



## Community Engagement & Outreach

### Books/Booklets

**Breaking the Impasse: Consensual Approaches to Resolving Public Disputes.** By Lawrence Susskind and Jeffery Cruikshank, 1987. New York, NY: Basic Books, Inc., Publishers. This book provides consensus building methods for effectively settling public disputes.

**Communication Skills for Conservation Professionals.** By Susan K. Jacobson, 1999. Washington, DC: Island Press. This book covers communication program design and strategies for natural resource professionals.

**Conservation Education and Outreach Techniques.** By Susan K. Jacobson, Mallory D. McDuff, and Martha C. Monroe, 2006. Oxford, UK: Oxford University Press. This book discusses relevant theories along with strategies for planning, implementing, and evaluating a wide range of techniques. This book is a practical guide for applying conservation education and outreach programs.

**Facilitator's Guide to Participatory Decision-Making, 2nd Edition.** By Sam Kaner, Lenny Lind, Catherine Toldi, Sarah Fisk, and Duane Berger, 2007. San Francisco, CA: Jossey Bass. This comprehensive book is a valuable resource for learning the skills necessary for group facilitation.

**Good Neighbor Campaign Handbook: How to Win.** By Paul Ryder, 2006. This handbook provides a detailed account of campaign approaches used by grassroots neighborhood organizations to solve factory-related pollution problems. It includes chapters on research, campaign planning, tactics, recruitment, citizen air monitoring, health surveys, fundraising, publicity, and negotiation.

**Successful Public Meetings.** By Elaine Cogan, 2000. Chicago, IL: APA Planners Press. This comprehensive guide to planning and conducting productive meetings elaborates on components of a successful meeting, crucial tasks, how to avoid disasters, and ways to manage difficult participants.

**Working through Environmental Conflict: The Collaborative Learning Approach.** By S. E. Daniels and G. B. Walker, 2001. Westport, CT: Praeger. This book provides theories, techniques, and case studies on using collaborative learning as an approach to natural resource policy decision-making and conflict management.

## Reports

**Learning about Learning Networks: Results from a Cross-Disciplinary Study.** By Marcia Brown and Nick Salafsky, 2004. Foundations of Success. (Available at: [http://www.fosonline.org/images/documents/Learning\\_About\\_Networks\\_7\\_July\\_04.pdf](http://www.fosonline.org/images/documents/Learning_About_Networks_7_July_04.pdf)). This report examines 21 case studies of learning networks to identify commonalities and differences. In addition, the authors provide recommendations for practitioners to consider when implementing different types of learning networks.

**Woody Biomass Users' Experiences Offer Insights for Government Efforts Aimed at Promoting Its Use.** By United States Government Accountability Office, 2006. Report No. GAO-06-336. (Available at: <http://www.gao.gov/new.items/d06336.pdf>). This report provides a review of the successes and challenges of 13 current woody biomass users located in the United States, including power plants, pulp and paper mills, schools, and hospitals.

## Articles

**Answers to ten frequently asked questions about bioenergy, carbon sinks and their role in global climate change.** By Robert Matthews and Kimberly Robertson, 2005. IEA Bioenergy, Task 38. (Available at: <http://www.ieabioenergy-task38.org/publications/faq/>). This document, prepared by the International Energy Agency, explains basic concepts of using biomass for energy, carbon dioxide emissions, and carbon sequestration by biomass.

**Community-based Forestry Perspectives on Woody Biomass,** Briefing Paper, Rural Voices for Conservation Newsletter, March 2005. (Available at: <http://209.85.165.104/search?q=cache:yT4WjibCwbkJ:www.sustainablenorthwest.org/pdf/policy/biomass/biobrief.pdf+woody+biomass+economic&hl=en&ct=clnk&cd=1&gl=us&client=firefox-a>). This paper discusses key considerations for biomass utilization policy, forest restoration and potential for woody biomass, the benefits of woody biomass, impediments to its utilization, and the importance of public involvement.

**Fuel for the Future.** USDA National Agroforestry Center, 2006. Inside Agroforestry, Volume 15, Issue 3. (Available at: <http://www.unl.edu/nac/insideagroforestry/vol15issue3.pdf>). This article provides an excellent example of how to create attractive and appealing informative materials that encourage communities to pursue biomass resources produced through agroforestry techniques.

## Brochures/Magazines/Newsletters

**Renewable Energy Sources: A Consumer's Guide, Energy Information Brochures, Official Energy Statistics from the U.S. Government, Renewable Energy Trends.** By the U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA), 2004. (Available at: <http://www.eia.doe.gov/neic/brochure/renew05/renewable.html>). This brochure provides a general overview of all sources of renewable energy and includes figures depicting energy consumption and electricity generation by fuel source.

## Media

**Fuels for Schools Partnership.** (<http://www.fuelsforschools.org>). The Fuels for Schools Program is a venture between public schools, state foresters, and regional foresters of the Northern and Intermountain Regions of the USDA Forest Service. The program's mission is to promote the use of woody biomass as a renewable, natural resource that provides a clean, readily available energy source for use in heating systems in public and private buildings. This Web site contains useful assessments, photographs, presentations, and information for those interested in pursuing biomass energy as an efficient and cost-saving heat source in their own facilities.

## Web Sites

**Education Web Site on Biomass and Bioenergy.** (<http://www.aboutbioenergy.info/>). Administered by the International Energy Agency (IEA), this attractive and fun-to-use Web site provides tools, papers, brochures, links, and other resources about biomass technologies, economics, benefits, and implementation.

