NORTHEAST REGIONAL BIOMASS PROGRAM

NINTH YEAR - THIRD QUARTER REPORT

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INTRODUCTION

As the Northeast Regional Biomass Program (NRBP) continues its ninth year of operation, its operational management and the program's objectives have virtually remained unchanged. They are stated below.

Management

The NRBP operates using three basic features: 1) a state grant component that provides funds (with a 50 percent matching requirement) to each of the states in the region to strengthen and integrate the work of state agencies involved in biomass energy; 2) a series of technical reports and studies in areas that have been identified as being of critical importance to the development of biomass energy in the region; and 3) a continuous long range planning component with heavy private sector involvement that helps to identify activities necessary to spur greater development and use of biomass energy in the Northeast.

The state grant program provides states with an opportunity to strengthen and integrate the work of energy, forestry, air quality and other appropriate offices in promoting biomass energy use. Most state efforts to promote biomass energy have been fragmented among a wide range of agencies involved in various aspects of this energy source. The state grant projects require interagency cooperation and fall into several general categories: industrial conversion assistance; resource availability and use assessments; technical information development and dissemination; and conversion of state facilities.

The second element of the regional program is a series of subcontracts for the production of reliable information and technical reports focusing on issues identified by the program's Steering Committee and other experts in the region as being of particular importance to the development of biomass fuels in the region. These projects focus on a wide range of issues, including development and dissemination of technical, economic and environmental information of industrial wood energy use, assessment and mitigation of the environmental impacts of wood energy development, and economic analysis of biomass energy in the region. Profit, not-for-profit, university and other organizations are eligible for these subcontracts, which are awarded on a competitive basis.

The active involvement of state officials in the formulating the topics for the technical subcontracts helps to insure that the work produced will be valuable to the state programs of the region. Cooperation between subcontractors and state officials will be built into the subcontract and grant agreements in areas such as information gathering and dissemination, workshops and publication preparation. In addition, other biomass energy experts (many from the private sector) will be actively involved in the program by serving on the Technical Advisory Committee or on the oversight committees that have been formulated for several of the subcontracts and grant programs.

Objectives

- Improve the effectiveness, coordination and planning capabilities of the state agencies in the region which have biomass-related responsibilities.
- Assess the availability of biomass energy resources.
- Provide reliable information to private companies, residential and commercial consumers, and public institutions about the potential and versatility of biomass energy sources.
- Better understand and mitigate the environmental impacts of increased biomass energy use without stifling the region's ability to take advantage of its most abundant indigenous renewable energy resource.
- Transfer the results of government-sponsored and private research and development to the private sector.
- Support region-specific and interregional studies of the critical impediments to further development of biomass energy resources.
- Coordinate the regional program with other federal, state and regional efforts to avoid duplication and maximize the effectiveness of NRBP dollars.

The grant for the ninth year in the amount of \$775,000 was received from DOE. Funds were allocated as follows:

Operating	\$156,032
Technical Subcontracts	288,968
State Grants	<u>330,000</u>
	\$775,000

The Annual Operating Plan grant application for the tenth year (FY1992) was prepared for DOE in the amount of \$785,000, with an anticipated starting date of September 30, 1992. Funds for this tenth year grant were preliminarily programmed as follows:

Operating	\$150,000
Technical Subcontracts	335,000
State Grants	<u>300,000</u>
	\$785,000

RESEARCH HIGHLIGHTS

The NRBP Steering Committee selected the following four projects for funding for the ninth year.

- 1) National Biomass Conference and Exhibition
 - A contract has been signed with C.T. Donovan Associates to organize and manage the conference.
- 2) Performance Evaluation of Wood Systems in Commercial Facilities
 - A contract has been signed with Commercial Testing and Engineering to conduct the study.
- 3) Wood Energy and Recycling Training Course
 - A Memorandum of Understanding has been signed with the Northeast Utilization and Marketing Council to conduct a training program for foresters.
- 4) Update of the Facility Directory
 - The Independent Energy Magazine has been contracted to determine if their publication can be adopted for our needs.

