

California Integrated Waste Management Board
Session Summary:
Emerging Technology Forum
April 17-18, 2006
Session 1A Governmental Perspectives

The purpose of this session was to provide some of the perspectives of potentially affected and involved government regulatory and resource management agencies on conversion technologies.

Summary of presentation by Susan Brown prepared by CIWMB Staff

Susan Brown is a Senior Policy Analyst for the California Energy Commission.

Ms. Brown started by stating her presentation would cover the following areas:

- Strategic Value of Biomass Resources
- Governor's Direction on Climate Change, Transportation Fuels, and Bioenergy
- Bioenergy Interagency Working Group
- Bioenergy Plan: Policy Objectives and Key Recommendations

Ms. Brown discussed the many strategic values of biomass resources in California. She discussed the varied sources of biomass that can be converted into different energy sources including materials currently being disposed. She pointed out that biomass resources are renewable, and can help meet the state's petroleum use reduction and renewable energy goals. She mentioned that using bioenergy can help ensure energy supply, diversity, and security while helping reduce greenhouse gas emissions.

In addition, she stated that use of bioenergy can improve protection the environment and animal and human health, while providing jobs and improving the economy.

Ms. Brown pointed out Governor Schwarzenegger's stance on alternative energy and greenhouse gas reduction, and his Executive Order establishing specific greenhouse gas reduction targets. A Climate Action Team, headed by Cal EPA, is developing and implementing strategies to meet these targets. She said that the development of biofuels and methane recovery are among the strategies being pursued by the Climate Action Team.

Ms. Brown noted that California is the twelfth largest greenhouse gas emitting economy in the world, and that emissions are growing as the population and economy grow. In California, the transportation sector is the largest contributor to greenhouse gasses at 41%, with industrial sources at 23%, in-state electrical generation sources at 10%, out-of state generation at 10%, and 16% from other sources. The California Energy Commission has been directed by the Governor and through legislation to work with other agencies to develop a long-term transportation fuel plan to reduce the impact of transportation in California, as well as reduce use of petroleum based fuels, increase fuel efficiency, and increase use of alternative fuels.

Ms. Brown described many specific recommendations from the 2005 Integrated Energy Policy Report regarding both biomass and biofuels. She also stated that the Governor has directed the Energy Commission to develop an integrated and comprehensive state policy on biomass.

Ms. Brown indicated that the Energy Commission has been working to reinvigorate the Bioenergy Interagency Working Group. This Group is made up representatives from the California Energy Commission (Chair), California Public Utilities Commission, Department of Food and Agriculture, Air Resources Board, Department of Forestry and Fire Protection, State Water Resources Control Board and the California Integrated Waste Management Board. The group began meeting regularly in May 2005. The group's goals are to:

- Identify and develop interagency opportunities to advance biomass-to energy in the form of biopower, biogas and biofuels;
- Address barriers and propose solutions;
- Create synergy through joint, state level efforts.

A Draft Consultant Report, "Recommendations for a Bioenergy Plan for California," was the subject of a public workshop on March 9, 2006. State policy objectives recommended in the report included:

- 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.
- Maximize the contributions of bioenergy toward achieving the state's petroleum reduction, climate change, renewable energy, and environmental goals

Some other key plan recommendations included:

- Support strategic RD&D for advanced biomass technologies, including gasification, pyrolysis, biomass-to-liquids, landfill gas to energy and systems using cellulosic feedstocks.
- Form strategic alliances at the state, regional and national levels to accelerate technology development.
- Formulate and implement a communications plan on the benefits of bioenergy.
- Explore new avenues of project financing, including loan guarantees and use of existing state bonding authority.
- Consider the establishment of biomass production and use targets in the form of a State Renewable Fuels standard or a State Renewable Set-Aside.

Ms Brown described many specific recommended actions from the report for different government entities, including: the Energy Commission, the Air Resources Board, the California Integrated Waste Management Board, the State Water Resources Control Board, the Department of Forestry and Fire Protection, the Secretary for Food and Agriculture, State Department of General Services, and the California Public Utilities Commission.

The Working Group will continue to meet to ensure that the Plan objectives are met. The final report, "Recommendations for a Bioenergy Plan for California," is now available on our web page at: www.energy.ca.gov/bioenergy_action_plan/

Summary of presentation by Steve Shaffer prepared by CIWMB Staff

Steve Shaffer is the Director of the office of Agriculture and Environmental Stewardship at the California Department of Food and Agriculture

Mr. Shaffer's presentation was entitled, "Agricultural Biomass in California." He began with a series of problem statement:

- Biomass is a disposal problem for industries and society
- Biomass is typically considered an undesirable waste
- Disposal options often have either economic or environmental costs
- He then asked the question, "Can biomass be considered a resource?"

Mr. Shaffer said that there is a large potential resource base from Agricultural and forest residues and urban wastes. He provided data on sources of over 25 million bone-dry tons of agricultural biomass. He stated that there were air quality, water quality landfill capacity, and homeland security and emergency preparedness issues associated with these residual materials.