**The Environmental Literacy Council.** (<http://www.enviroliteracy.org/index.php>). The Environmental Literacy Council helps citizens, especially young people, make wise environmental decisions. It is an independent, non-profit organization that gives teachers the tools to help students develop environmental literacy—a fundamental understanding of the systems of the world, both living and non-living, along with the analytical skills needed to weigh scientific evidence and policy choices. This Web site provides information and resources on a number of environmental topics, including energy.

**International Energy Agency (IEA) Bioenergy.** (<http://www.ieabioenergy.com>). IEA Bioenergy is an organization that was set up in 1978 by the International Energy Agency (IEA) with the aim of improving cooperation and information exchange between countries that have national programs in bioenergy research, development, and deployment. This Web site provides a global perspective on biomass energy use with event listings, a media centre, and a host of well-produced publications and informative materials for promoting the utilization of woody biomass as a sustainable fuel source.

**Primer for Effective Campaign Strategies.** ([http://glhabitat.org/GL\\_Toolbox\\_v1/Leave\\_Alone/primerintro.html](http://glhabitat.org/GL_Toolbox_v1/Leave_Alone/primerintro.html)). Created by Biodiversity Project and distributed by the Great Lakes Aquatic Habitat Network & Fund (GLAHNF), the Great Lakes Connecting Communities Communications Primer provides a simple approach for creating an effective campaign strategy.

**U.S. Department of Energy, Energy Efficiency and Renewable Energy, a Consumer's Guide to Energy Efficiency and Renewable Energy.** ([http://www.eere.energy.gov/consumer/your\\_home/electricity/index.cfm/mytopic=10450](http://www.eere.energy.gov/consumer/your_home/electricity/index.cfm/mytopic=10450)). This Web site describes the common technologies behind using biomass to produce energy. Links to a biomass resource map and additional information on bioenergy basics, gasification, and power production are also provided.

## Funding Sources

**Sun Grant Initiative.** (<http://sungrant.tennessee.edu/>). In an effort to develop solutions for America's growing energy needs and revitalize rural communities, the Sun Grant Initiative promotes the creation of university-based research, extension, and education programs on renewable energy and bio-based technologies. The Southeastern Sun Grant Center of Excellence at the University of Tennessee, Agricultural Experiment Station coordinates activities in Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia. This Web site provides information on competitive grants, regional workshop and seminar events, and a host of additional informative resources.

## Potential Guest Speakers

- Outreach, extension, or public education specialist
- Elected official from a community that has successfully involved its constituents in discussions about energy

## Economics

### Books/Booklets

**The Brilliance of Bioenergy in Business and in Practice.** By R.E.H. Sims, 2002. London, UK: James and James. This book covers several aspects of using biomass to generate energy, including business opportunities and technologies. In addition, case studies are provided within the chapters to convey real-life successes and challenges.

### Reports

**Economic Availability of Alternative Biomass Sources for Gainesville, Florida.** By Douglas R. Carter, Matthew Langholtz, Timothy Townsend, and Brajesh Dubey, in press. University of Florida, School of Forest Resources and Conservation and Department of Environmental Engineering. This report provides an assessment of the economic availability of alternative biomass resources in north central Florida, including supply curves under various scenarios, economic impacts, projections of resource changes in the future, CO<sub>2</sub> emissions, and transportation/traffic impacts.

### Articles

**Biomass as Feedstock for a Bioenergy and Bioproducts Industry: the Technical Feasibility of a Billion-ton Annual Supply.** By R. Perlack, L. Wright, A.F. Turhollow, and others, 2005. Oak Ridge, TN: Oak Ridge National Laboratory. (Available at [http://feedstockreview.ornl.gov/pdf/billion\\_ton\\_vision.pdf](http://feedstockreview.ornl.gov/pdf/billion_ton_vision.pdf)). This report examines the feasibility of reaching goals set forth in the Biofuels Initiative (30 x 30) and the capability of U.S. land resources to sustainably supply one billion dry tons of biomass per year.

**The Economics of Forest-based Biomass Supply.** By R. A. Sedjo, 1997. Energy Policy 25(6): 559-566. This article examines the economics of increasing energy generation from woody biomass and briefly covers the environmental impacts of using biomass versus fossil fuels.

**Measuring the Economics of Biofuel Availability.** By Matthew Langholtz, Douglas R. Carter, Matt Marsik, and Richard Schroeder. (Available at: <http://www.esri.com/news/arcuser/1006/biomass1of2.html>). Based on research done for the Wood to Energy Outreach Program, this article discusses strategies for determining the economic availability or total delivered price for a given quantity of woody biomass in selected counties. This assessment takes into account a number of factors, including biomass type, distance, and transportation infrastructure using ArcGIS Network Analyst.

**Thermal Energy, Electricity, and Transportation Fuels from Wood.** By John I. Zerbe, 2006. Forest Products Journal 56(1). (Available at <http://www.treesearch.fs.fed.us/pubs/22991>). This article provides an economic perspective on the potential for energy produced from woody biomass to help satisfy the nation's growing demand for a variety of dependable fuel sources.

## Web Sites

**U.S. Department of Energy, Energy Efficiency and Renewable Energy, Biomass program: Economic growth.** ([http://www1.eere.energy.gov/biomass/economic\\_growth.html](http://www1.eere.energy.gov/biomass/economic_growth.html)) This Web site provides information about the economic impacts of using biomass for energy and provides links to several related reports and documents.

## Possible Field Trips

- A utility or industry that uses wood for energy and is willing to discuss economic aspects

## Potential Guest Speakers

- Economic development experts
- Biomass financing consultants
- Forestry market experts

# Energy

## Books/Booklets

**Biomass Magazine.** (Available online at: <http://www.biomassmagazine.com/index.jsp>). This magazine covers a wide range of topics related to biomass including new technologies, case studies, industry news, and much more. Visit <https://ssl.bbfbiofuels.com/bmm/subscribe-payment.jsp> to subscribe to receive hard copies.

