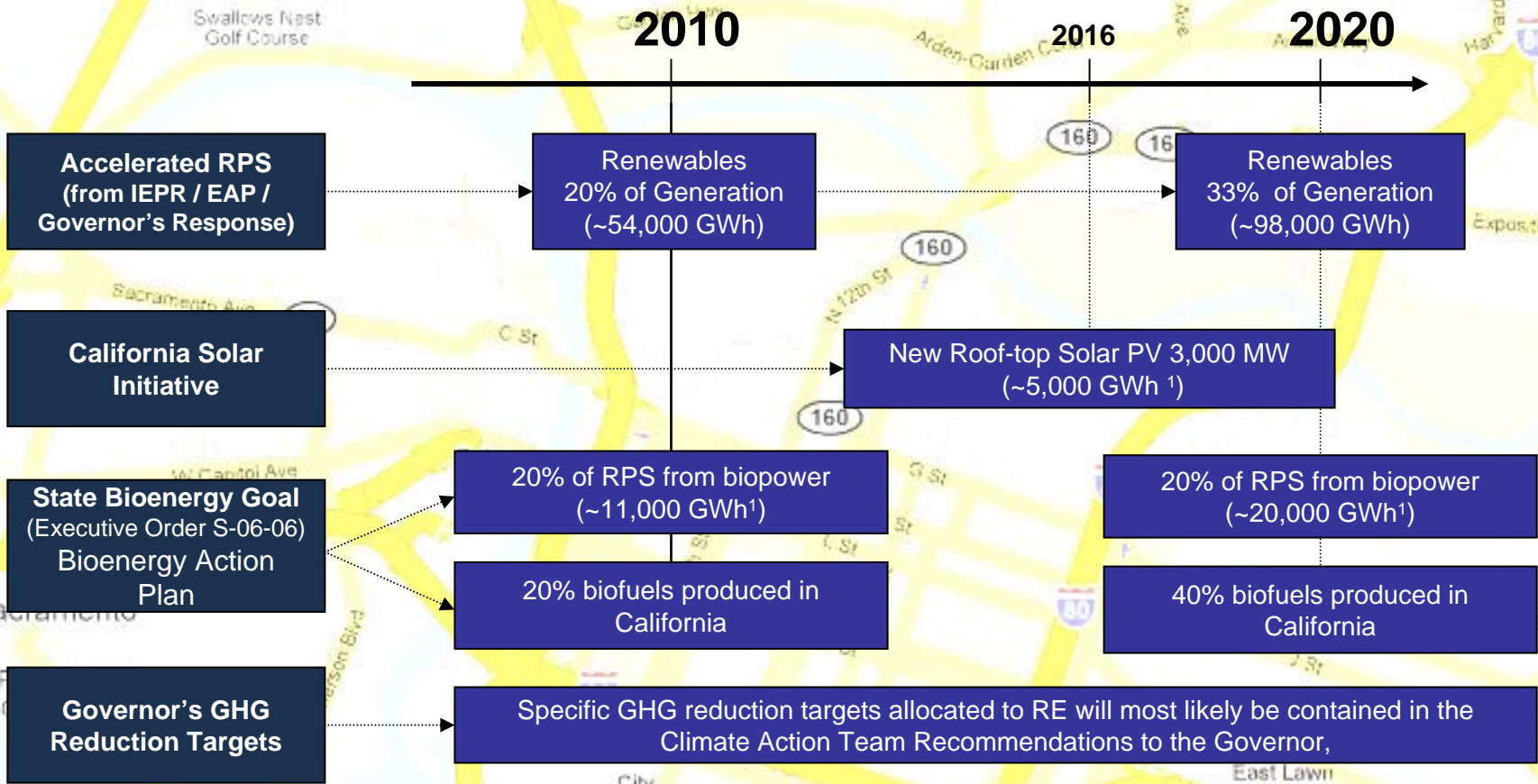
**Public Meeting of the  
U.S. Biomass R&D Technical Advisory Committee  
August 10, 2006  
California Energy Commission**

You are here





# This Roadmap Supports Key State Policy Goals



1. Assumed capacity factors are 20% for residential and commercial solar PV and 90% for biopower.  
 Note: The roadmap also considered detailed policy guidance as stated in the IEPR.



# AB 1007

- **AB 1007 Process:** State plan to increase the use of alternative transportation fuels—Alternative Fuels Plan
  - Energy Commission with other agencies preparing plan to reduce petroleum use
  - Plan does not pick technology “winners” and “losers.” Instead, “provides a comprehensive framework for the state to ensure that all fuel and technology options are given an opportunity to compete in the California transportation market.”
- **Scope:**
  - Evaluate fuels on full fuel-cycle assessment of emissions
  - Set goals for 2012, 2017, 2022 for increased use of alternative fuels
  - Recommend policies to ensure alternative fuel goals are attained, including:
    - Fuel and vehicle standards
    - Requirements and incentives to ensure vehicles use alternative fuels
    - Requirements and incentives to ensure fueling stations are available
    - Incentives and other encouragement for RDD&D of alternative fuel-capable vehicles
- AB 1007 allows until 30 June 2007 for completion of plan, Commission intends to have plan complete by January 2007

# This Roadmap Supports Public Interest Energy Research (PIER) Vision

## California Energy Context

*California provides clean, affordable, reliable and resilient sources of energy where consumers have choices that meet their needs, businesses prosper, and the state's beauty and environmental integrity are preserved.*

### PIER Mission Statement

*The Public Interest Energy Research program provides advanced energy innovation<sup>1</sup> for a sustainable<sup>2</sup> energy future in California*

### PIER Vision Statement

*Sustainable energy choices<sup>3</sup> for California*

### PIER Values

#### Legislative Mandate

- Improves the quality of life of Californians by providing environmentally sound, safe, reliable, and affordable energy services and products
- Undertakes public interest energy RD&D projects that are not adequately provided for by competitive and regulated energy markets
- Advances energy science & technology of value to Californians

#### Processes

- Informs and responds to state policy
- Provides environmental stewardship and natural resource conservation
- Responds to energy problems important to Californians
- Anticipates energy issues that California will face
- Provides leadership to develop affordable, innovative and useful solutions
- Maintains integrity, objectivity and trust as California's gateway for new energy technologies
- Strives towards excellence in solutions, management and administrative processes
- Attracts, retains and motivates the most talented staff
- Balances a portfolio of incremental, breakthrough and radical innovations

#### Stakeholder Collaboration

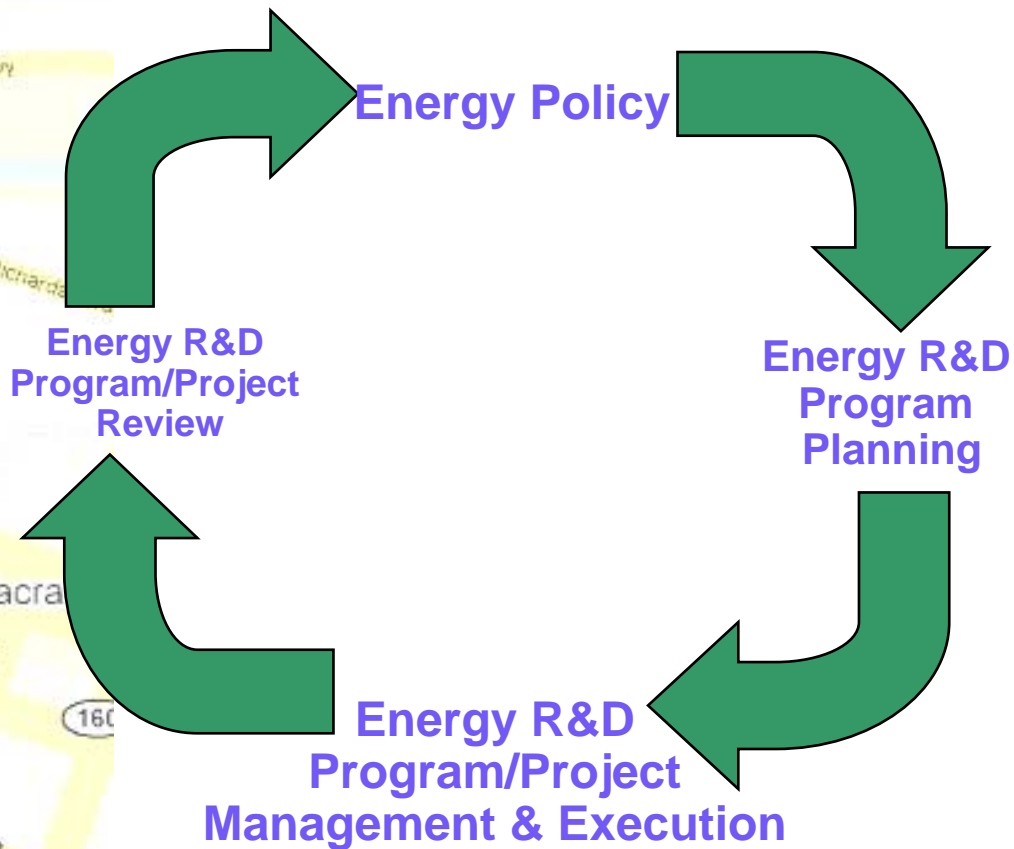
- Works with stakeholders to plan research and transfer technology
- Maximizes resources through valuable partnerships
- Funds the best and brightest researchers

<sup>1</sup>Innovation includes hardware, software, systems, exploratory concepts, supporting knowledge and a balanced portfolio of near-mid-long term energy options

<sup>2</sup>Sustainable defined as California and global resources affordable, reliable, clean and available for future generations

<sup>3</sup>Choices for utilities, state and local government, and large and small consumers

# The PIER Energy Policy – Energy R&D Cycle Begin with the End in Mind



- PIER R&D is always carried out within the context of CA Energy policy and addresses needs not met by the private sector
- PIER R&D aims to provide advanced technology that improves the lives of Californians, which means that PIER must interact with the marketplace
- PIER R&D planning, management, and evaluation is designed and carried out with the intent of
  - Meeting policy goals, or revising policy goals
  - Engaging with users and manufacturers throughout the R&D process
- PIER R&D addresses critical technical, market, and policy risks.