The Northeast Regional Biomass Steering Committee has prioritized the following seven projects for funding for the tenth year. A final determination will be made at the July, 1992 Steering Committee meeting.

- 1) Stack Testing of Representative Wood Waste Boilers
- 2) A Regional Wood Pellet Conference
- 3) Field Measurements of Air Toxics from Wood Stoves
- 4) Wood Stove Manufacturers Workshop on Durability Issues
- 5) Wood Pellets Public Relations Campaign
- 6) Identifying and Overcoming the Impediments to Landfill Gas-to-Energy Recovery Projects
- 7) A Decisions-Makers Guide to the Use of Wood Chips for the Institutional, Commercial and Industrial Markets

MANAGEMENT HIGHLIGHTS

During April, the NRBP Steering Committee met in Portland, Maine.

The new NRBP Manager began his employment effective 10 June 1992.

Established chain-of-command liaison with USDOE Headquarters CE-Technical and Financial Assistance, including the RBP Contact, the Director of the State Energy Program Division, and the Director of the Office of National Programs.

Established chain-of-command liaison with USDOE Headquarters CE-Utility Technologies, including the Biomass Conversion Program Manager, the Director of the Solar Thermal and Biomass Power Division, and the Director of the Office of Solar Energy Conversion. Agreed to assist them in their biofuels assessment project as it impacts the Northeast Region.

Prepared and mailed letter inviting the directors of the Support Offices in Philadelphia, New York and Boston to be full voting members of the NRBP Steering Committee, effective immediately.

Developed Agenda and secured venue and hotel accommodations for the next Steering Committee meeting, to be held 21-22 July in Boston. Mailed same to Steering Committee and other interested parties.

A contract was issued during the quarter to prepare a publication presenting the accomplishments and future direction of the NRBP in summary form. This publication will follow the format of the Northeast Regional Biomass Program: Mission Accomplishments and Prospects 1991. The publication is scheduled to be printed by October, 1992.

STATE GRANTS

Connecticut

The state of Connecticut has assumed four specific tasks, all aimed at facilitating the use, as appropriate, of the alternative fuels identified by the 1990 Clean Air Act Amendments as clean fuels. The four tasks are:

- Determine where the alternative fuels can make a significant impact on the fuel mix of Connecticut's transportation sector.
- Identify the barriers to the utilization of these fuels.
- Develop proposals to address these barriers.

- Propose goals (a timetable and percentages) for the introduction of alternative fueled vehicles in Connecticut.

An interagency committee alternative fuels has been established to conduct in depth review of the various fuels and their potential for the transportation sector.

Delaware

In the past quarter, the primary and secondary wood processor's directories for Delaware have been completed and printed. The directories are now being distributed to the public. Further, the directories are being entered into the U.S. Forest Service's F.I.N.D. (Forest Industry Data) System. This system promotes the exchange of forest industry data on a national level, thus increasing the marketability of Delaware's wood products.

Three separate meeting were held with the Delmarva Power & Light Corporation, the Delaware Solid Waste Authority, and the University of Delaware Cooperative Extension Service to help assess the potential uses, potential problems, and possible demonstration and study projects from biomass. This work group, along with a private consultant, will convene during the next quarter to discuss and help direct potential projects.

Work continues on a U.S. Forest Service focus funding grant whereby the water from a poultry processing plant will be spread on a loblolly pine plantation. It is hoped that the actual field application will begin within the year.

Delaware also announced a new NRBP State Contact following the retirement of James A. Wall. Effective 1 July 1992, the Delaware Department of Agriculture, Forestry Section notified NRBP that E. Austin Short, III will be their new State Contact. Mr. Short received a bachelor's degree in forestry (1989) and a master's degree in forest biometrics (1991) from Virginia Tech. He has worked with the State of Delaware as a forester since graduation.

Maine

In 1990, the Energy Planning Division of the Maine State Planning Office, with financial support provided by the NRBP, undertook a comprehensive study of the wood fired electrical generating industry, its contributions and impacts. The purpose of the study was to document the performance of the biomass energy industry after ten years of growth and operational experience, and to provide information useful to decision makers when considering biomass alternatives in meeting energy needs.

