Final Scientific and Technical Report

State and Regional Biomass Partnerships

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CONEG Policy Research Center Inc.

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Executive Summary

The development of renewable biomass energy requires coordination of many diverse public-private technical and policy objectives. The five-year cooperative agreement between the CONEG Policy Research Center and the Office of Biomass Programs at U.S. DOE was designed to address such complex tasks through the Northeast Regional Biomass Program (NRBP).

The Northeast Regional Biomass Program employed a three pronged approach to supporting biomass energy development and use in the Northeast. First, the NRBP helped support multi-agency biomass working groups in each of the 11 Northeast states to build greater capacity at the state level and to tie the efforts of the biomass program to multiple state goals. Second, NRBP staff provided technical assistance directly to states and private developers. Finally, the NRBP staff engaged in extensive networking and partnership-building activities that focused on the exchange of information and outreach and education activities so that lessons learned in one state or one region could be promptly and reliably transmitted to other states and regions.

The NRBP has expanded biomass awareness, knowledge, and institutional capacity within the public and private sector in the Northeast region. As a result of the three prong approach, state biomass programs have led the way for expanded use of biomass fuels and biomass technologies – as a cadre of knowledgeable state officials was able to leverage federal and state biomass resources and tie state objectives (such as reduced energy imports, improved environmental protection, and job creation) to biomass and bioenergy.

- Significant progress was made in expanding both commercial technologies important for state buy-in (such as biomass for heating schools and public buildings), and the production of biodiesel for such applications as heating and on- and off-road use. The NRBP set in place the necessary infrastructure and policy to support an emerging ethanol production industry in the region. It smoothed transition from the phase-out of MTBE to ethanol blended gasoline, and nurtured the establishment of dozens of supportive policies by state government that will help expand the use of biomass and biomass technology for years to come.
- The biomass working groups provided state biomass officials with access to the expertise and insights of other public, private, and academic stakeholders interested in the development and implementation of biomass and bioenergy technologies. In this manner, states were able to develop a capacity to evaluate and support the development of new biomass technologies within their respective states. Maintaining the state-based biomass capacity and networks, and the leveraging of federal and state biomass resources requires continued financial and institutional support.
- NRBP technical assistance was made readily available to states, private developers, academic institutions, and any other biomass stakeholder in the region who had questions about biomass technology or biomass policy. It included responses to direct requests as well as seminars and papers on topics ranging from production and use (e.g., biodiesel, ethanol and bio-oil production; blending-use-and storage of biofuels; biomass gasification), to federal and state policy summaries, and to project financing. NRBP

networks and outreach education spanned state, regional and federal biomass stakeholders; focused on timely sharing of objective and reliable information and best practices; and contributed to more effective coordination and leveraging of biomass resources.

Compared to prior agreements, the current cooperative agreement had a more targeted focus – outreach and education, networking and partnership building, and technical assistance. Past cooperative agreements supported education and outreach but also included small research and demonstration (R&D) projects designed to demonstrate commercial biomass technologies that lacked exposure and market acceptance. The change was based upon two major factors. First, declining cooperative agreement funding necessitated a shift from costly R&D projects to policy research and development tied to multiple state goals, such as improved environment, economic development, and reduced dependence on imported energy. By linking the cooperative agreement funding to other state goals, these limited biomass resources were leveraged with state resources, and the effectiveness of the biomass program was increased. Second, the national climate toward biomass was changing dramatically. As the production and use of biofuels was becoming a major national energy goal, there was a need for more education about biofuels at the local and state level, especially in parts of the country where the knowledge and experience of biofuels was limited. As noted above, the NRBP state working groups, technical assistance, and networking/partnership-building, directly addressed this need for information and education.