**Energy Efficiency Best Practices Workbook for Local Governments.** Sponsored by the California Local Energy Efficiency Program (CALeep). This workbook is designed to help communities that are looking to reduce energy use, costs, and greenhouse gas emissions. It describes a basic five-step process that communities can follow to increase their level of energy efficiency, whether starting from scratch or building on existing energy efficiency activities.

## Reports

**Fuel Value Calculator.** By Forest Products Laboratory, 2004. Madison, WI: State and Private Forest Technology Marketing Unit. Publication WO-3. (Available at: <http://www.fpl.fs.fed.us/documnts/techline/fuel-value-calculator.pdf>). This tool provides a user-friendly way to compare typical unit costs of various fuel sources, such as comparing the cost of using wood to the cost of using natural gas.

**Primer on Wood Biomass for Energy, USDA Forest Service Report.** By Richard Bergman and John Zerbe, 2004. USDA Forest Service, State and Private Forestry Technology Marketing Unit, Forest Products Laboratory, Madison, Wisconsin. (Available at: [http://www.state.co.us/oemc/programs/waste/biomass/resources/Primer\\_on\\_Wood\\_Biomass.pdf](http://www.state.co.us/oemc/programs/waste/biomass/resources/Primer_on_Wood_Biomass.pdf)). This report summarizes the concepts of wood energy on a residential, commercial, and industrial scale in the U.S.

## Articles

**Biopower Program: Activities Overview. Biopower Fact Sheet.** By National Renewable Energy Laboratory, U.S. Department of Energy, 2000. (Available at: <http://www.nrel.gov/docs/fy00osti/27980.pdf>). This fact sheet introduces biomass power generation and the Department of Energy's Biopower Program. It also provides information on the environmental and economic benefits of using biomass and the activities of the Biopower program.

**The Carbon Connection.** By David W. Orr, 2007. *Conservation Biology* 21 (2), 289–292. This essay addresses some of the indirect social and environmental costs of using coal for power production.

**The Contribution of Biomass in the Future Global Energy Supply: A Review of 17 Studies.** By Goran Berndesa, Monique Hoogwijkb, and Richard van den Broek. 2003. *Biomass and Bioenergy: Volume 25*. This paper discusses the contributions of biomass to the future global energy supply. The discussion is based on a review of 17 earlier studies on the subject. These studies have arrived at widely different conclusions about the possible contribution of biomass in the future global energy supply.

**Energy from Wood.** By John I. Zerbe, 2004. *Encyclopedia of Forest Sciences: Volume 2*. (Available at: <http://www.treesearch.fs.fed.us/pubs/7120>). This article provides descriptions of the various forms of fuel inputs derived from woody biomass and the common uses of biomass as a source of energy.

**Short-term Energy Outlook.** By the Energy Information Administration, 2006. (Available at: <http://www.eia.doe.gov/emeu/steo/pub/contents.html>). This article provides market forecasts and trends for coal, electricity, natural gas, and petroleum.

**What is a Megawatt?** By D. Bellemar, 2003. (Available at: <http://www.utilipoint.com/issuealert/article.asp?id=1728>.) This article provides a helpful explanation of the term megawatt and discusses the factors that affect the number of homes that one megawatt can power.

## Web Sites

**The Encyclopedia of Southern Bioenergy.** (<http://www.forestencyclopedia.com/Encyclopedia/bioenergy>). This Web site provides a comprehensive synthesis of biomass information. Topics include the southern bioenergy resource, forest management, utilization, harvesting, economics, and environmental sustainability.

**Energy Citations Database.** (<http://www.osti.gov/energycitations/index.jsp>). This database provides free access to more than two million science research citations from 1948 through the present. There are over 140,000 electronic documents, primarily from 1994 forward, available via the database. Citations and documents are made publicly available by the U.S. Department of Energy.

**Energy Information Administration, Renewables and Alternate Fuels, Wood and Wood Waste.** (<http://www.eia.doe.gov/cneaf/solar.renewables/page/wood/wood.html>). This Web site provides data on biomass energy consumption by industry and by source of biomass. Links to additional data on wood and wood waste are also provided.

**Environmental and Energy Study Institute (EESI).** (<http://www.eesi.org/>). EESI is a non-profit organization dedicated to promoting environmentally sustainable societies. EESI produces credible, timely information on innovative public policy initiatives in the form of publications, briefings, workshops, and task forces. This Web site offers fact sheets, presentations, reports, and other publications about climate change, energy issues, and renewable energy sources.

**Eprida, Inc.** ([http://www.eprida.com/eprida\\_flash.php4](http://www.eprida.com/eprida_flash.php4)). This Web site provides information on Eprida, Inc., founded in 2002 to provide a commercial vehicle for exploring innovative solutions to global challenges. The Delaware-based corporation's early research focused on addressing global climate change. This work has led to breakthrough innovations in renewable energy, carbon capture, and carbon utilization for sustainable agriculture.

**Forest Bioenergy.** (<http://www.forestbioenergy.net>). This Web site is designed for information sharing among natural resource management, extension, and community planning and development professionals. It is one of several products resulting from the Southern Forest Research Partnership bioenergy training initiative. This site contains a variety of resources and information related to biomass utilization, including publications, presentations, additional links, events, and images. Materials cover a wide range of topics including southern wood supply, management, harvesting, economics, and forest sustainability.