# California Biomass Roadmap

## Vision

***Sustainable biomass resources energize a healthy and prosperous California through the environmentally beneficial production and use of renewable energy, biofuels, and bioproducts.***

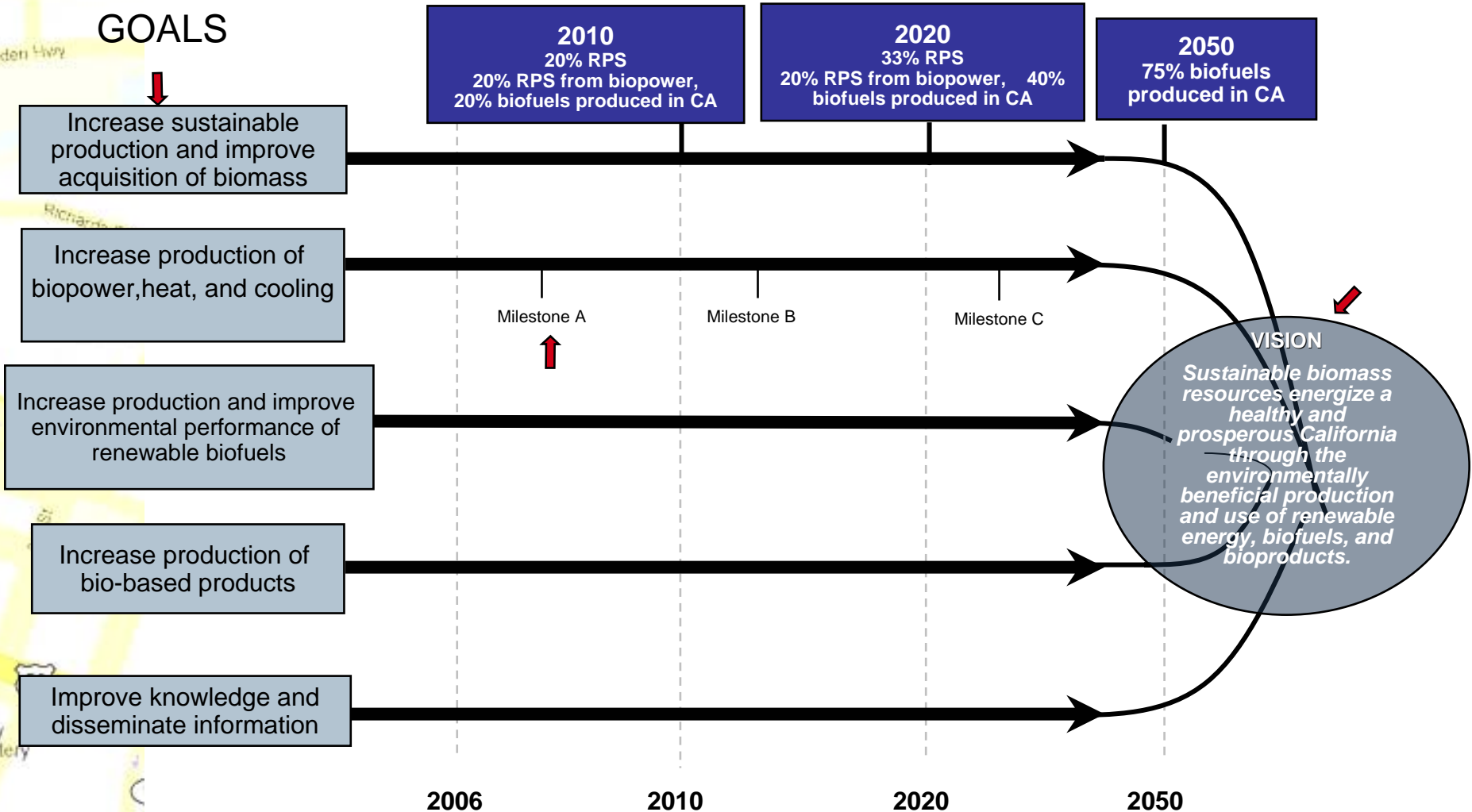


# Goals

1. Increase sustainable production and improve acquisition of biomass
2. Increase production of biopower, heat, and cooling
3. Increase production and improve environmental performance of renewable biofuels
4. Increase production of bio-based products
5. Improve knowledge and disseminate information

# Roadmap Overview

The Roadmap contains five goals with timeliness and milestones.