Project Goals and Accomplishments

Project Goal	Accomplishments
Provide grants to states	<p>The NRBP provided state grants to cover the cost of three required tasks: establish a state biomass working group, attend regional steering committee meetings, and report on all biomass activities in the state. In addition each state was encouraged to add optional tasks such as workshops and other outreach and education efforts and evaluations of the impacts of state policy on biomass development. The results of these activities are described below. The NRBP was able to establish a biomass working group in every state and attendance at steering committee meetings averaged 80%. In addition every state was able to leverage state funds and add additional optional elements to their respective state programs such as workshops or other outreach activities. In many cases states provided considerable cost share to leverage the federal funds. In many states, the working groups were a forum for policy discussion on biomass and an opportunity for biomass stakeholders to network.</p> <p>During the course of the cooperative agreement the NRBP was able to provide each state with grant funds totaling \$60,000 over a five-year period. These grants were used to establish a state biomass working group, provide funds to attend the regional steering committee meetings, and to conduct quarterly reporting to the NRBP management. Each state was given the opportunity to add optional elements to its own state program.</p>
Provide expert guidance (technical assistance) to state programs	<p>The NRBP project manager and staff spent considerable effort to identify outside experts who could provide guidance to all the state programs in the Northeast. Guidance included presentations at state working group meetings, review and comment on state policies and proposed legislation, speaking at state workshops and conferences, and providing testimony at legislative hearings.</p>
State Working Group meetings	<p>States receiving NRBP grant funding were required to convene a multi-agency biomass working group in its state and to host at least one biomass working group meeting per year. The goal was to build state experts in biomass and create an in-state network of biomass stakeholders. The working groups were designed to engage all state agencies that had a role in biomass development in the state. All eleven Northeast states convened biomass working groups, and exceeded their requirements by hosting from two to six biomass working group meetings per year. After completion of the grant funding, States continued to hold biomass working group meetings with significant contributions from state and private sector biomass stakeholders. The NRBP project manager attended most of the state working group meetings.</p>

National / Regional Networking: National Biomass Partnership	The Northeast Regional Biomass Program helped establish and participated as an active partner in the National Biomass Partnership (NBP). NRBP staff served as a secretariat to the NBP and host monthly meetings of the Partnership's steering committee called the principals committee. These meetings were exceedingly important in improving national coordination among regions and contributed to leveraging funds.
Performance measurement plan	The U.S. DOE Office of Biomass Programs provided a series of metrics, and required that each of the regional biomass programs conduct a performance measurement program. The Northeast Biomass Program served as a pilot for the other four programs and helped to define the process through which the metrics would be evaluated. A successful evaluation program was developed and applied to each of the five regional biomass programs. At a national review of biomass programs conducted in 2007, the regional biomass program was one of the highest rated biomass programs funded by the Department of Energy.
Assistance to Developers	The NRBP project director frequently provided assistance to potential biomass developers in the northeast. Information requests typically involved biomass feedstocks, state policy on biomass, financing information, and key contacts within the region. In addition to providing direct feedback to developers, NRBP provided information on its website, such as a "much-used" description of the federal production tax credits for biomass contained in the Energy Policy Act of 2005.
Report state biomass activities to key stakeholders.	States receiving NRBP funding were required to prepare quarterly reports on activities funded directly by the NRBP and other biomass activities occurring in the respective state. The NRBP compiled and distributed these reports to key stakeholders in the northeast region and the other Partnership regions. The collection and distribution of these reports was a key element in fostering information exchange in leveraging of state and federal resources for biomass.
Network among state, regional, federal, and private-sector bioenergy stakeholders	The NRBP established an extensive network of local, state, regional and national contacts to benefit the Northeast states and bioenergy development in the Northeast. The NRBP maintained contact information and areas of expertise for all contacts. This bioenergy network proved very useful to states, developers, and to the Office of Biomass Programs at U.S. DOE.
Outreach and Education Activities	NRBP staff were frequently called upon to participate in workshops and conferences both within and outside the region. The NRBP project director also served on planning committees to help design agenda and identify appropriate speakers for several workshops related to energy, renewable energy, and biomass. These workshops were a key component in the education and outreach on biomass fuels and technologies.