Since 1980, the wood fired electric generating industry has developed from a few cogenerators producing electricity and process steam mostly for self consumption, to a complex of twenty cogeneration and free standing plants capable of providing nearly 500 megawatts of generating capacity to the utility grid.

Maryland

The state of Maryland has formally withdrawn from participation in the Regional Biomass Program. This lack of participation was the result of reduction and reorganization of personnel within the Forestry Service.

The Maryland Energy Administration was contacted (Dr. Donald Milsten) to determine if their office would care to participate in the program.

Massachusetts

The Massachusetts Division of Energy Resources (DOER) has four major efforts underway.

Alternative Fuels For Transportation

The program was established to demonstrate alternative transportation fuels, and it continues to broaden and make progress. The Division of Energy Resources (DOER) submitted a proposal to the USDOE to fund the purchase of OEM CNG-fueled school buses. DOER has also issued a Request for Information, inviting vendors to supply biomass-based ethanol for their demonstration program.

Fuelwood Promotion Program

DOER serves as a member of the "Residential Woodstoves: Lessons Learned" review team, and has participated with the contractor responsible for the educational outreach component to fine-tune their video presentation and PSA package.

Wastewater Treatment Program

DOER has sponsored a proposal to be funded by the NRBP to study the potentials and barriers to alternative sludge disposal options in recovering methane from the anaerobic digestion of sewage.

Cogeneration at State Facilities

DOER continues works with others in the review of the availability and quality of wood fuel in the Amherst area. Study results will be used to restore the potential of using wood as a fuel in the University of Massachusetts-Amherst cogeneration project. DOER's program to demonstrate alternative fuels for transportation continues to broaden and make progress.

New Hampshire

The New Hampshire Timberland Owners reported their survey results for the 3rd and 4th quarters of 1991, thus completing the yearly analysis efforts. The Survey was begun

in 1990 to track the source of wood chips consumed in NH's wood-powered electric generating plants. The 1991 survey indicated a 4.2 percent increase in wood chip consumption from 1990, with the total consumption equaling 1,649,685 tons. The assumption underlying the growth is attributable to increased power production. The 1992 survey has been slightly modified to make some questions more relevant, and to coincide with other NRBP states' surveys in order that some regional comparative information might be obtained.

The development of a fuel management program for biomass facilities continues to be discussed by the Independent Power Producers with the encouragement of the ECS. A proposal is likely to be forthcoming. The expected thrust will be for some technical workshops out of which will come direction for future effective programs. The common needs along with technical considerations among the wood fired plants are not now known and, hence, this next phase is logical in this program's evolution. There also seems to be a need for better understanding with regard to the nature of the wood material itself. Thus, some specific scientific research may also be in order.

New Jersey

The number of wood waste processing facilities has increased dramatically in recent years. These businesses in New Jersey processing used pallets, secondary wood residues, clean demolition materia, whole tree chips and tree stumps are now located throughout the state. As a continuing effort through project activity were work with these businesses in locating and developing market opportunities for their groundwood products. These outlets address all opportunities available including energy feedstock supplies. A proposal for what could be New Jersey's first commercial wood fired power production facility is under consideration at this time. The facility is designed to generate 21 megawatts of electricity using ground stumpwood fines to fuel the system. Proposed for completion in 1994 the operation will not only be the most significant application of wood energy technology in our state but it also representant a solution to a continuing and growing problem in our state -- productive use for wood that does not belong a s component of our solid waste stream. This commercial wood power proposal has progressed further along than any other similar New Jersey proposal in the past.