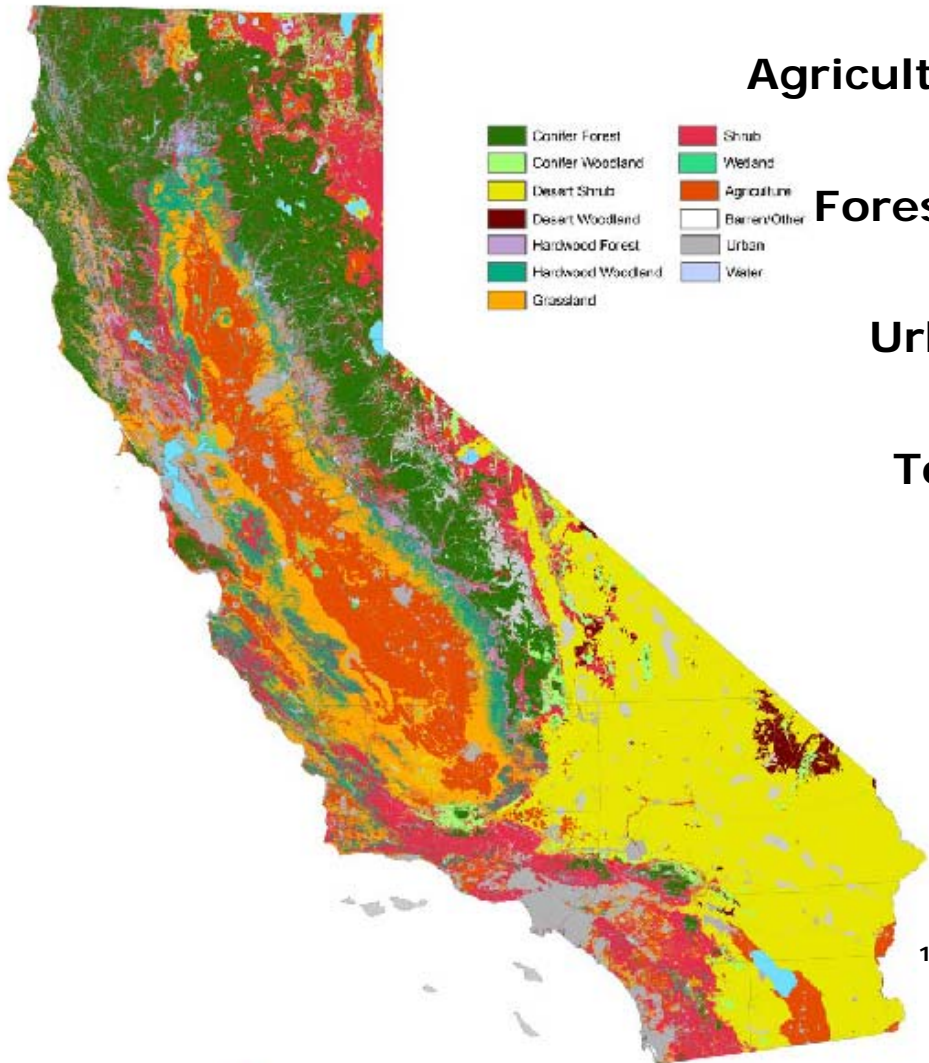




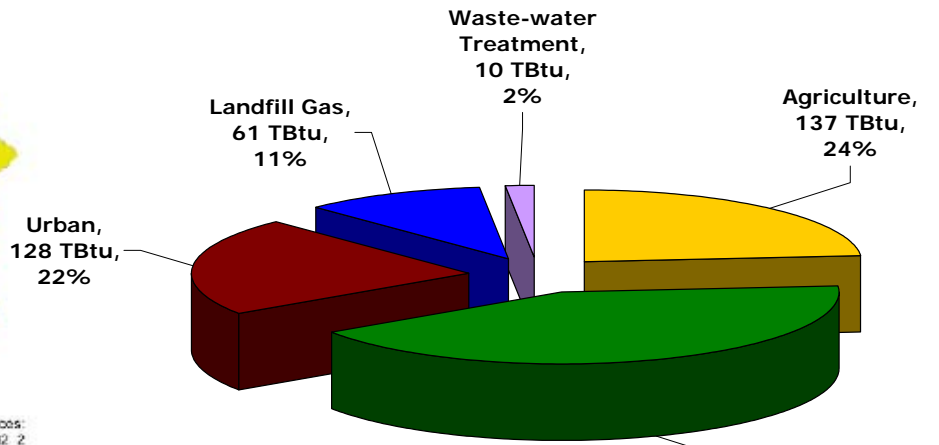
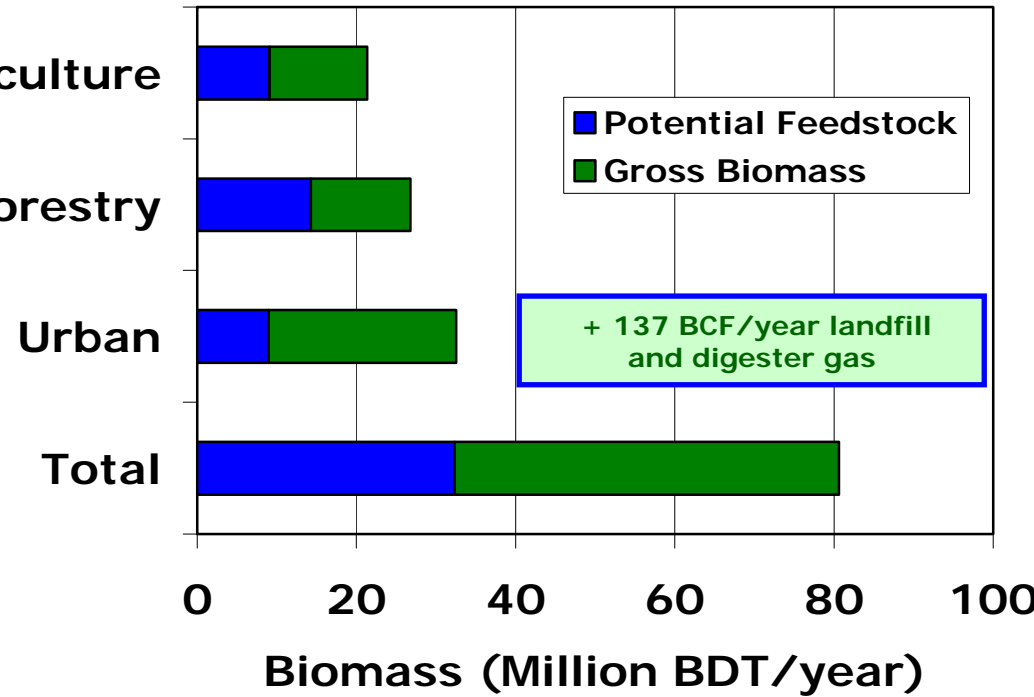
# Resource Base







- Agriculture**
- Conifer Forest
  - Conifer Woodland
  - Desert Shrub
  - Desert Woodland
  - Hardwood Forest
  - Hardwood Woodland
  - Grassland
  - Shrub
  - Wetland
  - Agriculture
  - Barren/Other
  - Urban
  - Water



**Potential Feedstock Energy in Biomass**  
**507 Trillion Btu/year**

FRAP pier February 17, 2005 Data Sources: FRAP Multi-Source Land Cover Data, v32\_2

# California Biomass Resources



# Total Categorical Bioenergy Potentials in California

Category	Biomass (Million BDT/year)	Energy in Product (Trillion Btu/year)	Total Capacity
Electricity	32	118 (35 TWh)	4,650 MWe
CHP Heat		230	9,050 MWt
Heat	32	350	11,700 MWt
Biochemical Biofuel	32	188	2.3 BGY ethanol equivalent
Thermochemical Biofuel	27	250	1.7 BGY diesel equivalent
Biomethane	5 + Landfill gas and WWTP	106	106 BCF/y methane
Hydrogen (bio + thermal)	32	305	2.5 Million tons/y

Current California consumption:

16 billion gallons gasoline + 4 billion gallons diesel = 2,500 Trillion Btu/y direct energy content

300 TWh/y electrical energy = 1,024 Trillion Btu/y direct energy

# Estimated Impacts of 1.5 Billion Tons of Biomass through 2050

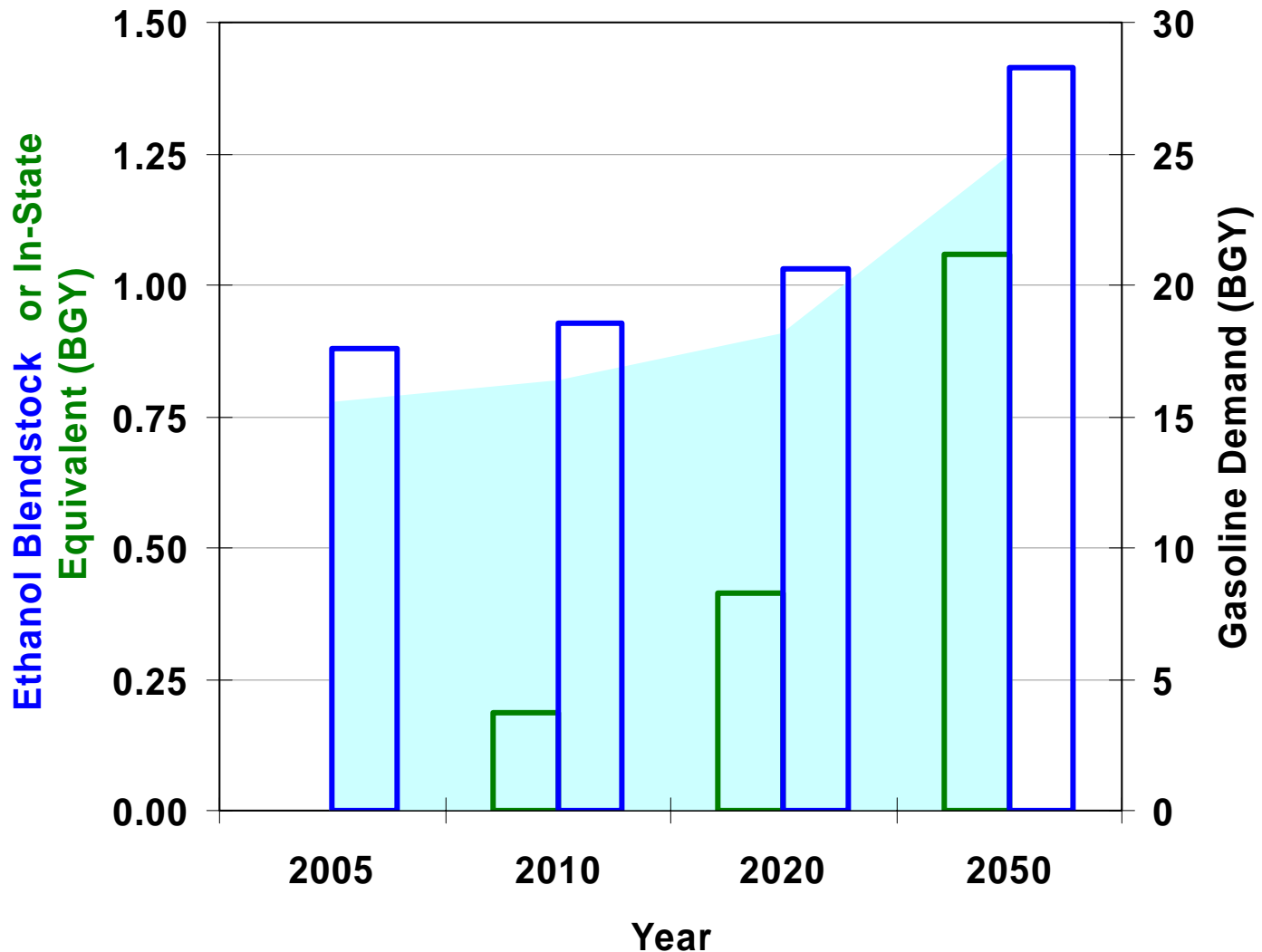
- \$40 Billion Feedstock Acquisition Cost
- \$20 Billion Investment in Conversion Plant (equal investment in feedstock/product infrastructure)
- 16,000 Annual Primary Jobs
- \$175 Billion Cost of Energy Generation
- \$300 Billion Retail Energy Value
- 1 Billion Tons CO<sub>2</sub> displacement
- \$33 Billion carbon credit value (\$120/ton C)
- Savings in fire suppression, medical costs, waste disposal