A white paper on the benefits of barriers of implementing a regional bioheat strategy	The NRBP completed several reports and white papers on the barriers and benefits of Bioheat in the Northeast. Examples include a white paper by NRBP staff on implementing a “5 in 5” plan; a report on laws, policies and regulations that could be potential barriers to Bioheat; and numerous fact sheets on biodiesel use and production.
E-85 Outreach Plan	The NRBP believed that the best opportunity to increase the number of public E-85 refueling stations was informational outreach to convenience store owners. The NRBP identified a target audience within the broad group of convenience stores owners and provided a message and message delivery approach about E-85. One of the accomplishments of the project is a detailed website dedicated to convenience store owners about E-85.
Consumer Education on Bioheat	The NRBP believed that the most effective way to build the market for Bioheat in the Northeast was for oil heat consumers to request Bioheat blends from their respective dealers. The NRBP completed a comprehensive analysis of consumer attitudes, how they find information on new products, and the key reasons why early adopters chose Bioheat. This analysis was used to develop a consumer education strategy for Bioheat in the Northeast. One of the key findings: consumers respond to a consistent message from multiple sources, government and industry.
Assist states with the analysis and development of new state policies, both for biofuels and under Renewable Portfolio Standards, to support biomass development	NRBP staff conducted analysis and prepared reports on state biofuel policies. These reports were presented at NRBP steering committee meetings and were placed on the NRBP’s web site. In addition to analysis and education, the NRBP staff reviewed draft state policy for states and provided comments. The NRBP used its networks regionally and nationally to identify best practices and innovative biomass policies and make that information available to states in reports or at NRBP steering committee meetings.

Project Summary

The current five year cooperative agreement between the U.S. Department of Energy (DOE) and the CONEG Policy Research Center, Inc. (Center) was preceded by the Center's nearly 20 years of hosting the Northeast Regional Biomass Program. Over the past 25 years the needs, the approach, the technical direction, and project personnel (NRBP staff, federal and state officials) involved in the program have changed in response to the evolving needs of states, regions, the nation, and the public. Prior biomass agreements with the DOE focused more on project development and demonstration projects. In the prior biomass projects, landfill gas, anaerobic digestion, and biomass electric power production were supported and demonstrated at the state and regional level. In addition, biomass fuels were tested and availability identified.

In this current agreement (the third five-year cooperative agreement following an initial ten-year agreement), a different approach was taken based upon available resources, and the need to coordinate with federal goals and R&D. The federal biomass program placed its primary emphasis on research and development of biorefineries – the production of heat, power, chemicals, and fuels from biomass at a single location. The initial guidance from DOE for this cooperative agreement was to conduct marketing conditioning activities in the region that would help the development of new biomass feedstocks and the provision of fuel for the new biorefineries; as well as activities to condition markets for products that would be developed at the biorefineries, including biofuels, biochemicals, and bioproducts.

The new approach focused on the development of supportive state policies; feedstock assessments (including development of new feedstocks such as switchgrass); an extensive outreach and education campaign to educate consumers about the benefits of biofuels and bioproducts; and an unprecedented networking effort to a new group of stakeholders who had not previously included themselves as biomass stakeholders. These new stakeholders included environmental, economic development, and agriculture agencies and organizations which can play a very significant role in helping build supportive policy for future biorefinery development.

Over the past five years, the project has worked to overcome such hurdles as the lack of adequate and sustained funding, changing DOE priorities, and a public perception that renewable biomass is not as clean and green as other renewable technologies such as wind and solar. In spite of these challenges, the project has been successful in expanding awareness and knowledge about biomass within the public and private sector; and state biomass programs have led the way for expanded use of biomass fuels and biomass technologies.

State support was critical for expanding the use of biomass fuels and bioenergy technologies. To secure effective state support, the NRBP needed a cadre of knowledgeable state officials and leveraged state resources – so that state objectives, such as reduced energy imports, improved environmental protection, and job creation, were tied to biomass and bioenergy. It was anticipated that this state-based, leveraged approach could deliver the biggest “bang for the buck.”

The Northeast Regional Biomass Program was successful in building the capacity, networks, and in providing the objective and reliable information required to advance biomass and bioenergy

technologies in the region. Significant progress was made in expanding both commercial technologies important for state buy-in (such as biomass for heating schools and public buildings), and the production and use of biodiesel for such applications as heating and on- and off-road. The program was able to meet the goals set forth by DOE. It set in place the necessary infrastructure and policy to support an emerging ethanol production industry in the region. It smoothed transition from the phase-out of MTBE to ethanol blended gasoline, and nurtured the establishment of dozens of supportive policies by state government that will help expand the use of biomass and biomass technology for years to come.