**Plant Power: Energy and the Environment.** (<http://www.treepower.org/>). This Web site features project descriptions and research reports from studies by the Common Purpose Institute, the University of Florida, the U.S. Department of Energy, farmers, power providers, biofuel producers, and others. The organization works to find ways to grow, harvest, and use fast-growing crops and biomass waste streams to fuel power plants and provide industrial biogas, transportation fuels (ethanol and biodiesel), and steam power.

**Southeast Regional Biomass Program, Southern States Energy Board.** (<http://www.serbep.org/>). This Web site provides information about upcoming events, news, projects, and publications concerning the use of bioenergy. Several links to other helpful Web sites are provided along with a forum discussion board.

**U.S. Department of Agriculture Forest Service, Forest Products Lab, State and Private Forestry Technology Marketing Unit.** ([http://www.fpl.fs.fed.us/tmu/wood\\_for\\_energy/wood\\_for\\_energy.html](http://www.fpl.fs.fed.us/tmu/wood_for_energy/wood_for_energy.html)). The purpose of the Technology Marketing Unit is to provide technical assistance for improving utilization and marketing of forest products. This Web site provides links to several publications and other materials that may be helpful for understanding the use of wood for energy.

**U.S. Department of Energy, Biomass Program.** (<http://www1.eere.energy.gov/biomass/>). This Web site provides information about the benefits of biomass utilization, current issues, feedstocks, technologies, and research and development activities. It also provides a database of documents on biomass.

**U.S. Department of Energy, Energy Efficiency and Renewable Energy, Glossary of Energy-Related Terms.** ([http://www.eere.energy.gov/consumer/information\\_resources/index.cfm/mytopic=60001](http://www.eere.energy.gov/consumer/information_resources/index.cfm/mytopic=60001)). As part of the Consumer's Guide to Energy Efficiency and Renewable Energy, this Web site provides an easy to use glossary of energy-related terms.

**U.S. Department of Energy, Energy Efficiency and Renewable Energy, State Energy Program.** ([http://www.eere.energy.gov/state\\_energy\\_program/projects\\_state.cfm](http://www.eere.energy.gov/state_energy_program/projects_state.cfm)). This Web site features links to, and information about, state energy programs and special projects, grants, and case studies.

**U.S. EPA Clean Energy Program.** (<http://www.epa.gov/cleanenergy/epaclean.htm>). This Web site provides links and information about initiatives related to combined heat and power, green power, state energy programs, energy efficiency, and renewable energy.

## Possible Field Trips

- Many wood-to-energy facilities will provide tours if you contact them ahead of time.
- **Rowan County High School.** This school has utilized biomass energy to generate heat for its classrooms for over twenty-five years. A sawdust combustion unit operates on an almost year-round basis generating enough excess energy to provide power for a near-by utility company. Please contact Ted Trent with the Rowan County School District at (606) 784-8928 ext. 2010 or [ted.trent@rowan.kyschools.us](mailto:ted.trent@rowan.kyschools.us) to make arrangements.

## Funding Sources

**Conservation Innovation Grants (CIG).** (<http://www.nrcs.usda.gov/programs/cig/>). CIG is a voluntary program intended to stimulate the development and adoption of innovative conservation approaches and technologies while leveraging Federal investment in environmental enhancement and protection, in conjunction with agricultural production. Environmental Quality Incentives Program funds are used to award competitive grants to non-Federal governmental or non-governmental organizations, Tribes, or individuals. The National Resources Conservation Service (NRCS) administers CIG.

## Potential Guest Speakers

- Energy experts
- Representatives from renewable energy organizations
- State Energy Policy Office members
- Engineers or consultants who specialize in biomass conversion technologies



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## Environmental Considerations

### Articles

**Environmental Impacts of Renewable Energy Technologies.** (Available at: [http://www.ucsusa.org/clean\\_energy/renewable\\_energy\\_basics/environmental-impacts-of-renewable-energy-technologies.html](http://www.ucsusa.org/clean_energy/renewable_energy_basics/environmental-impacts-of-renewable-energy-technologies.html)). This briefing paper was adapted from material in the UCS book *Cool Energy: Renewable Solutions to Environmental Problems*, by Michael Brower (MIT Press, 1992), 220 pp. It discusses a number of renewable energy sources, including biomass, wind, solar, and geothermal, and the positive and negative impacts these sources may have.

**Stabilization Wedges: Solving the Climate Problem for the Next 50 Years with Current Technologies.** By S. Pacala and R. Socolow. *Science*. August 2006. Vol. 305. This article examines how current scientific knowledge and technologies could be used to limit atmospheric carbon to a concentration that would prevent most damaging climate change.

### Brochures/Magazines/Newsletters

**Climate Solutions. Co-op America Quarterly Magazine. No. 70 Fall 2006.** This booklet includes several articles about climate change and offers a wide range of potential solutions.

### Web Sites

**Northeast Sustainable Energy Association, Biopower.** (<http://www.nesea.org/energy/info/biopower.html>). The Northeast Sustainable Energy Association encourages the understanding, development, and adoption of energy conservation along with renewable energy technologies. This Web site gives an overview of biomass power, including sources and economic and environmental impacts.

**Power Scorecard, Electricity and the Environment.** ([http://www.powerscorecard.org/elec\\_env.cfm](http://www.powerscorecard.org/elec_env.cfm)). This Web site is a tool that is useful for comparing types of power generation sources and their effects on the environment.

### Potential Guest Speakers

- Environmental managers from utilities or industries that use wood for energy
- Representative from an environmental organization that has expertise in energy, renewable energy, or woody biomass

## Forest Management

### Books/Booklets

**Fuel for the Future. Inside Agroforestry booklet. Volume 15, Issue three.** This booklet includes several articles on topics related to biomass including perennial woody crops, bioenergy basics, and the environmental benefits of biomass energy.