New York

Work on the "Lessons Learned" marketing project continues, with the production of a draft video tape and brochure developed by the contractor Kelligher/Samets Marketing Communications. It is hoped these two items will be completed by the end of July, so that the marketing component can commence before the beginning of the heating season. As previously reported, the purpose of this contract is to increase awareness of and interest in the new generation of EPA-certified wood stoves and their proper operation and maintenance among current wood stove owners, prospective owners and the people who sell and service them in 11 northeastern states. The objectives are to:

- educate the target audience about the benefits of wood heat, and for those people with a predisposition to heating with wood, offer tips on buying a wood stove;
- persuade owners of pre-EPA wood stoves to exchange them for clean-burning models;
- show owners of wood stoves how to operate and maintain them properly;
- encourage influencer like political leaders to serve as wood heating exemplars; and
- provide wood stove sellers and servicers with the educational tools to influence their prospects and customers.

The contract is jointly funded by the Massachusetts Division of Energy Resources, the Massachusetts Division of Environmental Management (supported by the U.S. Forest Service), the Great Lakes Regional Biomass Program administered by the Council of Great Lakes Governors and the NRBP administered by the CONEG Policy Research Center, Inc.

Pennsylvania

Minor problems continue to plague the Warren State Hospital's wood energy project. Most are contractor performance related. The test burn resulted in a low boiler efficiency (54%) and combustion efficiency (69%). At higher boiler loads fly ash production is excessive (compared with similar systems). Minor slagging is occurring in the fuel bed and on the firebox walls. Because the contractor has been very slow responding to these problems, work is continuing very close to the contract deadline. The major cause of these conditions have been identifies as the lack of overfire combustion air. The current design relies solely on the air used to inject the fuel into the firebox. During the quarter, overfire air was added to Warren's system which has improved the boiler's performance.

A site visit to Walter H. Weaver Sons, Inc. in Lebanon was arranged for a Public Welfare Facilities engineer and the State Hospital's power plant supervisor. The sawmills system is very similar to Warren's. Apparently the mill (an early NRBP case study) had experienced the same problem during the early stages of plant operations. The corrective measure was to use the flue gases for the overfire air.

Mountain View High School's wood burning system has been operating well, in spite of being oversized. A lack of live-bed trailers and the design of the fuel receiving area not being able to accommodate dump trucks and trailers have caused some added fuel handling.

The Glatfelter Paper Company in Spring Grove is interested in fueling their boilers totally with wood residues. In addition to process steam, the company also generates 45

MW of electricity. Presently the boiler is fueled using wood residues, culm coal, and black liquor. A study is in progress to eliminate the need for coal. A meeting with Robert Rumph, Vice President and General Manager of the Glatfelter Pulp Wood Company was attended to discuss the availability of residues to fuel this energy conversion. Lists of potential suppliers were provided and an additional meeting was conducted to determine specific fuel suppliers.

A presentation on wood waste products and marketing opportunities was given to the Pennsylvania Pallet Association. Technical assistance was also given in setting up the evening program, which included a discussion on wood pellets and stoves.

A two hour presentation was given on wood energy at the Longwood Gardens Horticulture Department in-service training. The audience numbered approximately 85 members of Longwood Gardens' horticultural, maintenance, and office staff. The subject material focused on wood energy in greenhouse operations.

The State Contact continues to be involved with the development of a state's "Best Management Practices for Wood Residues" manual. The final product is to provide guidance on at least cost methods to avoid air and water degradation by mill residues. An added benefit to proper residue management will be maintaining a quality material marketable for other products (bedding, fuel, mulch, etc.).

A meeting was held with two engineers from Chemical Waste Engineering. The company has developed a boiler fuel using sewage sludge and recycled paper. The pelletized fuel process will be sited at landfills using landfill gas as the energy source in the production process. A test burn is planned at a cement kiln.

C&C Smith, a manufacturer of squares, installed a wood pellet operation. This is the first such operation in Pennsylvania.

In addition to the activities mentioned above, the PA State Contact provided over 40 individuals or companies wood energy information or technical assistance.