*All monetary values in 2006 constant dollars*

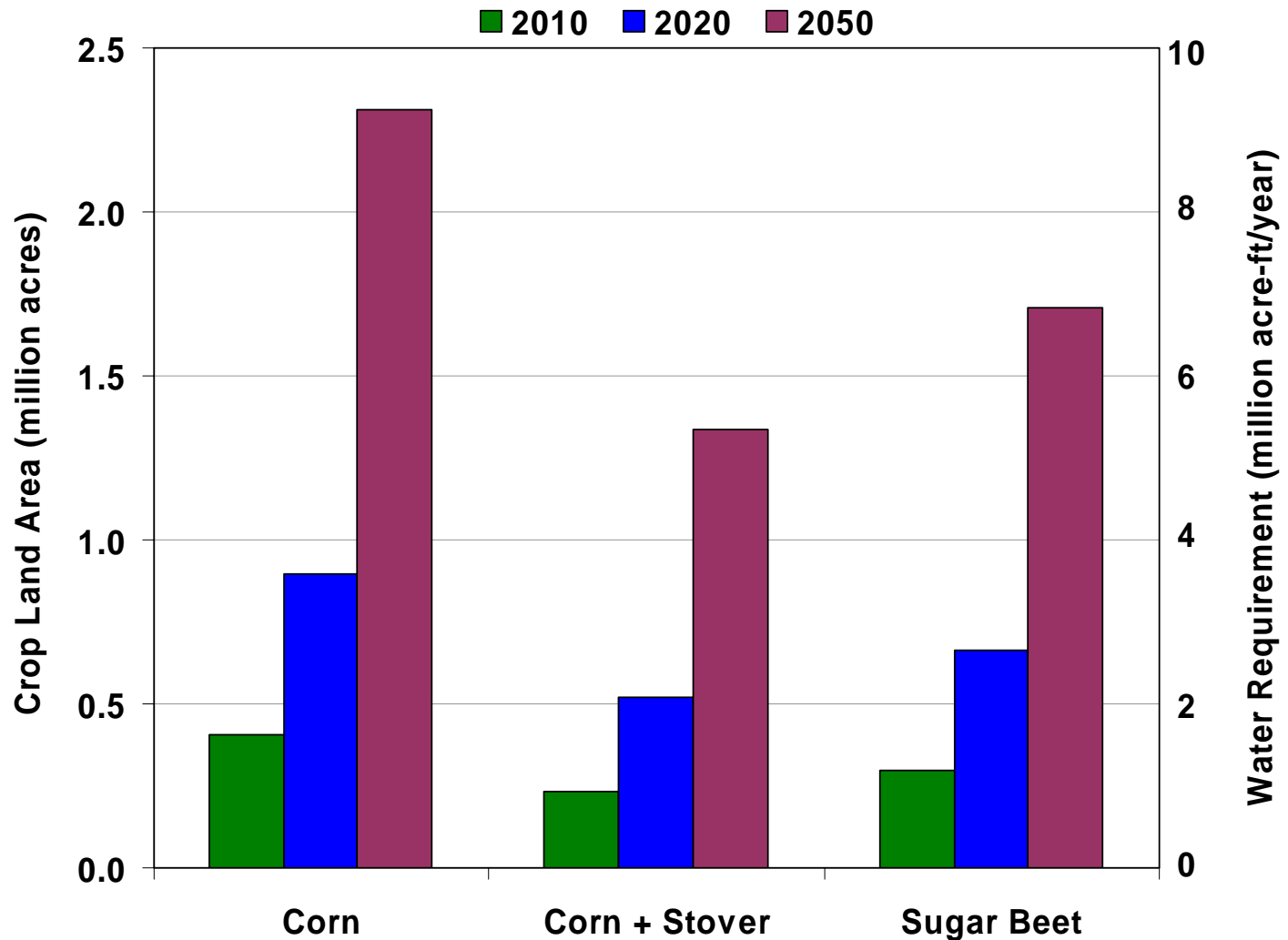
# DEVELOPMENT SCENARIO



# Biofuel Requirements to Meet Targets for 5.7% ethanol blend equivalent (E5.7) under high gasoline demand case



# Crop area and water requirements— targets with E5.7 and high gasoline demand case



# Gasoline replacement with E85

- California high demand case:

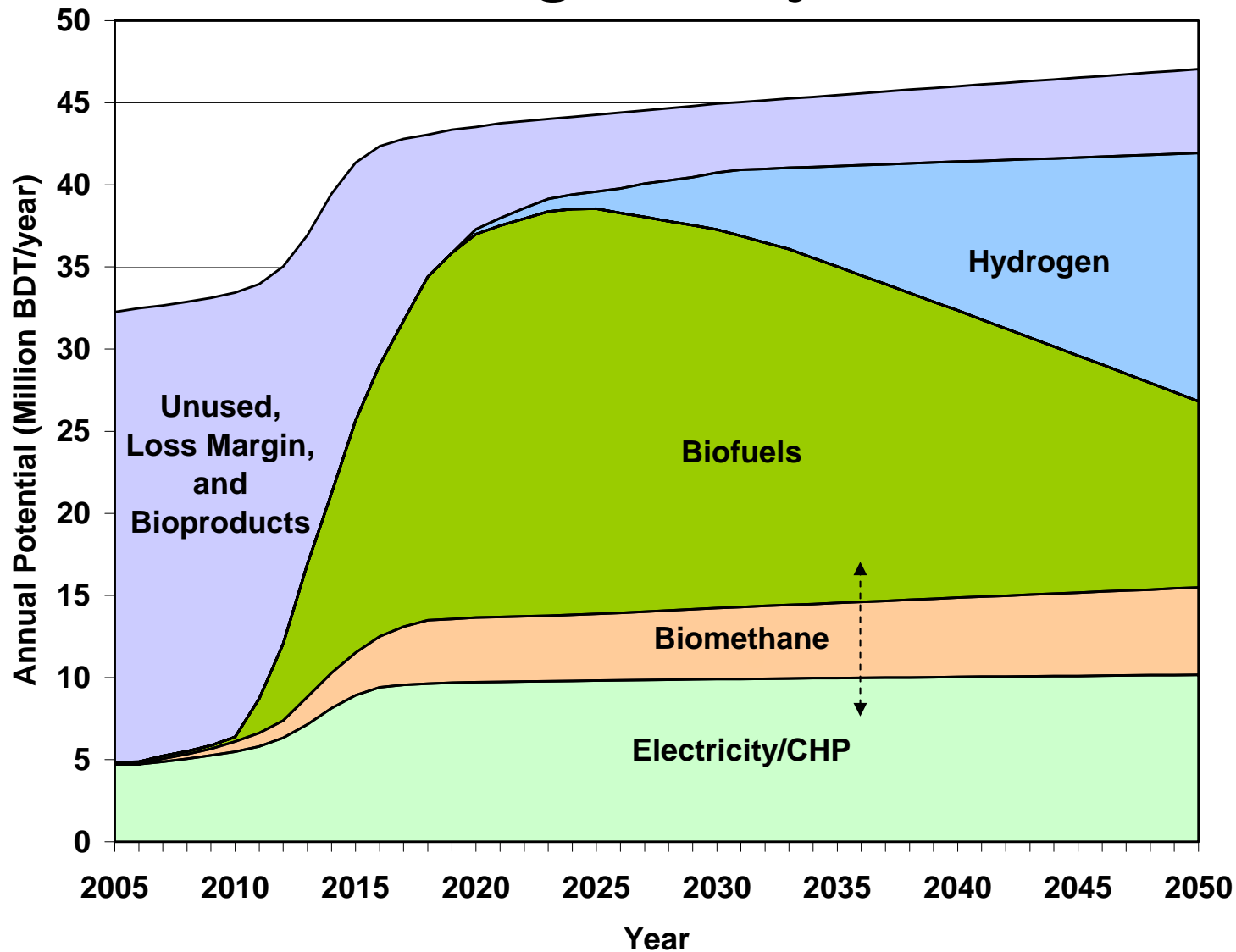
Year	Gasoline (BGY)	E85 (BGY)	In-state E85 (BGY)
2010	16	23	5
2020	18	25	10
2050	25	35	26

# Electricity Generation—20% of accelerated RPS in 2010 and 2020

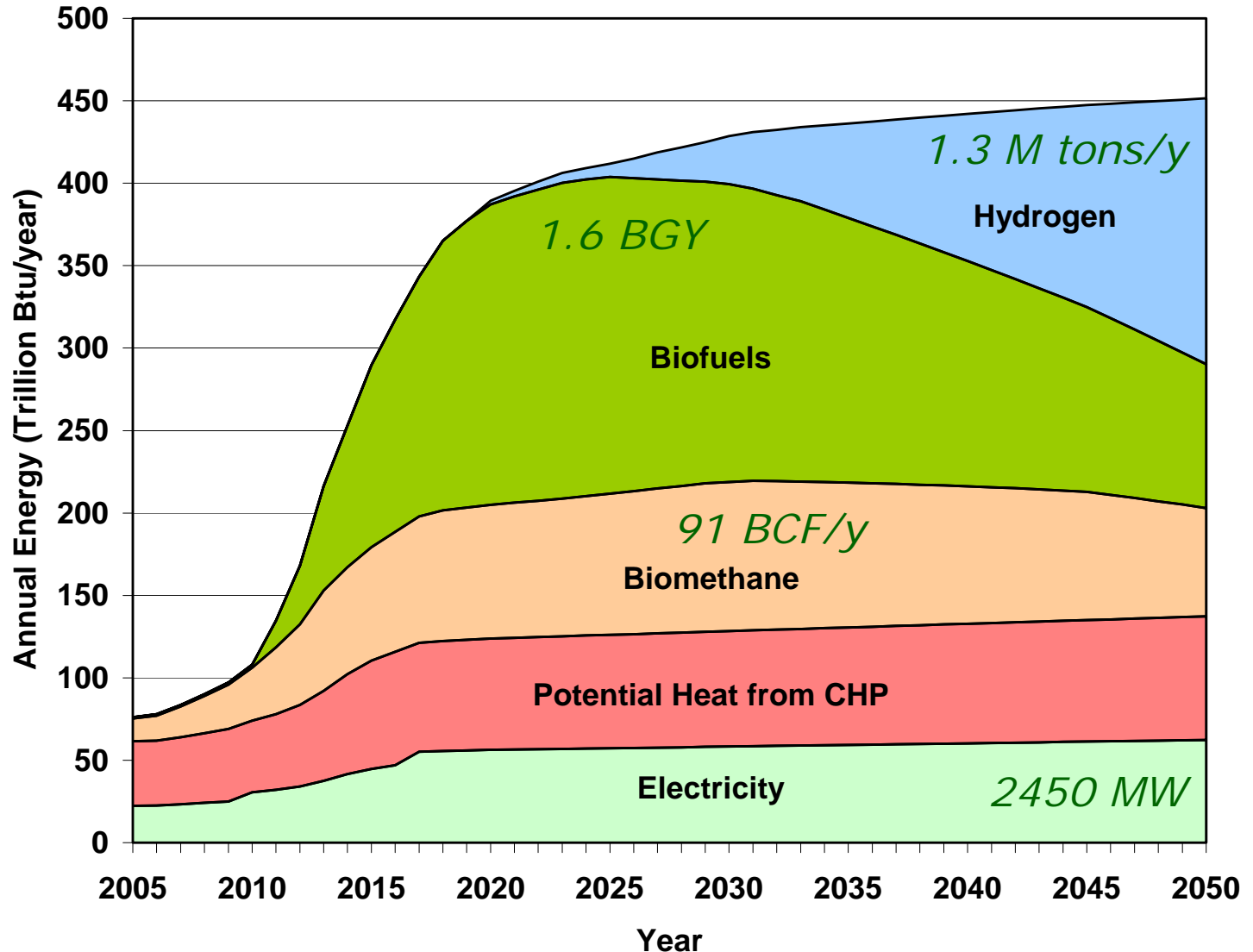
Year	Incremental Capacity (MW at 85% CF)	Cumulative Capacity (MW at 85% CF)
2010	500	1,600
2020	1,450	2,450