## Reports

**Perspectives on Woody Biomass Fuel Value and Specifications in Alabama.** By Dana Mitchell, 2006. Some characteristics of woody biomass that are often included in mill specifications include size, species, ash and moisture content. This report briefly reviews these characteristics in reference to how they impact the energy value and physical handling or processing of the material.

**Linking Community Development with National Forest Planning and Management in the South.** By Donald E. Voth, Martin Jardon, Cindy McCauly, Zola K. Moon, and Irene Frentz, 1999. Mississippi State, MS: Southern Rural Development Center. This report addresses rural development issues affecting the South.

## Articles

**Comparisons of two methods of harvesting biomass for energy.** By W.F. Watson, B. J. Stokes, and I. W. Savelle, 1986. *Forest Products Journal* 36(4): 63-68. This article compares conventional and intensive methods of harvesting biomass for energy.

**Eastern Texas Harvest and Utilization Study, 2003.** By J. Bentley and T. Johnson, 2004. SRS-97. Asheville, North Carolina: USDA Forest Service Southern Research Station. Based on a forest harvest and utilization study in East Texas, this article provides results concerning the percent of wood utilized for products and the remaining logging residues for both hardwood and softwood forests.

**Modeling Stand Level Growth and Yield Response to Silvicultural Treatments.** By L.V. Pienaar and J.W. Rhoney, 1995. *Forest Science* 41(3): 629-638. This article presents a height growth model that accounts for applying different silvicultural treatments to a slash pine plantation.

**Sustainable Production of Woody Biomass for Energy.** By the IEA Bioenergy Executive Committee, 2003. (Available at: [http://www.ieabioenergy.com/library/157\\_PositionPaper-SustainableProductionofWoodyBiomassforEnergy.pdf](http://www.ieabioenergy.com/library/157_PositionPaper-SustainableProductionofWoodyBiomassforEnergy.pdf)). This paper discusses traditional woody biomass production systems, sustainability issues and indicators, and makes general recommendations for sustainable production.

**Urban wood waste resource assessment.** By G. Wiltsee, 1998. Golden, CO: National Renewable Energy Laboratory. (Available at: <http://www.p2pays.org/ref/19/18947.pdf>). This study examined wood waste resources in 30 U.S. metropolitan areas in order to develop predictive tools for estimating urban waste wood resources based on an area's demographic and economic variables.

**Utilization of Forest Biomass to Restore Forest Health and Improve U.S. Energy Security.** This article provides a position statement about woody biomass production and forest health that was originally adopted by the Society of American Foresters (SAF) in 2005.

## Media

**Sustainable Hardwoods Network.** (<http://sustainablehardwoods.net/biomass>). The purpose of the Woody Biomass Utilization Forum held on September 23, 2004, was to address the uses of wood chips and other forest residues as possible energy sources for electrical generation and heat. This Web site provides information on forum presentations, including the types and properties of biomass materials, small-scale biopower systems, and safeguarding rural communities through fuels utilization.

**University of Minnesota Extension Service Biomass Web site.** (<http://www.extension.umn.edu/woodlands/biomass#download>). This Web site provides resources from three workshops hosted by the University of Minnesota Extension Service in March 2006. The workshops, titled “Woody Biomass Harvesting & Utilization,” were held in Grand Rapids, St. Cloud, and Rochester, Minnesota.

**Wood Utilization Solutions to Hazardous Fuels.** (<http://www.emmps.wsu.edu/woodutilization/secondary/PROCEEDINGS.html>). This Web site provides information from the “Wood Utilization Solutions to Hazardous Fuels” workshop held in Spokane, Washington on December 14, 2004, and includes several slide presentations that focus on biomass energy solutions. Presentation topics include small-scale biomass energy production, biomass energy plants, and small-scale gasifiers.

## Web Sites

**USDA Forest Service Woody Biomass Utilization Web site.** (<http://www.fs.fed.us/forestmanagement/WoodyBiomassUtilization/index.shtml>). This Web site, developed by The USDA Forest Service, is dedicated to advancing woody biomass utilization. It contains an array of valuable information regarding technological achievements, products, partnering organizations, fuel reduction and management techniques, and funding opportunities.

**USDA National Agroforestry Center.** (<http://www.unl.edu/nac/>). The USDA National Agroforestry Center (NAC) was founded in 1992. The USDA Forest Service Research branch and state and private forestry were driving forces in its creation and in 1995, the partnership expanded to include the Natural Resources Conservation Service (NRCS). NAC works to accelerate the application of agroforestry through a national network of partners. They conduct research, develop new technologies and tools, coordinate demonstrations and training, and provide useful information to natural resource professionals. This Web site provides information, links, and other resources about agroforestry.

## Possible Field Trips

- A timber plantation that is a certified producer of sustainable forest products

## Potential Guest Speakers

- Certified sustainable forest products producer
- Forester from a state or county forestry agency
- Forestry extension agent or specialist
- Consulting forester

# Infrastructure & Logistics

## Web Sites

**BioMass Energy Concepts (BEC).** (<http://www.becllusa.com>). BEC provides a variety of services related to the sale of biomass energy equipment packages. BEC specializes in creating tailored biomass fueled energy systems that meet the specific needs of their customers and offers engineering assistance.

**Biomass Trader Site.** (<http://www.ncbiomasstrader.com/home.aspx>). The North Carolina State Energy Office sponsors this web-based bio-energy exchange service. This Web site provides contact information for and resource descriptions of bio-based manufacturing products to help biomass energy suppliers connect with prospective buyers in the state of North Carolina. This resource might provide a useful model for other states.