Rhode Island

The project entitled "Research and Identify Markets for Recycled Construction/Demolition Waste Wood" has been under way for 8 months, with an anticipated completion date by the end of summer. A Technical Advisory Committee meeting was held, with representatives from private C/D landfills and state agencies attending. A review of C/D waste processing equipment and facility costs was completed. The project has reviewed and identified state programs, policies and other activities that could encourage or discourage the increased reuse and recycling of C/D waste wood. The project has identified specific initiatives and other programs that should result in increasing the recycling level of C/D waste. Research into the potential end-uses of C/D waste identified a number of companies that already, or could potentially, use recycled C/D materials. Further research on the barriers to the potential recycling of C/D waste identified innovative end-uses for C/D wood ash in concrete products.

The revision of the "Wood Stove Handbook" was slowed because of institutional barriers, however, it is anticipated the revised workbook will be completed by the next heating season.

The administrative details of the "Anaerobic Digestion and In-Vessel Composting Options Study" have been completed, and it is anticipated that the contract to conduct the study will be fully executed shortly. A Technical Advisory Committee has been formed to help provide project oversight, and an organizational meeting will be held in the near future. Rhode Island is in the process of undertaking a study of anaerobic digestion and in-vessel composition option. An RFP was issued and seven proposals were received. Selection of a contractor in process.

Rhode Island also has a project underway to "Research and Identify Markets for Recycled Construction and Wood Waste." Study is expected to be completed in July 1992.

Vermont

The Vermont Department of Public Service has proposed building a 20-megawatt biomass gasification steam injected generator (BIG/STIG) power plant that would burn waste wood from the Green Mountain Forest. The plant would consume about 100,000 cords a year. Vermont has been among the nation's leaders in their work to develop biomass gasification for electric power generation. Gasification is a highly efficient way to extract energy from biomass. The combustion of the gaseous product in a jet engine for electricity production is a most promising renewable energy technology for power production. Commissioner Richard P. Sedano of the Department of Public Service has scheduled a meeting on 17 July 1992 to discuss the status of work toward construction of a wood gasification project in Vermont. The meeting will review what has happened to date, including the pilot test in which General Electric gasified wood and sugar cane wastes. More importantly, the meeting will discuss what specifically Vermont can do to promote an advanced renewable technology for power generation. Attendees will represent regulators of energy and the environment on state and federal levels, utilities, environmental groups and the business community.

TECHNICAL SUBCONTRACTS

Regional Biomass Strategies and their Potential to Mitigate the Accumulation of Greenhouse Gases in the Atmosphere

The study, conducted by Tellus Institute, was initiated to combat a common perception that links biomass energy development to deforestation and the consequent exacerbation of the "greenhouse effect", which is associated with the potential threat of global warming. Far from resulting in deforestation, this analysis shows that increased reliance on biomass for energy depends on strengthening afforestation and forest management efforts, including some urban forestry and short rotation crop production in addition to

better management of existing forests. In summary, if utilized on a sustainable basis, biomass can play a modest but significant role in mitigating the accumulation of carbon dioxide and methane in the atmosphere.

The highlights of the findings are as follows:

- Given current biomass and energy policies, carbon equivalent emissions would increase from 289.1 million tons in 1988 to 361.7 million tons in 2020 under a posited base "Reference Case". Forest growth, now absorbing about 8 percent of gross carbon equivalent emissions from energy use and solid waste, would absorb only about 7 percent of projected 2020 emissions.
- Under an alternate "Advanced Biomass Policy" scenario, there could be a reduction in net carbon equivalent emissions from 289.1 million tons to 226.9 million tons. This represents a reduction of 22 percent, to be compared with the 25 percent increase found with the Reference Case scenario. Forest growth could absorb 15 percent of projected gross annual emissions by the year 2020.
- Although conservation and energy efficiency has the dominant role to play in reducing the region's emissions of carbon dioxide, biomass strategies account for 4.7 percent of the reductions in net carbon emissions by the year 2020.
- The region's forests are capable of playing a much greater role in producing energy, as well as other durable forest products. By creating a reliable market for otherwise less valuable wood, biomass energy production tends to encourage better management of existing forest lands, many of which are dispersed among small private owners.