One of the primary goals of the Northeast Regional Biomass Program was to establish, in each of the 11 Northeast states, a core group of people who were knowledgeable about biomass and bioenergy technologies. To carry out that goal the NRBP established biomass working groups in each of the 11 Northeast states. These working groups brought together public, private, and academic stakeholders who are interested in the development of biomass and bioenergy technologies. Through these biomass working groups, states were able to develop a capacity to evaluate and support the development of new biomass technologies within their respective states. However, as the nation moves toward greater development and use of renewable energy, continued financial and institutional support will be essential to sustaining and leverage this critical state-based biomass capacity and networks with their focus on market conditioning and applications.

Another goal of the Northeast Regional Biomass Project was technical assistance to states, private developers, academic institutions, and any other biomass stakeholder in the region who had questions about biomass technology or biomass policy. Technical assistance included seminars and papers on ethanol production, biodiesel production, blending-use-and storage of biofuels, biomass gasification, bio-oil production, federal policy summaries, state policy summaries, project financing and handling hundreds of telephone and email request for information.

A third goal of the NRBP was the establishment and nurturing of networks among state, regional, and federal biomass stakeholders with the objective of expediting the development of biomass technologies through more effective coordination and leveraging of biomass resources and the sharing of best practices. NRBP staff attended meetings of other stakeholder groups to network and established a point of contact and working relationship with nearly 100 federal and state agencies, universities, non-profits, biomass developers, and other stakeholder groups. In addition, the NRBP program director served as chair of the National Biomass Partnership, and was a founding member of the Biomass Energy Resource Center.

The final goal of the NRBP was to contribute to biomass development in the region by conducting outreach education and providing objective and reliable information on the technical and policy issues at the state and regional level. The NRBP project director attended over 50 state workgroups meetings, NRBP staff planned and hosted over 15 steering committee meetings which served as networking and training sessions. NRBP director was active in regional efforts serving on 20 or more planning committees for workshops and conferences in and outside the region.

Publications

- NRBP website: www.nrbp.org
- Bioheat Laws, Regulations, and Policies: Impediments and Solutions in the Northeast United States. September 2007. http://nrbp.org/publications/Bioheat_Laws_Regs_Policies.pdf
- Biomass Combined Heat and Power – An Outreach and Education Strategy for Vermont Hospitals. July 2007. <http://nrbp.org/publications/biomass-chp/report.pdf>
- Net Energy Balance of Ethanol: Corn Production Inputs Comparison Chart. 2005. http://nrbp.org/pdfs/ethanol_balance.pdf
- Biomass Provisions in EPart 2005 Summary Chart. October 2005. http://nrbp.org/pdfs/epact2005_chart.pdf
- Renewable Electricity Production Tax Credit Summary Chart, as Modified by the Energy Policy Act of 2005. August 2005. http://nrbp.org/pdfs/energy_policy_act_2005.pdf
- Removing MTBE from Gasoline: Implications for the Northeast Gasoline Supply. April 2004. http://nrbp.org/pdfs/mtbe_voll.pdf
- National Forum on Cellulosic Ethanol Webinar. April 23, 2008: <http://www.nrbp.org/updates/2008-04/default.htm>
- Food vs. Fuel webinar. September 10, 2008: <http://nrbp.org/updates/2008-09/default.htm>
- NEE-85 Convenience Store Owners Guide to E-85. 2008. <http://nrbp.org/E85/>
- Bioheat Consumer Education - Messaging and Communication Strategy for Bioheat. April 2008.

Networks and Partnerships

- Vermont Methane Demonstration Project.
- Northeast Association of Utilization and Marketing Foresters
- Cornell Policy Action Group on Anaerobic Digestion
- Northeast Sustainable Energy Association
- Pocono Northeast Resource Conservation and Development Council
- River Valley Growth Council / Fractionation Development Center (Maine)
- Maine Technology Institute.
- Chesapeake Bay Commission
- CONEG Energy Working Group
- Northeast Regional Clean Cities
- Brookhaven National Laboratory
- Sprague Energy
- Office of the Federal Environmental Executive
- Platts Global Conferences
- Biomass Energy Resource Center
- American Council on Renewable Energy
- New England Fuel Institute
- National Oilheat Research Alliance
- The Appalachian Regional Commission.