**Timber Buy Sell Site.** (<http://www.timberbuysell.com>). This Web site serves as a marketplace for forest resources. Users can search ads from buyers and sellers of forest residue, logs, mill residue, and standing timber.

**WoodFuel.com.** (<http://www.woodfuel.com>). This Web site provides an online forum for the growing network of biomass suppliers and consumers to exchange products and services. WoodFuel forms trade alliances with the equipment and transportation industries involved with biomass energy production and uses the latest Internet technologies to complete an efficient supply chain for the entire industry.

## Possible Field Trips

- A tour of a utility or industry that uses wood to produce energy

## Potential Guest Speakers

- Local leaders from communities that have a successful wood-to-energy facility
- Consultants, or other experts, on harvesting, transportation, storage, and other infrastructure concerns

# Policy

## Books/Booklets

**Forest Resource Policy.** By Frederick W. Cubbage, Jay O’Laughlin, Charles S. Bullock III, 1993. New York, N.Y.: John Wiley & Sons, Inc. This textbook examines the political processes that distribute and allocate power and resources in the United States as they relate to forest policy, the participants in the policy process, and information on forest resource programs, laws, and policies.

**Growing Greener: Putting Conservation Into Local Plans and Ordinances.** By Randall Arendt, 1999. Washington, DC: Island Press. This book focuses on empowering communities with tools that set new standards for developing a creative design for local conservation plans and ordinances.

## Reports

**Bioenergy: Technologies, Federal and State Incentives.** By Carol Werner, 2004., Washington, DC: Environment & Energy Study Institute. (Available at: <http://www.eesi.org/programs/agriculture/1.23.04%20bioenergy.pdf>). This report highlights important aspects of several federal and state incentives related to using biomass for energy.

**Biofueling Rural Development: Making the Case for Linking Biofuel Production to Rural Revitalization.** By Jim Kleinschmit, 2007. Carsey Institute Policy Brief No. 5, University of New Hampshire. (Available at: [http://www.carseyinstitute.unh.edu/documents/Biofuels\\_final.pdf](http://www.carseyinstitute.unh.edu/documents/Biofuels_final.pdf)). This report covers important concepts related to how rural communities can develop biomass resources for use in the energy sector.

**The Work that Goes into Renewable Energy.** By V. Singh and J. Fehrs, 2001. Washington, DC: Renewable Energy Policy Project. (Available at: [http://www.crest.org/articles/static/1/binaries/LABOR\\_FINAL\\_REV.pdf](http://www.crest.org/articles/static/1/binaries/LABOR_FINAL_REV.pdf)). This report covers the labor requirements for renewable energy in the U.S., from the initial harvesting of resources to power generation.

## Articles

**Biofuels: Production and Potential.** By John I. Zerbe, Forum for Applied Research and Public Policy, Winter, 1998. (Available at: <http://www.fpl.fs.fed.us/documnts/pdf1988/zerbe88a.pdf>). This article provides a historical perspective on how U.S. policies have shaped the development and implementation of bio-based energy production methods.

**Renewable Electricity Production Tax Credit, Energy Policy Act of 2005.** By the Northeast Regional Biomass Program (NRBP), 2005. Washington, DC (Available at: [http://www.nrbp.org/pdfs/energy\\_policy\\_act\\_2005.pdf](http://www.nrbp.org/pdfs/energy_policy_act_2005.pdf)). This chart summarizes the available tax credits for qualifying resources provided by the Energy Policy Act of 2005.

## Media

**Biomass, the Energy Policy Act of 2005 and the President's Biofuels Initiative.** By John Ashworth, 2006. Golden, CO: National Renewable Energy Laboratory. (Available at: <http://www.nationalbiomassconference.org/presentations/Ashworth.pdf>). This presentation for the Bioenergy & Wood Product II Conference includes an overview of the Energy Policy Act of 2005, the Department of Energy's response to the Act, and the Biofuels Initiative (30 x 30).

**Wood Biomass Feedstock for Bioenergy and Bioproducts: A North American Solution** slide presentation. By Ed White, Lawrence Abrahamson, Timothy Volk, Lawrence Smart, James Nakas, and Thomas Amidon, SUNY-ESF, Syracuse, NY, 2006. (<http://66.48.22.171/documents/EdWhitePresentation-5December2006.pdf>). This presentation covers national energy issues, federal and state biomass initiatives, and national biomass supply.

## Web Sites

**Biomass Research and Development Initiative.** (<http://www.brdisolutions.com/>). The purpose of the Biomass Research and Development Initiative (BRDI) is to coordinate all federal products, research, and development related to bioenergy. This Web site is a resource for recent news, publications, upcoming events, and links to additional resources.

**Database of State Incentives for Renewable Energy.** (<http://www.dsireusa.org/index.cfm>). Produced by North Carolina Solar Center and Interstate Renewable Energy Council, North Carolina State University, this Web site provides information on federal, state, local, and utility incentives related to renewable energy and energy efficiency.

**Energy Policy Act of 2005.** ([http://www.fedcenter.gov/Documents/index.cfm?id=2969&pge\\_id=1606](http://www.fedcenter.gov/Documents/index.cfm?id=2969&pge_id=1606)). This Web site includes an overview of the main provisions of the Act and a link to the full text version of the Act.

**Federal Biomass Policy, Biomass Program, Energy Efficiency and Renewable Energy.** ([http://www1.eere.energy.gov/biomass/federal\\_biomass.html](http://www1.eere.energy.gov/biomass/federal_biomass.html)). U.S. Department of Energy (U.S. DOE). This Web site provides a comprehensive overview of the major federal laws, executive orders, and reports related to using biomass for energy.