The key policy elements of a more aggressive biomass energy policy include the increased use of biomass to displace coal in electricity production, afforestation and increased forest management, and advanced solid waste management practices. The essence of what biomass has to offer, in addition to the energy security and economic development potential of a locally-produced resource, is the possibility of "closing" the carbon cycle. Biomass is a conditionally renewable fuel. If it is to be credited and effectively exploited for its potentially beneficial impact, regulators need to be able to assure that wood used to generate electricity is being produced on a sustainable basis.

This study was completed and published by the CONEG Policy Research Center in April 1992. A general summary of the study and its findings appeared in the spring issue of *BIOLOGUE*. An important next step will be to focus on producing more targeted messages to key audiences with different perspectives of this common problem. The four audiences include utility regulators and policy makers, independent power producers, the environmental community, and foresters and the forest products industry. Work is now being conducted in developing a detailed purpose for targeting these groups, the message and supporting points from the study for each audience, proposed next steps, and organizing a list of possible publications for each targeted group. One copy is attached.

Wood Waste in the Waste Stream: Characterization and Emission Testing Protocol Development

NYSERDA has signed a contract with Environmental Risk Limited/C.T. Donovan Associates for the amount of \$327,542 for Phase I. The Regional Programs will contribute \$102,000 towards this effort. CONEG will manage the contract for the region.

Since Waste Wood represents a significant portion of the solid waste stream currently being disposed of in landfills and in an increasing number of instances the clean fraction of the waste wood is being collected and combusted for power production.

Environmental regulators are reluctant to allow the combustion of waste wood that is contaminated with paints, preservatives, resins, glues, etc. because of the general lack of knowledge regarding potential adverse environmental impacts. The goal of this project is to identify the major contaminants in waste wood and determine air emissions and ash characteristics when the material is combusted in a conventional wood energy system. This knowledge will then serve as the basis for selecting pollution control devices and/or recommending combustion systems operating parameters that minimize adverse impacts.

The project includes an extensive data collection task in eight states in the United States and one Canadian province. Based on the results of the data collection work, a series of laboratory investigations will be used to identify the chemical and physical properties of the contaminants. All information will be reviewed by a Technical Advisory Committee comprised of the sponsors and representatives of the regulatory community, industry trade associates and other interested parties.

The workplan for the project has been monitored by the Technical Advisory Committee (TAC) and the NRBSP Steering Committee. The project is nearing completion, with a draft of the final report now in preparation. After the TAC has reviewed this draft and any changes are made, the final report will be issued. The anticipated completion date is no later than November, 1992.

Evaluation of the Performance of Wood Chip Heating Systems in Institutional Buildings

Commercial Testing and Engineering Company was selected by the Technical Advisory Group to conduct the performance evaluation, which has a scheduled completion date of February 1993.

The project is a field evaluation of direct combustion and gasification wood chip or residue systems to determine fuel and capital costs, combustion efficiencies, O&M costs, and overall system performance over a period of at least one full heating system. These costs and benefits would be compared to those of comparably sized units fueled by electricity and oil--or in the case of retrofitted systems, of the pre- and post-conversion costs and benefits.

At this time, the 10 active states have recommended potential candidates for the project. From this list, no fewer than six systems, at least one of which is wood gasification unit, will undergo a comprehensive performance analysis. The performance analysis

measurements will include the moisture content of the fuel, fuel weight, and energy output. By calibrating changes in the flow rate and temperature of incoming and outgoing water for hot water systems, analysts will be able to determine combustion efficiency in high-fire and standby modes. The smallest system to be measured will be no smaller than 500,000 BTUs per hour. The specification for the largest system has been increased from 5 million BTUs per hour to 10 million BTUs per hour.

To provide a representative analysis for the Region, at least one of the systems to be evaluated will be in northern New England, and one each will be located in Pennsylvania, New York, and New Jersey. Final determination of the sites will be completed in during the 4th quarter.

