

Onsite Biomass & Biogas:

A Natural Strategy for Success

U.S. EPA's Green Power Partnership

Blaine Collison, U.S. EPA



Green Power Partnership Webinar

May 19, 2009

1:00 – 2:30 p.m. EST

Today's Agenda

- Introduction & Biomass 101
 - Blaine Collison, Director, EPA's Green Power Partnership
- Middlebury College's Biomass Gasification Plant
 - Jack Byrne, Director, Sustainability Integration Office
- University of Iowa Biomass Project
 - Ferman Milster, Associate Director - Utilities & Energy Management
- University of New Hampshire's ECOline
 - Paul Chamberlin, Assistant Vice President for Energy and Campus Development
- Question & Answers

Webinar Logistics

- You will be muted throughout this webinar to minimize background noise.
- Submit questions and comments in writing via the online control panel. To minimize or maximize the control panel, click on the >> button at the top left of the tool bar.
- Presentations from today's session will be made available for download shortly at:
www.epa.gov/greenpower/events/index.htm
- Post-webinar survey.



State Bioenergy Primer

Information and Resources for States On Issues, Opportunities, and Options For Advancing Bioenergy

To be posted at: www.epa.gov/cleanenergy/stateandlocal

- Forthcoming Summer 2009
- Covers biopower, biofuels, and bioproducts
- Concise format useful for state policy-makers
- Primer to understand the basics / determine if additional information is wanted or needed

Abbreviated Table of Contents:

- Chapter 2. What Is Bioenergy?
 - Feedstocks, Conversion Technologies
- Chapter 3. Benefits, Challenges, and Considerations of Bioenergy
 - Economics, Environmental Issues, Feedstock Supply, Infrastructure
- Chapter 4. How Can States Identify Bioenergy Opportunities?
 - Determine Feedstock Availability, Assess Markets, Identify Opportunities
- Chapter 5. Options for States to Advance Bioenergy Goals
 - Policies, Regulatory Development; Environmental Revenue Streams, Investments/Financing, Incentives, RD&D, Information Sharing

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What is Green Power?

- Green power is an “environmentally-differentiated” electricity product from:
 - solar
 - wind
 - geothermal
 - biomass
 - biogas
 - small hydro



Green Power Benefits

- Environmental
 - Reduce greenhouse gases (GHGs)
 - Reduce criteria pollutants*
 - Water conservation
- Energy Price Stability/Reliability
 - Reduced demand for natural gas lowers prices
 - Electricity price stability
 - On-site systems can reduce T&D requirements
- Economic Development
 - Job creation
 - Landowner lease payments (\$2000-\$5000/wind turbine)
 - Tax revenues (often in rural areas that need them)



Buying Green Power – Product Options

- Green Power Electricity Products
 - Buy electricity from utility green pricing programs or green power retail marketers that is all, or partially, generated from renewable sources
- Renewable Energy Certificates (REC)
 - Buy only the environmental “attributes” associated with the electricity generated (1 REC = 1 MWh)
- On-site Generation
 - Install renewable energy system on-site (e.g. solar panels, wind turbines)



Partnership Offerings & Benefits

- Credible Benchmarks
 - Metric for “How much green power is enough?”
 - Definition of eligible renewables
- Planning & Implementation Resources
 - Green power locator www.epa.gov/greenpowerpubs/glocator.htm
 - Purchasing guidance
 - Marketing and communications support
 - Environmental impact information www.epa.gov/greenpower/pubs/calculator.htm
- Recognition
 - Top Partner lists
 - Green Power Leadership Awards
 - Promotional opportunities
 - Use of the Partnership logo



Biomass Energy 101

- "Biomass" is a term used to describe natural materials used as energy sources
- Biomass derived from organic materials, including wood and crops, as well as wastes from consumer, municipal and agricultural processes, can be used to generate heat and electricity. Biomass fuels encompass a broad range of solids, gases, and liquids that result from living organisms or from the wastes and by-products of human activities.
- Biomass energy is commonly used in the following applications:
 - Electricity production
 - Heat generation
 - Transportation fuel
- Biomass supplies ~55 billion kWh/yr, or 1.3% of U.S. electricity generation



Biomass Energy: Applications

- Cofiring
 - Cofiring is the mixture of biomass fuel with fossil fuels. This reduces reliance on fossil fuel and helps reduce emissions.
- Landfill and Digester Gas
 - The decomposition of organic matter in landfills and wastewater treatment plants produces significant amounts of methane as a byproduct. Methane is also the main component of natural gas, which is a primary fuel for electricity generation. Though the gas needs to be collected and its impurities removed, it is still a cost effective means of generating power or heat by using what would otherwise be vented to the atmosphere.
- Biomass Gasification
 - In a gasification system, biomass (wood or other solid plant matter) is heated to high temperatures (600-800 °C) in a gasifier. The fuel is converted to a gas that is then used to generate heat and power. Gasifiers are a much cleaner and more efficient technology than traditional biomass combustion systems.

Benefits of Onsite Biomass & Biogas

- Dispatchable renewable generation technologies
 - Have ability to supply baseload power
- Local renewable energy source
 - The money spent on biomass keeps energy dollars circulating in the local economy and supports local jobs
- Fuel price stability
- Energy Security
- Potential for Combined Heat and Power (CHP) applications
- Waste disposal
 - use of biomass wastes mitigates the need to create new landfills and extends the life of existing landfills
- Co-firing is a cost-effective means of using current power generation technologies while incorporating renewables and decreasing emissions profiles

Want to Know More?

- Basic Information

- An overview of Green Power Partnership is available on EPA's Web site www.epa.gov/greenpower
- To see EPA's Top Partner Lists, please visit: www.epa.gov/greenpower/toplists/index.htm

- More Questions?

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