## Potential Guest Speakers

- Policy-maker who specializes in energy issues
- Local leaders who have been involved in energy policy issues

## Social Considerations

### Reports

**Federal Agencies Are Engaged In Various Efforts To Promote the Utilization of Woody Biomass, But Significant Obstacles to Its Use Remain.** United States Government Accountability Office Report No. GA-05-373, 2005. Report to the Chairman, Committee on Resources, House of Representatives. (Available at: <http://www.gao.gov/new.items/d05373.pdf>). This report discusses woody biomass coordination efforts among and within federal agencies and identifies obstacles to their success.

### Articles

**The Origin, Fate, and Health Effects of Combustion By-products: A Research Framework. (Workshop Summaries).** By Maureen D. Avakian, Barry Dellinger, Heide-lore Fiedler, Brian Gullet, Catherine Koshland, Stellan Marklun, Gunter Oberdorster, Stephen Safe, Adel Sarofim, Kirk R. Smith, David Schwartz and William A. Suk, 2002. *Environmental Health Perspectives* 110(11): 1155-1162. This article is a summary of principal findings and recommendations for research focus on the control of combustion by-products and the associated public health effects.

## Technology

### Books/Booklets

**Energy From Biomass: A Review of Combustion and Gasification Technologies.** By P. Quaak, H. Knoef, and H. Stassen, 1999. Washington, DC World Bank. Technical Paper No. 422. This booklet provides a comprehensive review of current biomass combustion and gasification systems, including advantages and disadvantages.

### Reports

**Assessment of Power Production at Rural Utilities Using Forest Thinnings and Commercially Available Biomass Power Technologies.** By C.P. Demeter, D. F. Knowles, J. Olmstead, M. Jerla, and P. Shah, 2003. Landover, MD: Antares Group, Inc., 15-5 through 15-7. (Available at: <http://www.antaresgroupinc.com/DOERUSreport.htm>). This report provides information to consider in the first part of a feasibility study for a biomass power facility, such as biomass supply, power plant location, technology, and economics.

**Biomass for Electricity Generation.** By Zia Haq, 2003. (Available at <http://www.eia.doe.gov/oiaf/analysispaper/biomass/>). This paper provides information on issues relating to using biomass for energy generation. Current technologies, supply curves for several biomass sources, and bioenergy projections are discussed.

**Report on Biomass Drying Technology.** By W. Amos, 1998. Golden, CO: National Renewable Energy Laboratory. Technical paper 570-25885. (Available at: <http://www.nrel.gov/docs/fy99osti/25885.pdf>). This report compares the advantages, disadvantages, costs, and environmental considerations of biomass drying technologies.

## Articles

**Evaluation of Roll-off Trailers in Small-diameter Applications.** By B. Rummer and J. Klepac, 2003. Bar Harbor ME: University of Maine. In Proceedings of the 2003 Council of Forest Engineering 26<sup>th</sup> annual conference. (Available at: [http://www.srs.fs.usda.gov/pubs/biomass\\_cd/Publications/Pub566.pdf](http://www.srs.fs.usda.gov/pubs/biomass_cd/Publications/Pub566.pdf)). This article compares conventional transportation methods for removal of small-diameter wood with an innovative transportation method using roll-off pallet tracks.

**Information Needs for Increasing Log Transport Efficiency.** By T. McDonald, S. Taylor, R. Rummer, and J. Valenzuela, 2001. University of Washington. In First International Precision Forestry Symposium [CD]. (Available at: [http://www.srs.fs.usda.gov/pubs/ja/ja\\_mcdonald012.pdf](http://www.srs.fs.usda.gov/pubs/ja/ja_mcdonald012.pdf)). This study uses a simulation model to examine three different methods of dispatching trucks to loggers and presents results on which methods maximize the amount of delivered wood.

**Used Pallets As a Source of Pellet Fuel: Current Industry Status.** By P.B. Aruna, Jan G. Laarman, Phil Araman, Edward Coulter, and Frederick Cabbage, 1997. Forest Products Journal 47(9). (Available at: <http://www.treesearch.fs.fed.us/pubs/183>). This article considers production aspects of utilizing used pallets to produce wood pellets and analyzes current markets for wood pellets and wood pellet stoves.

## Web Sites

**U.S. Department of Energy, Energy Efficiency and Renewable Energy (EERE) Biomass Program Web site.** (<http://www1.eere.energy.gov/biomass>). This Web site provides information on the U.S. Department of Energy (DOE) Biomass Program which develops technology for conversion of biomass to valuable fuels, chemicals, materials, and power, so as to reduce dependence on foreign oil and foster growth of biorefineries.

## Possible Field Trips

- A utility or industry that has implemented an innovative technology in their use of wood for energy

## Potential Guest Speakers

- Engineer or consultant who specializes in biomass conversion technologies

## Funding Sources

**National Forest Foundation Community Assistance Program.** ([http://www.natlforests.org/consp\\_05\\_cap.html](http://www.natlforests.org/consp_05_cap.html)). The National Forest Foundation (NFF), chartered by Congress, engages America in community-based and national programs that promote the health and public enjoyment of the 192-million-acre National Forest System and administers private gifts of funds and land for the benefit of the National Forests. The NFF established the Community Assistance Program (CAP) to promote the creation of locally-based, collaborative natural resource partnerships which seek to build ecological, social, and economic sustainability.

**U.S. Department of Agriculture, Sustainable Agriculture Research and Education (SARE).** (<http://www.sare.org/grants/>). SARE is a competitive grants program providing grants to researchers, agricultural educators, farmers and ranchers, and students in the United States. This Web site features a list of their funding opportunities.