National Biomass Conference and Exhibition

The NRBP previously reported the signing of a contract with C.T. Donovan Associates to plan, organize and conduct the 1992 National Biomass Meeting and the Fifth Annual National Biofuels Conference and Exhibition. The conference will be held in Newton, Massachusetts from 19-22 October 1992. The specific conference objectives are:

- conduct a national meeting of state biomass coordinators;
- characterize the physical and chemical contents of wood waste that could potentially be used for energy, and to identify non-wood materials that may cause wood waste to be unacceptable as a fuel source;
- identify and address a variety of technical issues affecting the use of wood waste for fuel, such as the ability of wood waste separation, processing, combustion, air emissions, and ash handling equipment to meet acceptable environmental standards; and
- review existing federal and state policies and regulations concerning the use of wood waste for fuel and address whether policy and regulatory trends are consistent with actual knowledge and data concerning wood waste combustion.

At this point, efforts are focussed on contacting and confirming the 60 plenary and luncheon speakers for the event. The Contractor has also produced the conference brochure, and has sent the brochure to the printer. The Contractor has conducted substantial research on sources of mailing lists, and made plans for mailing about 20,000 to potential participants by the end of July. These participants include federal and state biomass, energy, solid waste management and recycling planners, environmental regulators, and wood waste processing and combustion industry representatives.

Wood Energy and Recycling Training Course

During the quarter, a contract was signed with contract with C.T. Donovan Associates to plan, organize and conduct this four-day training course for state and federal foresters.

The purpose of the course is to provide training on a variety of technical, regulatory and environmental issues concerning the processing and use of waste wood for energy and other products. Additional participants may include private foresters, state energy office staff and others. Some of its objectives include:

- Describing opportunities for using wood and waste wood for energy and identifying forest management, solid waste management, environmental, energy, economic and political benefits associated with using wood for fuel.
- Emphasizing opportunities for displacing fossil fuels with wood fuel in businesses, industry, public buildings and other facilities.
- Describing waste wood processing and recycling technologies and facilities with emphasis on specific technical opportunities and end-use markets for recycled wood.
- Describing direct combustion and gasification technologies, with emphasis on equipment appropriate for primary and secondary wood product industries, state and municipal buildings, and other commercial and industrial facilities.
- Identifying technical, engineering, economic and energy issues that should be evaluated when selecting, purchasing, financing, operating and maintain wood combustion and gasification systems.

The course is co-sponsored by the Northeast Utilization and Marketing Council, with support from the Southeastern Area S&PF Rural Development through Forestry Program. It is scheduled for 14-17 September 1992, and will be conducted in Vergennes, Vermont.

TECHNOLOGY TRANSFER

Articles were prepared for the Biologue Magazine.

A Steering Committee meeting was held in Portland, Maine on 27-28 April. The highlights of the meeting included a Maine Biomass Energy Tour via videotape, and the testimonial held on the behalf of the retiring NRBP Director.

Provided technical assistance to Central Missouri State University by providing information on residential fuel wood consumption in the northeast and the key contacts in the region.

The residential wood stove "lesson learned" project attracted international attention during the quarter. The NRBP was contacted by Ir. Hans Zeedijk and the Royal Netherlands' Embassy in Washington to provide a project update. Ir. Zeedijk was visiting the United States to gather information on wood stove usage and biomass

utilization programs in this country. The aim of his investigation is to prepare a comprehensive report to the Dutch Ministry of Housing, Physical Planning, and Environment (their Environmental Protection Agency) and the Dutch association of wood stove manufacturers (Kachel en Schoorsteen) on his findings. Jotul, one of the world's largest woodstove manufacturers, is based in the Netherlands. Not only interested in the technical findings of this project, he was also most interested in our educational outreach campaign to inform consumers about its results. Ir. Zeedijk was also interested in the possibility of collaborating in an international symposium to share the results of similar projects being conducted world-wide. The possible target audiences include wood stove manufacturers, researchers like Ir. Zeedijk, and governmental agencies concerned with energy and environmental issues from Europe, the Americas and Asia. Additional discussions on the possibility of cooperating in an international symposium of this type will be held with the NRBP Steering Committee, the RBEP Directors, and the U.S. Department of Energy to determine interest levels and potential sources of funding.

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