# Development scenario for California biomass—tonnage and yield



# Development scenario for California biomass--energy





# Roadmap Process

- Scoping and focus meetings of Collaborative Executive Board and Staff to develop vision, goals, primary issues, and preliminary recommendations
  - Preliminary roadmap document for public discussion
- Public and targeted external review and comment
- Public workshop
- Review and revision
- Final roadmap

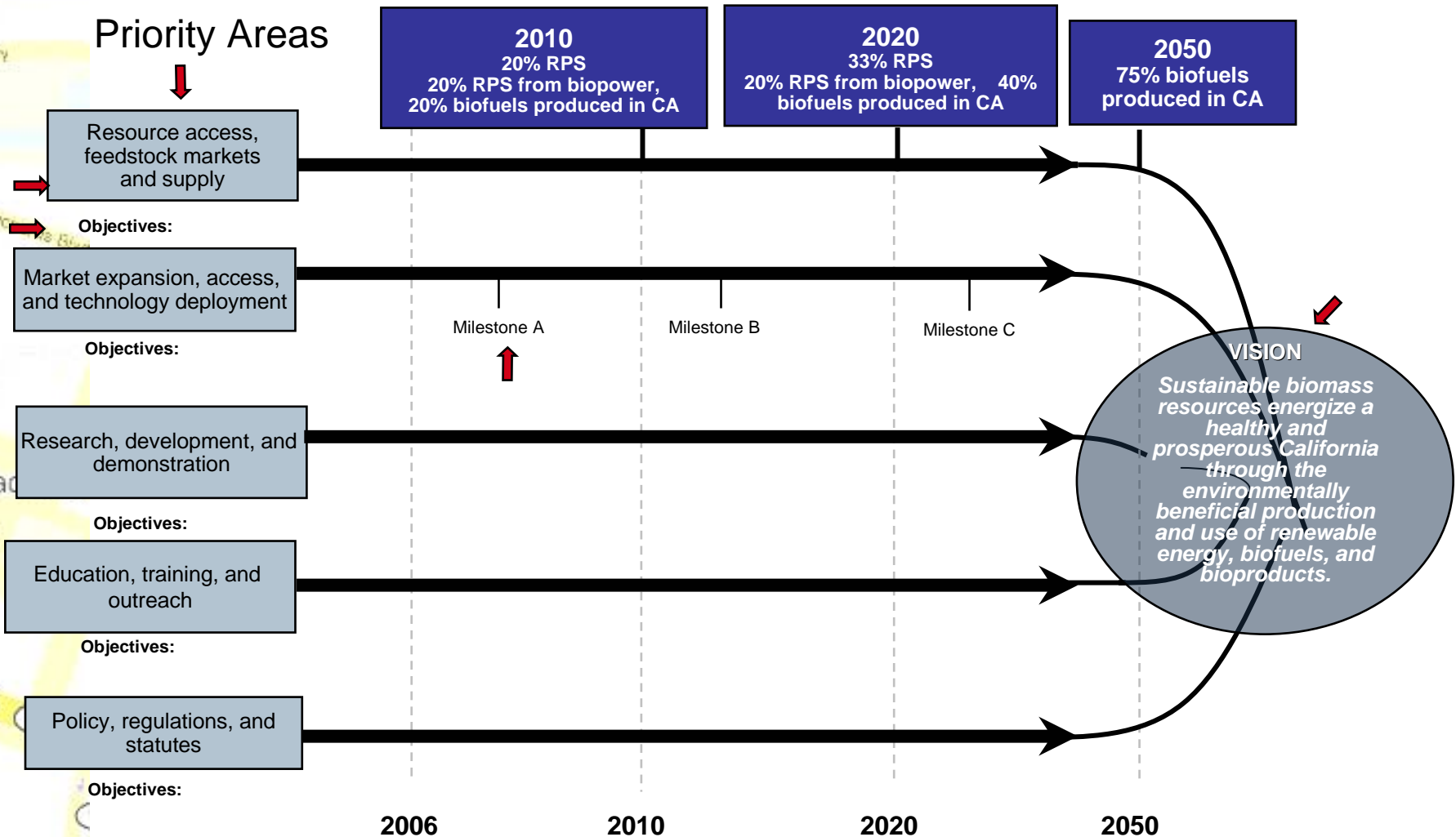


# Five priority areas with timelines and milestones

- Resource access, feedstock markets and supply
- Market expansion, access, and technology deployment
- Research, development, and demonstration
- Education, training, and outreach
- Policy, regulations, and statutes

# Roadmap Overview

The Roadmap contains five priority areas with timeliness and milestones.



A vertical map strip on the left side of the slide shows a portion of the Sacramento, California area. It includes labels for San Juan Rd, Truxel Rd, and Richards Blvd. Highway shields for 50, 99, and 160 are visible. The word 'Sacramento' is partially visible. At the bottom left of the map is the 'biomass' logo.

# Roadmap for Sustainable Biomass Development in California

- Resource access and Feedstock Supply:
  - Standards, best practices, certification for sustainable supply
  - Land use
  - Environmental impacts
  - Monitoring and enforcement
  - Dedicated crops
  - Logistics—collection, handling, transport
  - Seasonality
  - Characteristics
  - Commodity market and enterprise zones

# Resource Access

- Apply best management practices for resource development, production, and acquisition allowing both industry and state enforcement of standards.
- Establish processes for independent certification of sustainable practices including
  - land use,
  - environmental assessment, and
  - resource monitoring.
- Establish a biomass commodity market and commodity board or commission to facilitate
  - biomass marketing,
  - development of production, collection, transportation, storage, and processing infrastructure,
  - build upon existing enterprise zones
- Provide expanded access to biomass resource and market information.



# Roadmap for Sustainable Biomass Development in California

- Market expansion, access, and technology deployment:
  - Funding and incentive mechanisms
    - Taxes, tax credits, loans, loan guarantees, insurance funds, contracts, net metering, pricing structures, GHG market, government procurement
  - Regulatory incentives
    - Emission offset credit mechanisms, RECs, ERCs, RPS/RFS expansion
  - Infrastructure improvements and access
    - Transmission/pipeline access, biofuel distribution
  - Technology deployment
    - Repowering, new capacity, DG, biorefineries, hydrogen, bio-based products manufacturing





# Market expansion, access, and technology deployment

- Stimulate private and public investment in infrastructure
  - transmission lines and interconnections,
  - gas pipelines and transportation fueling systems,
  - storage, transportation, and processing capacity,
  - conversion technologies, power generation, fuel production, and manufacturing,
  - Increased opportunities for long-term contracting
- Establish education/certification programs to develop biomass expertise, provide project specifications and design, siting assistance, environmental review, and business assistance,
- Work toward policies and statutes providing mechanisms to monetize benefits, and
- Open markets to customers for power, fuels, and products



# Roadmap for Sustainable Biomass Development in California

- Research, Development, and Demonstration:
  - Coordination with Federal Programs and Initiatives
    - Biomass Roadmap, Genomics: GTL, others
  - Resource sustainability and access
    - Standards, sustainable practices, certification, preferred crops for California, inventory monitoring and assessment, infrastructure and scale limitations
  - Biosciences and biotechnology
    - Existing and proposed research programs, centers, and institutes, resource production and modification
  - Improved feedstock handling
  - Biomass Conversion
    - Technology, environmental performance, comprehensive LCA, systems analysis
  - Bio-based products
  - Systems analysis
    - Comprehensive LCA, economics, optimization
  - Research Centers of Excellence



# RD&D

- Determine Best Management Practices and monitoring environmental impacts
  - Resource base – production techniques and ecosystems
  - Feedstock handling and processing
  - Conversion technology and manufacturing
  - Health and safety features of feedstocks, products and uses
  - Life cycle assessments systematically comparing waste and resource utilization alternatives



# RD&D

- Conduct basic research in bioscience and biotechnology to
  - Improve biomass production systems
  - Increase yields
  - Reduce water and other agronomic inputs
  - Develop disease-resistant and pest-resistant plants
  - Develop multi-trait crops to improve conversion processes and product quality



# RD&D

- Demonstrate commercial scale biomass conversion and biorefinery techniques
  - Enzyme and chemical treatments
  - Cellulosic fermentation
  - Advanced power generation
  - Biomass-to-liquids processes
  - Advanced anaerobic processes
  - Integrated biochemical and thermochemical biorefineries for improved yields and cost



# RD&D

- Conduct modeling, systems analyses, and systems optimization to evaluate
  - Land use
  - Climate change
  - Competition and compatibility



# RD&D

- Establish research centers and centers of excellence.