Mr. Shaffer pointed out that the use of biomass can produce value-added products such as animal feed/bedding, compost, erosion control products, packaging, pulp and paper, composites, and energy product through cogeneration, ethanol, biogas, syngas, and bio-derived diesel. He noted, however that the end use must pay for harvesting and handling to have a sustainable system.

He then went into detail about the example of rice straw management. He explained the way rice straw was historically managed in the past by burning it in the fields because it was cost-effective, helped control weeds and disease, and the fact that rice straw decomposes slowly. He also pointed out the associated problems with this, such as safety issues with visibility and air pollution. He then described the conditional straw burning program requirements, winter flooding programs, and the benefits and economic problems with removal and utilization. He also went into efforts to develop alternative uses for rice straw through legislation, incentive programs, and research efforts and described some of the policy and technical barriers encountered. He stated that there are over one million ton's of excess rice straw generated each year, and that \$35,000,000 is expended each year in efforts to harvest and utilize rice straw, and described many of the uses, asking if some of these uses could be expanded. He noted that use as building material and for erosion control seemed to be in the increase.

Mr. Shaffer also described efforts to divert manure through use as bedding, compost, fertilizer, biogas, and other energy products. He provided details of the Hilarides Dairy bio-methane program in Lindsey, California as an example of how manure can be used to create energy. Some of the benefits included electricity generation, greenhouse gas reduction, reduced odors and flies, and consistent nutrient management. He said the program provides 90% of the electricity needs of the dairy, and could pay for the initial investment in 12 years.

Mr. Shaffer concluded by pointing out the need for policy discussions on several topics, including recognizing associated benefits, establishing uniform policy that provides market predictability, recognizing that societal needs have evolved, recognizing that technology has evolved and striving to achieve multiple benefits by using multiple objectives management strategies.

Summary of presentation by Doug Wickizer prepared by CIWMB Staff

Doug Wickizer is the Department Chief for Environmental Protection, Regulation, and Forest Product Utilization at the California Department of Fire and Forestry Protection.

Mr. Wickizer's presentation was entitled "Forestry and Emerging Technologies - Why?" He began by describing the large amounts of available biomass from California's forest and shrubland. He also noted that the greatest number of trees available were small in diameter and therefore not marketable for traditional solid products, but possess the greatest potential for fire and forest health risk. Mr. Wickizer described the various products that come from California's forest biomass, which included traditional products, as well as materials potentially suitable for conversion technologies such as logging slash, mill residue, forest thinnings, and shrub and chaparral. He also mentioned the value of forestry lands for carbon trading and conservation easements.

Mr. Wickizer then began to describe some of the potential threats the biomass in our forest lands can pose. He described the affects of drought in Southern California, and how it makes trees more susceptible to disease, death and fire. He discussed the threat of the transmission of disease and pests such as pine pitch canker, sudden oak death, eucalyptus long-horned borer and pine bark beetles. He noted that all of these factors along with increased wildland development cause an increased potential for large wildfires. He said that 48 % of States wildlands are in a high, very high, or extreme fire threat class, and that fire sizes have been increasing over the past five years, due in part to fuel loading.

Mr. Wickizer finished his presentation by outlining emerging technologies and other potential markets that might accept much of the excess biomass from these sources, including:

- Bio-Energy (Alternative fuels & electricity) such as gasification, anaerobic digestion and thermo-chemical technologies
- Chemicals, resins and polymers
- Reconstituted wood products such as plastic composites and oriented strand board
- Niche Markets such as compressed beams and the hardwood industry

Summary of presentation by Jay Chen prepared by CIWMB Staff

Jay Chen is a Senior Engineer Manger for the South Coast Air Quality Management District, responsible for overseeing the permitting and field enforcement of the Toxics and Waste Management Section of the Office of Engineering and Compliance.

Mr. Chen began his presentation by describing the California air quality perspective, particularly that of the South Coast which he said has some of the worst air pollution problems in the nation. He then described the regulatory structure designed to help minimize these problems. Locally, these are delegated primarily to the Air Pollution Control Districts (overseeing individual counties) and the Air Quality Management Districts (overseeing regions).

Mr. Chen provided some detailed information regarding the air quality permitting process required to construct and operate conversion technology facilities in California. He said that the key air quality issues associated with conversion

technology facilities are the levels of emission control and/or product refinement necessary to address direct (on-site) and indirect (product use) emissions, the fact that reduced transportation emissions may not offset increased local impacts, and that co-locating MRF/CT does not necessarily gain community acceptance.

Mr. Chen provided several useful suggestions that might facilitate success in permitting a facility. These included the early involvement of the local regulatory bodies, government officials and community leaders, eliminating odors and nuisance issues at existing material recovery facilities and transfer stations if proposing co-location, improving the separation of materials to minimize emissions, and to use technologies that have the lowest emissions.