**U.S. Department of Energy, Inventions and Innovation (I&I) Grant.** (<http://www.eere.energy.gov/inventions/>). I&I provides financial and technical assistance for research and development that supports the efficient and innovative use of renewable energy. Technologies proposed must fit within one or more of the program areas designated by the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy (EERE). These technology areas include: Biomass; Building Technologies; and Distributed Energy. Grant recipients are selected through a competitive process and cost-sharing is strongly encouraged.

## Woody Biomass Groups, Organizations, & Consultants

**Biomass Energy Research Association (BERA)** (<http://www.bera1.org/index.html>). BERA is an association of biofuels researchers, companies, and advocates that promotes education and research on renewable biomass energy and waste-to-energy systems.

**Biomass Energy Resource Center.** (<http://www.biomasscenter.org>). The Biomass Energy Resource Center is an independent, non-profit organization established by public and private sector leaders to assist in the development of biomass energy projects across the U.S. and around the world. The Center helps communities, schools and colleges, state and local governments, businesses, utilities, and others make the most of their local energy resources.

**BioResource Management, Inc.** ([www.bio-resource.com](http://www.bio-resource.com)). BioResource Management, Inc., of Gainesville, Florida handles and manages various forms of biomass including organic waste, urban organic solid waste, animal waste, and forestry residues. The company develops processes and end uses for these materials as renewable sources of energy, chemicals, and other products. BioResource provides consulting, management, and marketing services to entities involved with biomass, forestry, agriculture, and organic wastes. BioResource works both nationally and internationally.

**Crain Consulting** (<http://crainconsulting.net>). Crain Consulting, Inc., based in Jackson, Mississippi, specializes in securing public and private financing primarily for commercial renewable energy projects. The company provides total project development services for renewable energy and other ventures nationally and internationally. It has been involved in developing projects relating to cellulosic ethanol, biodiesel, wood



pellet plants, biomass electricity plants, fischer-tropes diesel, corn ethanol, anaerobic digesters, plasma arc, and pyrolysis. Project development services offered include loan packaging, grant writing, government relations, business plans, feasibility studies, and permitting.

**Forest Bioproducts Research Initiative**, (<http://www.forestbioproducts.umaine.edu>). The Forest Bioproducts Research Initiative, based at the University of Maine and funded by the National Science Foundation, is comprised of a diverse group of campus researchers and scientists and state partnerships who are working to create energy solutions grounded in sustainable forest and ecosystem management. The Initiative's areas of research include forest health for a sustainable bio-economy, the creation and commercialization of new bioproducts, and landowner needs and perceptions.

**General\*Bioenergy**, (<http://www.bioenergyupdate.com>). General\*Bioenergy, based in Florence, Alabama, is a consulting company that specializes in the use of biomass resources for energy and other products. The company offers many services nationally and internationally including resource assessments and procurement assistance, feasibility studies, assistance with facility siting, marketing analysis and marketing plans, expert witness testimony, conference and workshop leadership and support, preparation of technology transfer or outreach materials, technical writing, assistance with locating project financing, preparation of business and strategic plans, preparation of solicitations, proposal preparation and review, and meeting facilitation.

**National Association of Conservation Districts, Woody Biomass Speakers' Bureau**, (<http://forestry.nacdnet.org/SpeakersBureauDirectory.htm>). The Speakers' Bureau lists contact information, areas of expertise, and cost for over 50 woody biomass experts. The areas of expertise include: hazardous fuels, energy, biofuels, biochemicals, economic development, business and industry, research, funding, public policy, technical aspects, and other specialized areas. Speaker costs range from no cost to a fee plus expenses. This resource can be used to identify potential guest speakers for trainings and meetings.

**Southern Alliance for Clean Energy (SACE)**, (<http://www.cleanenergy.org>). SACE is a nonprofit, nonpartisan organization that promotes responsible energy choices that help address global climate change and ensure clean, safe, and healthy communities throughout the Southeast. The SACE Web site describes the organization's programs and provides information and resources on a wide range of renewable energy sources, including biomass.

**Southern Alliance for the Utilization of Biomass Resources (SAUBR)**. (<http://saubr.ua.edu/>). Formed in May 2004, SAUBR's mission is to create an industry to use renewable biomass resources available in the South to enhance energy security, provide a cleaner environment, help revitalize the South's rural economies, maintain healthy forests, and sustain forests and farms.

**Southern States Energy Board (SSEB)** (<http://www.sseb.org/>). SSEB a non-profit interstate compact organization that was founded in 1960 and established under Public Laws 87-563 and 92-440. SSEB's mission is to foster economic development and quality of life in the South through innovations in energy and environmental policies, programs, and technologies. Sixteen southern states and two territories comprise the membership of SSEB: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, Missouri, North Carolina, Oklahoma, Puerto Rico, South Carolina, Tennessee, Texas, U.S. Virgin Islands, Virginia, and West Virginia. Each jurisdiction is represented by the governor and a legislator from the House and Senate.

**U.S. Department of Energy, Energy Efficiency and Renewable Energy, Biomass program: Information Resources, State and Regional Resources.** ([http://www1.eere.energy.gov/biomass/state\\_regional.html](http://www1.eere.energy.gov/biomass/state_regional.html)). This Web site provides information about regional biomass organizations that provide leadership for advancing the use of biomass. In addition, state biomass contacts are provided.

**Woody Biomass Coalition** (<http://www.woodybiomass.net/>). The Woody Biomass Coalition's mission is to promote research, development, and funding for sustainable woody biomass utilization and markets by providing advocacy, education, information, and outreach to public and private entities.

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