- The Federal Woody BUG (Biomass Utilization Group)
- Northeast and Mid-Atlantic Combined Heat and Power Applications Centers
- The Massachusetts Technology Collaborative
- Northern Forest Biomass Working Group
- Pennsylvania Petroleum Marketers Association
- USA Biomass Producers Association
- The Northeast Sun Grant Initiative
- New York State Association of Conservation Districts
- Pennsylvania Farm Bureau
- New Jersey Farm Bureau
- Governors Ethanol Coalition
- Pacific Northwest Laboratories
- Oak Ridge National Laboratory
- The National Biodiesel Board
- The Brookhaven National Laboratory
- The University of Maine
- Keene State
- The University of Maryland, Wye Research Center
- Cornell University
- Clarkson University
- Mount Wachusett Community College
- Rutgers University
- SUNY College of Environmental Science and Forestry
- Dartmouth College
- Pace University Energy Project
- Eastern Connecticut State University
- The University of Delaware
- Penn State University
- The University of Idaho
- The University of Massachusetts Lowell
- Washington State University
- United States Environmental Protection Agency
- Landfill Methane Outreach Program
- Combined Heat and Power Partnership Program
- United States Forest Service, Northeast Area State and Private
- Department of Interior
- U.S. Department of Energy Office of Biomass Programs
- U.S. DOE Combined Heat and Power Applications Centers, Northeast and Mid-Atlantic
- U.S. Department of Agriculture
 - Rural Utilities Services
 - Rural Development
 - Biodiesel Outreach Program
 - Biobased Products Outreach Program
 - Agricultural Research Service

- Beltsville Agriculture Research Center
 - Eastern Regional Research Center
- Vermont Biofuels Association
- New York Corn Growers
- The National 25 x 25 Organization
- The Pellet Fuels Institute
- Co-op Power (MA)
- USA Biomass Power Producers Alliance
- The National Ethanol Vehicle Coalition
- Clean Fuels Development Association
- The Energy Future Coalition
- The American Council of Renewable Energy
- The Mid-Atlantic Soybean Growers
- Ethanol Producers and Consumers
- The Northeast Association of State Forester's
- The National Conference of State Legislatures
- Council of State Governments
- Southern States Energy Board
- Western Governors Association
- Council of Great Lakes Governors
- The National Association of State Energy Officials
- State Technologies Advancement Collaborative
- Sustainable Agricultural Research and Education
- Philadelphia Fry-o-Diesel
- West Penn Sustainable Energy Fund
- Chewonki Foundation
- Connecticut Innovations
- Maine Energy Investment Corporation
- Vermont Sustainable Jobs Fund
- Natural Resources Canada
- Massachusetts Oilheat Council
- Regional Economic Development District (PA)

Papers and Presentations

- National Biodiesel Conference
- Biodiesel Uses and Benefits Workshop
- Overview of biomass energy in the Northern Forest region, Northern Forest Working Group
- USA Biomass Power Producers Alliance
- Virginia Sustainable Building Network: Biomass Program to the Energy Policy Act of 2005
- Regional Trends in Biodiesel: Maine Biodiesel Workshop
- Net Metering: An Important Component to Biomass Power SSEB Regional Meeting
- Energy Policy Act of 2005: Presented to Northeast Energy and Commerce Association
- North East Utilization and Marketing Council meeting
- National Ethanol Conference
- Northeast Sun Grant Meeting: Creating a Market for Biomass
- Regional Clean Cities Regional Conference (2)
- Council of State Governments Eastern Regional Conference
- NESCAUM / NRBP Biodiesel Briefing for State Air Quality Officials
- Renewable Energy Vermont (2)
- NYSERDA Biodiesel Forum
- Maine Biomass and Biofuels Conference
- Massachusetts Cellulose Ethanol Workshop
- Eastern Lands & Resources Council Western States Land Commissioners Association National Conference (2)
- Atlantic Regional Energy Expo
- Biofuels East (3)
- 2006 First Annual Biomass and Biofuels Conference organized by the Maine Association of Conservation Districts
- Sullivan CC Renewable Workshop
- Completed article on 5 in 5 for Bioenergy Climate Protection Oil Reduction Newsletter
- Biofuels East Atlanta
- Biofuels East Nashville
- Biofuels East Philadelphia
- New England Energy and Commerce Association (2)