A vertical strip on the left side of the slide shows a map of the Sacramento area. Labels include San Juan Rd, Truxel Rd, and Garden Hwy at the top; Richards Blvd in the middle; and Sacramento, 9th St, 160, 50, 99, and City Cemetery at the bottom.

# Roadmap for Sustainable Biomass Development in California

- Education, training, and outreach:
  - Educate/inform public, decision makers, regulators
  - Consumer information
  - Engage potential environmental justice communities
  - Industry and professional education
  - K-12 education
  - Expanded University curricula
  - Bio-based products
  - Extension
  - Technical interaction



# Education, Training, and Outreach

- Conduct education and outreach for decision makers, consumers, and general public
  - Workshops, tours, and conferences
  - International research conferences
- Conduct training for/by industry and biomass professions
  - Certification programs including life cycle assessment and environmental justice
  - Facility operations
  - Cooperative extension outreach for farmers on biomass production practices
- Engage environmental justice communities
- Establish K-12 and university level curricula on biomass to enhance public education and train new scientists, engineers, and other professionals.
- Extend research and promote professional and international interactions
  - Extension programs, exchange programs, internships, technical conferences, workshops, and meetings

A vertical map strip on the left side of the slide shows a portion of Sacramento, California. It includes labels for San Juan Rd, Truxel Rd, and Richards Blvd. Highway shields for 50, 99, and 160 are visible. The word 'Sacramento' is partially visible. At the bottom left of the map is the 'biomass' logo.

# Roadmap for Sustainable Biomass Development in California

- **Policy, regulations, statute:**
  - Agency authorities (Bioenergy Action Plan)
  - Environmental benefit accounting
  - Carbon-based policies
  - Revised basis for waste management
  - Financial uncertainties
  - Consolidated and coordinated permitting
  - Performance-based standards
  - Interconnection
  - Renewable Fuels Standard
  - Procurement
  - Enterprise zones
  - Environmental Justice

# Policies, regulations, statutes

- Monetize benefits
  - Expand greenhouse gas market, increase value of renewable energy credits, and designate allowable emission offset credits,
  - Carbon tax on use of carbon fuels and/or emission of CO<sub>2</sub> to support carbon market and reduce leakage across state borders
  - Expand use of and provide equitable tax credits and production incentives for biomass production and use
  - Expand RPS and establish RFS
  - Facilitate long term contracting
  - Provide loan assistance – low-interest loans and loan guarantees

# Policies, regulations, statutes

- Review and revise or establish best management practices and permitting requirements
  - Monitor and assess impacts and apply results from comprehensive life cycle assessments
  - Coordinate and consolidate permitting process while safeguarding environmental protections
  - Enforce compliance through the industry and government agencies
- Establish or expand biomass enterprise zones and authorize
  - siting assistance,
  - local government support,
  - environmental review,
  - appropriate incentives such as reduced-cost utilities
- Enhance access to transmission lines, pipelines, and other infrastructure, and
- Provide equitable policies for net metering and other incentives intended to stimulate markets.

# THANK YOU

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[bmjenkins@ucdavis.edu](mailto:bmjenkins@ucdavis.edu)

<http://biomass.ucdavis.edu/index.html>

## **Attachment H**



BIOMASS RESEARCH & DEVELOPMENT INITIATIVE

# **Analysis Subcommittee Update**

**August 10, 2006**

Ralph Cavalieri

Ralph Cavalieri

Douglas Hawkins

John Hickman

Charles Kinoshita

Eric Larson

Del Raymond

Edwin White



- *Updated: Development of Two Process Assessment Cases: 2003 State of Technology and 2002 Experimental Parameters*
- *Lignocellulosic Biomass to Ethanol Process Design and Economics Utilizing Co-Current Dilute Acid Prehydrolysis and Enzymatic Hydrolysis for Corn Stover*
- *Development of a Multicriteria Assessment Model for Ranking Biomass feedstock Collection and Transport Systems*
- *Costs of Harvesting, Storing and Transporting Corn Stover in a Wet Form*
- *Preliminary Screening – Technical and Economic Assessment of Synthesis Gas to Fuels and Chemicals with Emphasis on the Potential for Biomass-Derived Syngas*
- *The Potential of Thermochemical Ethanol via Mixed Alcohols Production*

- Are the basic assumptions valid?
- Was a suitable and adequate methodology followed?
- What was the quality of data?
- Does the analysis performed justify the conclusions?
- Was there an adequate review of the analysis, prior to publication?

## Additional factors for consideration

- Next steps?
- Value of the report?
- Should it be updated?

- *Assumptions:*  
The reasons for the processing choices are not adequately justified. There are several fundamentally different process designs that could have been chosen.  
  
Feedstock cost \$30/ton is questionable for large quantities of biomass (particularly from dedicated feedstock supplies).
- *Appropriate Methodology:* Yes, a suitable and adequate methodology was followed.
- *Quality of Data:* Except for process components for which literature data is lacking, the authors appear to have access to good technical data.
- *Conclusions Justified:* Generally, “yes,” the analysis performed justifies the conclusions.
- *Adequate Review:* Review was performed in-house and one reviewer seems to be one of the authors.

- *Methodology*: This is primarily a literature review. The methodology was largely well conceived.
- *Data Quality*: Most of data seem to be best available.
- *Conclusions Justified*: Generally, “yes,” the analysis performed justifies the conclusions.
  - However, we would recommend an update using today’s known facts, assumptions and projections about future markets and costs.
- *Assumptions*: Feedstock cost \$30/ton probably is not valid for large quantities of biomass (certainly not from dedicated feedstock supplies).
- *Reviewed?*: Internal review status/methodology was unclear.

# Costs of Harvesting, Storing and Transporting Corn Stover

- *Valid Assumptions:* Single feedstock biorefineries is no longer a valid assumption
  - DOE has moved to recognize regional feedstocks; also utilizing woody biomass avoids the problems with short harvest seasons for ag crops.
- *Methodology* is appropriate for a preliminary engineering economic study, which is typically good for an initial look at competing possibilities.
- *Data Quality:* Some data on operations costs come from a limited set of experiences but not much is available.
- Conclusions seem valid but dated
  - The authors do not indicate any confidence levels for the numbers reported for each case.
- *Reviewed?:* Internal review status/methodology was unclear.

# *Development of a Multicriteria Assessment Model*

- *Assumptions:* Conclusions are highly dependent on criteria weighting factors which are presented without justification.
- *Data quality* is difficult to evaluate in that the majority of the harvesting study data are the output of the (IBSAL) model, which was not reviewed in this manuscript.
- The *methodology* for developing the qualitative data is not described sufficiently.
- *Valid Conclusions:* Assumptions are that the “data” created as output from another model are of sufficient quality to conduct the multi-criteria assessment presented in this report.
  - The authors should have conducted a sensitivity analysis to see how errors in their input “data” would affect the results of this study.
- *Reviewed?:* Internal review status/methodology was unclear.

# *Lignocellulosic Biomass to Ethanol Process*

- Overall *conclusion*: a production cost of \$1.07/gal ethanol is possible via this process.
- It is more likely that the cost of ethanol from a corn stover would be substantially higher than the \$1.07/gal figure.
  - A more realistic cost might be \$1.20-1.25/gal (based on the assumptions used by the authors for this report)
- *Methodology* was reasonable and similar to industry standards.
- The *assumptions* made seem to be overly optimistic. It is likely that the corn stover feedstock will cost more than \$30/ton.
- *Other*: The logistical challenge of collection, storage and handling of the corn stover presents a very large challenge that was not covered in this report.
- Internal *review* status/methodology was unclear.

# 2003 State of Technology and 2002 Experimental Parameters

- *Difficult to read and review*
- Update of the 2002 Design Study and should have been reviewed as such

## Analysis *Conclusions*:

- The 2002 experimental and 2003 state of the technology cases produce selling prices in the range of \$2.44-\$2.73/gal.
- The other conclusion is that the original case was way too optimistic and produced an unrealistically low selling price for ethanol.
- A few pages of additional discussion regarding the differences between the original design case assumptions and the SOT or experimental conditions would be very helpful.
- Internal *review* status/methodology was unclear



- Assign analysis documents – **COMPLETED**
- Compile initial comments – **COMPLETED**

## Next steps

- Review initial group comments
- Identify gaps in the existing analyses
- Report-out

## **Attachment I**

**Biomass Research and Development Technical Advisory Committee  
Subcommittee Goals and Volunteers**

*\*Committee members whose terms will expire at the end of the day, November 30, 2006*

1. Vision and Roadmap: Evaluate goals for biomass production in biofuels, biopower, bioproducts. Update Committee documents to recommend best practices in industry progress towards goals.
  - Tom Binder (Chair) – Central Workshop Chair
  - Butch Blazer
  - Ralph Cavalieri\* – Western Workshop Chair
  - Doug Hawkins – Eastern Workshop Chair
  - Jim Martin
  - Ed White
  
2. Policy: Evaluate major issues with expert input prior to the development of a Committee stance. Project Committee recommendations outward in a unified manner.
  - Jim Barber (Chair)
  - Bob Dinneen
  - Carolyn Fritz\*
  - Terry Jaffoni\*
  - Scott Mason
  - Larry Pearce
  
3. Analysis: Scenario planning, validation of completed DOE and USDA biomass work. The Analysis subcommittee will provide the basic beliefs for the Policy subcommittee to project outward.
  - Ralph Cavalieri\* (Chair)
  - Doug Hawkins
  - John Hickman
  - Charles Kinoshita
  - Eric Larson
  - Del Raymond\*
  - Edwin White

## **Attachment J**

## 2006 Annual Recommendations to the Secretaries

Committee members have discussed their annual recommendations to the Secretaries of Agriculture and Energy for FY 2006 during meetings on April 13 and June 6, 2006. Recommendations are submitted in the following categories, according to Committee duties in the Biomass R&D Act of 2000:

- A. Recommendations regarding the distribution and use of Initiative funds
- B. Recommendations on the solicitation and proposal review process
- C. Overall recommendations to the Secretaries

Committee members can submit further recommendations via email, fax, or phone, to complete a final list by July 21<sup>st</sup>, according to the 2006 Committee Work Plan. The list will be distributed for comment before the August 10, 2006 public meeting. A final compilation of all recommendations and comments will be considered and voted on at the August 10, 2006 meeting.

The recommendations discussed up to this date are:

- A. Recommendations regarding the distribution and use of Initiative funds
  - 1. That the thermochemical platform receives continued funding support, and those thermochemical technologies become an integral part of the Biofuels Initiative. (Raymond)
  - 2. That the Biomass Program and the Fossil Energy Program at DOE report to the Committee on how their efforts in the areas of thermochemical conversion and in carbon capture and storage are interacting with each other, what synergisms and benefits they see in expanding the coordination and collaboration from current levels, and what future coordination and collaboration is being planned. (Larson)
  - 3. That carbon sequestration research should include multiple biomass feedstocks, such as woody biomass. (White)
  - 4. That R&D in producing hydrocarbon fuels from multiple biomass feedstocks should be pursued. (Mason)
  - 5. That research funded by the Biomass Initiative should keep the following goals in mind: (Martin)
    - Conversion technologies for the production of cellulosic ethanol, hydrocarbon fuels and or biobased chemicals should, as much as is practicable, be flexible with minimal adjustment with regard to feedstocks allowing for the use of multiple or mixed streams of materials including agricultural residues, processing wastes, wastes from animal production, municipal wastes, forest thinnings and other low value materials as well as dedicated energy crops.
    - Research should endeavor to provide technologies which can be practiced on a local basis in disperse geographies utilizing readily available feedstocks in order to reduce the concentration of plant emissions in an area, reduce the transportation requirements for inbound feedstocks and outbound finished products and provide the economic benefits of resulting jobs to more locations.
    - Research should address the densification of biomass feedstocks to reduce transportation costs and storage requirements.

- Design for conversion plants and infrastructure should address the issue of collection of diverse feedstocks from multiple sources.
  - The ownership and control of conversion plants and infrastructure should be diverse to promote greater competition in the market for finished products and to encourage the participation of more stakeholders, particularly among feedstocks providers such as farm groups, municipalities, agricultural processors, forest owners and wood products processors.
6. To reach the billion-ton feedstock goal, support R&D capable of handling and converting a wide variety of feedstocks. This should include research directed at overcoming logistical hurdles and addressing issues of handling, transporting, preparing, and storing feedstocks headed for the biorefinery. (Hawkins)
  7. The committee strongly endorses USDA efforts to review their previously awarded R&D biomass grants for technical program alignment across all federal biomass activities and ask that such reviews be continued in the future. (Hickman)

B. Recommendations on the solicitation and proposal review process

1. That the 2007 USDA – DOE joint solicitation be issued in a timely manner, by October 1, 2006. (Hickman)
2. That budgeted funding for the Initiative should be subject to fewer Congressionally directed projects, and provide a greater proportion of discretionary amounts to pursue projects that are measured by documented milestones. (Larson)
3. Support ongoing review and analysis of awards made to determine the impact of funded programs. (Hawkins)

C. Overall recommendations to the Secretaries

1. That opportunities for workforce development and outreach in biomass sciences be pursued. (Kinoshita)
2. That incentives for biobased products be created. (Barber)
3. That Congress provides full funding for the integrated biorefinery solicitation under section 932 of EPAAct - FOA # DE-PS36-06GO96016. (Hickman)
4. That the number of university faculty directly involved in Federally-funded biomass research be increased. (Cavalieri)
  - Federal grants from NSF, NIH, and other agencies do not target biomass work specifically. Moreover, Federal agencies which fund biomass research do not adequately communicate. Opportunities for biomass research have a very low award rate. Consequently, current students lack learning opportunities in the biomass field. These factors combine to hinder fulfillment of the actual personnel needs of the biomass industry. The Committee recommends providing funding for a top-down education of academia about the technological opportunities available in biomass, endorses the enhanced biomass professional community this will create, and advocate cooperation with industry to publicize education in biomass technology.

D. Members also identified topics for future Committee discussions on recommendations. These are:

- Areas on which the Biomass Program should focus to achieve its \$1.07/gallon cost target for cellulosic ethanol by 2012.
- Whether the 2006 joint solicitation selections are endorsed by the Committee. (Binder)
- Whether the information provided by the upcoming Biofuels Initiative (“30x30”) analysis report is endorsed by the Committee. (Binder)

## **Attachment K**



## **Jim Martin – OmniTech International**

### Issues for Committee Consideration and Discussion

ISSUE: The production of cellulosic ethanol from emerging energy crops (as opposed to crop residues and forest thinnings) is expected to be dependent on new production of large volumes of these materials in concentrated areas. A host of economic and agricultural product on questions must be answered for these crops to be viable as farm enterprises, competing with alternative uses of available land, water, labor, capital and other resources. Some of these questions include:

- What if any safety net provisions available to other crops, such as crop marketing loans, target prices and deficiency payments, crop insurance, etc., will be available to producers of new energy crops.
- What, if any, commodity marketing mechanisms for the discovery of price and futures trading, such as now provided by the various boards of trade or direct contracts with purchasers, are envisioned to assure producers with fair market prices.
- Given the significant capital investments for these perennial crops (\$600 per acre to plant trees plus new equipment for harvest and transport, annual costs for production labor and fuel, harvesting costs) and the long term before harvest (3 years before first harvest of woody biomass, at least 1 year before first harvest and perhaps 2 or more before maximum production of grasses) are there any incentives envisioned to spur investment?
- Large concentrated acreages of native and non-native plants will change the surrounding ecosystem, perhaps beneficially and perhaps in harmful ways. Permanent stands of tall grasses may provide a refuge for wildlife, which may include damaging insect species, rodents and fungi. No insecticides or fungicides are currently labeled for legal use on these crops. Farmers and ranchers at a minimum are required by law to control noxious weeds, but no herbicides are currently registered for legal use on switchgrass grown as an energy crop. What are the long term agronomic impacts of large scale production of these crops on soil, water, pests, and adjacent farm production and rural communities?
- The new cellulosic ethanol industry may indeed create new jobs in rural communities, but what will happen to the existing agricultural support industries and the jobs they create at the grain elevator, the livestock auction, the fertilizer and seed dealerships, the feed mills and others? Will we see a net gain or loss for the rural economy?
- What happens to land values which are the bedrock asset on which our rural economies depend.

ISSUE: Current biofuel industries (grain ethanol and biodiesel) are producing an oversupply of high protein materials (soybean meal, distillers dry grains, animal by-products, etc.).

ISSUE: The US chemical industry has lost significant production and jobs to foreign competition where petrochemical production is lower cost due in great part to lower costs petro-feedstocks (petroleum and natural gas). This has resulted in growing

dependence on foreign sources of strategically critical materials often in nations that are unstable or at times hostile to national interests. Can biomass feedstocks be utilized as feedstocks to reverse this loss of domestic production and growing dependence on foreign produced chemical products.

## **Attachment L**

# Governors' Ethanol Coalition



• **Kansas Gov. Kathleen Sebelius, Chair** • **Nebraska Gov. Dave Heineman, Vice Chair** • **Minnesota Gov. Tim Pawlenty, Past Chair**

<b>Alabama Gov. Bob Riley</b>	<b>Indiana Gov. Mitch Daniels</b>	<b>Mississippi Gov. Haley Barbour</b>	<b>North Dakota Gov. John Hoeven</b>	<b>South Dakota Gov. Mike Rounds</b>
<b>Arizona Gov. Janet Napolitano</b>	<b>Iowa Gov. Thomas Vilsack</b>	<b>Missouri Gov. Matt Blunt</b>	<b>Ohio Gov. Bob Taft</b>	<b>Tennessee Gov. Phil Bredesen</b>
<b>Arkansas Gov. Mike Huckabee</b>	<b>Louisiana Gov. Kathleen Blanco</b>	<b>Montana Gov. Brian Schweitzer</b>	<b>Oklahoma Gov. Brad Henry</b>	<b>Texas Gov. Rick Perry</b>
<b>Colorado Gov. Bill Owens</b>	<b>Maryland Gov. Robert Ehrlich</b>	<b>New Mexico Gov. Bill Richardson</b>	<b>Oregon Gov. Ted Kulongoski</b>	<b>Virginia Gov. Tim Kaine</b>
<b>Hawaii Gov. Linda Lingle</b>	<b>Kentucky Gov. Ernie Fletcher</b>	<b>New York Gov. George Pataki</b>	<b>Puerto Rico Gov. Anibal Acevedo-Vilá</b>	<b>Washington Gov. Christine Gregoire</b>
<b>Idaho Gov. James Risch</b>	<b>Michigan Gov. Jennifer Granholm</b>	<b>North Carolina Gov. Mike Easley</b>	<b>South Carolina Gov. Mark Sanford</b>	<b>Wisconsin Gov. Jim Doyle</b>
<b>Illinois Gov. Rod Blagojevich</b>				<b>Wyoming Gov. Dave Freudenthal</b>

• **International alliances with Brazil, Canada, Mexico, Sweden and Thailand** •

August 2, 2006

To: Members, Biomass Technical Advisory Committee

From: Larry Pearce, Governor Heineman's Representative

Subject: *Recommendations and Comments on the Committee's Recommendations*

We appreciate the opportunity to provide our comments regarding the Committee's annual recommendations to the Secretaries of Agriculture and Energy. The Governors' Ethanol Coalition recommendations in this area are generally consistent with our communications to Congress and the Administration over the past year.

### *Recommendations Regarding the Distribution and Use of Initiative Funds*

1. Research and demonstration efforts should be structured in such a way that both larger scale research and demonstration projects are balanced with more diverse, small-scale projects conducted in every region of the nation to ensure broad participation and leverage of resident expertise in each area.
2. Research is needed to address so called "gap-yield" issues in order to ensure adequate feedstocks are available as production expands. For example, an increase in the research is urgently needed to improve the drought resistance of corn, increase yields, etc. The need for analyses and funding in this area is growing rapidly as demand for ethanol expands. Given the required lead-time to move from research to production of the feedstock, acting quickly to bolster state, federal, and private efforts in this area seems essential.

### *Overall Recommendations to the Secretaries*

3. A greater emphasis should be placed on addressing ethanol infrastructure requirements and flex-fuel vehicle production. While increased research and development to advance ethanol production is essential and fully supported by the governors, efforts to improve the efficiency and robustness of the delivery and use of ethanol are equally important —

two of three legs of the stool. Working with the states and industry, a renewed effort to address infrastructure (E85 fueling, distribution, storage, etc.) should be initiated immediately and would include activities ranging from greater deployment of E85 fueling stations to research on the financial, technical, and environmental requirements of an expanded ethanol delivery system.

4. In consultation with appropriate Congressional staff and the governors' offices, a separate targeted program and/or solicitation should be developed which focuses on drawing in state research and demonstration funding in a true partnership fashion. Around the nation, governors and legislators are making decisions about increasing funding for ethanol and biofuel research, demonstration and infrastructure efforts. States are providing not only funding but tax incentives, education, and outreach to the public. Leveraging these public interest funds and efforts in a manner that recognizes the important role of the states would greatly expand available resources for sector ethanol development efforts. Moreover, properly structured and communicated, it would greatly aid our efforts in reducing the overall proportion of congressionally directed funding.
5. In consultation with the U.S. Environmental Protection Agency, USDA and DOE should support the examination of means for the agriculture community and the ethanol industry to benefit from the environmental challenges presented by the nation's reliance on oil as a transportation fuel. For example, there may be mechanisms for farmers and ethanol producers to monetize carbon reduction through trading mechanisms. Support should be provided to develop and test pilot programs with states, industry, and farmers.
6. Linkages should be established with increased ethanol production incentives or requirements (e.g., expanded Renewable Fuels Standard) and the utilization of renewable energy and energy efficiency technologies. The Department of Energy should support pilot efforts and technical assistance to aid producers in adopting production approaches, which include combined heat and power, renewable electricity and heat sources, and high-efficiency production components — linking and leveraging a range of federal and state energy programs.
7. Increased support should be given for international peer exchange among policy makers and researchers on ethanol issues. Supporting a growing global market for biofuels would greatly advance U.S. efforts by facilitating the exchange of complementary cross-border policies, development of joint research projects, and increased understanding of the potential of ethanol and biofuels.

CC: John Ferrell  
Doug Kaempf

## **Attachment M**

# The Biomass R&D Technical Advisory Committee

## **Annual Recommendations**

August 10, 2006

Committee members have discussed their annual recommendations to the Secretaries of Agriculture and Energy for FY 2006 during meetings on April 13 and June 6, 2006. Recommendations are submitted in the following categories, according to Committee duties in the Biomass R&D Act of 2000:

- A. Recommendations regarding the distribution and use of Initiative funds
- B. Recommendations on the solicitation and proposal review process
- C. Overall recommendations to the Secretaries



- Committee members submitted further recommendations via email, fax, or phone, to complete a final list by July 21<sup>st</sup>, according to the 2006 Committee Work Plan.
- The list was distributed for comment and revision before the August 10, 2006 public meeting.
- This final compilation of all recommendations and comments will be considered individually, and approved by majority vote.

## A. Recommendations regarding the distribution and use of Initiative funds

1. In order to fully support the vision of the integrated biorefinery, the Thermochemical Platform should receive continued funding, and those thermochemical technologies should become an integral part of the Biofuels Initiative. (Raymond)

Yay	Nay
9	0

## A. Recommendations regarding the distribution and use of Initiative funds

2. The Biomass Program and the Fossil Energy Program at DOE should report to the Committee on how their efforts in the areas of thermochemical conversion and in carbon capture and storage are interacting with each other, what synergies and benefits they see in expanding the coordination and collaboration from current levels, and what future coordination and collaboration are being planned. (Larson)

Yay	Nay
9	0

## A. Recommendations regarding the distribution and use of Initiative funds

3. Carbon sequestration research should include multiple biomass feedstocks, such as woody biomass. (White)

Yay	Nay
0	9

## A. Recommendations regarding the distribution and use of Initiative funds

4. R&D should be pursued to develop liquid transportation fuels from biomass, in addition to ethanol and biodiesel. (Mason)

Yay	Nay
9	0

## A. Recommendations regarding the distribution and use of Initiative funds

5. Fund R&D to develop technologies capable of processing multiple and mixed feedstocks into biofuels and bioproducts (to the extent possible).

Yay	Nay
9	0

## A. Recommendations regarding the distribution and use of Initiative funds

6. Research should endeavor to provide technologies of scales that can be practiced on a local basis in dispersed geographies utilizing readily available feedstocks. Such technologies will help to reduce the concentration of plant emissions in an area, reduce the transportation requirements for inbound feedstocks and outbound finished products and provide the economic benefits of resulting jobs to more locations.

Yay	Nay
8	1

## A. Recommendations regarding the distribution and use of Initiative funds

7. The ownership and control of conversion plants and infrastructure should be diverse to promote greater competition in the market for finished products. This should encourage the participation of more stakeholders, particularly among feedstock providers such as farm groups, municipalities, agricultural processors, forest owners and wood products processors.

Yay	Nay
1	8



## A. Recommendations regarding the distribution and use of Initiative funds

8. To reach the billion-ton feedstock goal, support R&D capable of handling and converting a wide variety of feedstocks. This should include research directed to overcome logistical hurdles and address issues related to harvesting, handling, densification, transportation, preparation, and storage of biorefinery feedstocks. (Hawkins)

Yay	Nay
9	0

## A. Recommendations regarding the distribution and use of Initiative funds

*include in text of recommendations  
acknowledging USDA effort in responding to  
this previous concern of the committee. e*

Yay	Nay

## B. Recommendations on the solicitation and proposal review process

1. The 2007 USDA – DOE joint solicitation should be issued in a timely manner, by October 1, 2006. (Hickman)

Yay	Nay
8	1

## B. Recommendations on the solicitation and proposal review process

2. Budgeted funding for the Initiative should be subject to fewer Congressionally-directed projects. It should provide a greater proportion of discretionary amounts in order to pursue projects that are measured by documented milestones and which reflect the Committee's Vision and Roadmap. *For example (see L. Pierce item #4 replace ethanol w/biofuels and bionproducts)*  
(Larson)

Yay	Nay
9	0

## B. Recommendations on the solicitation and proposal review process

3. Support ongoing review and analysis of awards made to determine the impact of funded programs. (Hawkins)

Yay	Nay
9	0

## C. Overall recommendations to the Secretaries

1. Opportunities for workforce development in biomass-related disciplines should be pursued. (Kinoshita)

Yay	Nay
9	0

## C. Overall recommendations to the Secretaries

2. Outreach to the general public should be expanded to better communicate the benefits of biomass technologies.

Yay	Nay
9	0

- Fuel tax abatement has been extremely successful in promoting biofuels. Similar incentives should be developed to promote biobased products. An evaluation should be conducted to identify policy initiatives which will support the growth of biobased products. (Barber)

Yay	Nay
9	0



4. Congress should provide full funding for the integrated biorefinery solicitation under section 932 of EPAct - FOA # DE-PS36-06GO96016. (Hickman)

Yay	Nay
9	0

5. The Committee encourages the agencies of the Interagency Biomass R&D Board to solicit biomass R&D so that a greater number of university faculty members are directly involved in biomass R&D projects. This will have the benefit of advancing the size of the biomass community, facilitating an increased biomass workforce, and encouraging cooperation with industry and federal science.

Yay	Nay
9	0

## C. Overall recommendations to the Secretaries

6. Increased support should be given for international peer exchange among policy makers and researchers on biofuels and biobased products issues. Supporting a global market for biofuels and biobased products would greatly advance U.S. efforts by facilitating the exchange of complementary cross-border policies, development of joint research projects, and increased understanding of the potential of biofuels and biobased products. (*Identify as new*)

Yay	Nay
9	0

## C. Overall recommendations to the Secretaries

7. Study and test the existing infrastructure to identify methods in which it can be modified or improved to transport and distribute biobased fuels, products and energy. (*new recommendation*)

Yay	Nay
9	0