

DOE/OR/21389--34

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**NORTHEAST REGIONAL BIOMASS ENERGY PROGRAM
FINAL PROGRESS REPORT - 8TH YEAR
JULY - SEPTEMBER 1991**

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NOVEMBER 1991

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Prepared for the U.S. Department of Energy under Grant Number DE-FG05-830R21389

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INTRODUCTION

The management structure and program objectives for the Northeast Regional Biomass Program (NRBP) remain unchanged from previous years.

Additional \$ was provided by the Bonneville Power Administration Regional Biomass Program to continue the publication of articles in the Biologue. The Western Area Power Administration and the Council of Great Lakes Governors provided \$ each for funding the project "Characterization of Emissions from Burning Woodwaste."

*Budget
reduced.
ds*

A grant for the ninth year

was received from DOE.

RESEARCH HIGHLIGHTS

The Northeast Regional Biomass Steering Committee selected the following four projects for funding for the next fiscal year.

- Wood Waste Utilization Conference
- Performance Evaluation of Wood Systems in Commercial Facilities
- Wood Energy Market Utilization Training
- Update of the Facility Directory

MANAGEMENT HIGHLIGHTS

CONEG Policy Research Center, Inc. issued a request for proposals for the ninth year for the eleven states in the Northeast Region. RFP was issued September 3, 1991 with responses due October 15, 1991.

The next Steering Committee Meeting is scheduled for Cherry Hill, New Jersey on October 21-22, 1991.

STATE GRANTS

Connecticut

While considerable work has been done at the Federal level and by selected states on the potential of biomass for use in the transportation sector, Connecticut's work under previous NRBP subgrants has focused on the use and potential of biomass as a home heating fuel, in commercial/industrial enterprises, and for the generation of electricity. Connecticut has established that biomass (wood) has a small but steady place as a fuel for space heating. Actual use depends largely on the price of oil. Local and environmental concern, along with lack of solid information on residues associated with the burning of urban wood waste, has delayed the realization of proposed wood-fired generating facilities. Three such facilities (72 MW) have been approved for licensing by the State's Department of Public Utility Control and to date two of these have received Siting Council approval as well. However, little if any attention has been directed toward the potential of biomass as a transportation fuel.

In their next grant submission, Connecticut will endeavor to identify policies and programs that will facilitate the introduction and use of renewable/sustainable resources such as fast growing trees, shrubs and grasses.

Delaware

Delaware is currently updating the primary and secondary wood processors in the state. The Delaware Solid Waste Authority plans to start up the municipal solid waste incinerator at Wilmington. This plant has been closed for close to a year due to pollution problems that the former contractor would not address. Negotiations are ongoing with a new contractor. Once on line, this plant will produce 18MW of electricity and exhaust steam at 280 psi at 400 degrees fahrenheit piped to ICI Americas, Atlas Point Plant (one mile away). Also on the drawing board is a mass burn incinerator in the lower end of the State with a capacity to burn up to 700 tons of MSW per day.

Maine

The Maine State Planning Office is conducting an economic study on the wood fired electrical generating industry in Maine. A survey of chip harvesters was completed and the results have been incorporated into the Maine Forest Information data bank. A survey was also completed on residential fuel wood use in 1990 and 1991. The survey showed that the percentage of homes using wood for some of the their heating needs dropped to a ten year low of 31.5%.

Maryland

Maryland is developing a directory of Maryland wood energy users and fuel suppliers. Currently, the University of Maryland Survey Research Center is conducting

the actual survey of Maryland's entire Forest Products Industry, including both Primary and Secondary Industries.

Maryland is also developing a Business Plan to recycle woody land clearing debris and urban solid wood and demolition materials. Several departments and sub-units of the Maryland State Government and Maryland County Governments, individually, have responsibility for recycling, landfills, associated waste, water quality, etc. and all recognize the issue of landfills (and the ramifications thereof) as being one of the most important problems to be resolved in the near future. This thinking is also indicative of the position taken by concerned private sector firms.

Both these projects have been put on hold pending a reorganization within the state of Maryland. The principle investigator for this project has been transferred and a replacement has not been assigned.

Massachusetts

The Division of Energy Resources (DOER) and the Division of Capital Planning and Operations (DCPO) succeeded in pushing through legislation enabling the procurement of a privately-owned, -financed, -and-operated cogeneration plant at the University of Massachusetts at Amherst.

Wood is among the fuels being considered for the program, there being a substantial supply available nearby through selective thinning in publicly-owned forests such as that surrounding the Quabbin Reservoir. To count potential local objections to the large-scale combustion of wood on campus, DOER is coordinating with DFP and has received information from NRBP program managers in Maine and Vermont.

DOER is discontinuing the City of Northampton Methane Recovery Project. Although an engineering study showed that recovery of methane and its use for cogeneration of the facility's on-site thermal and electric needs is economically viable, changing solid waste management requirements dictates a switch from anaerobic to aerobic digestion, eliminating the recovery of methane.

New Hampshire

New Hampshire's wood-fired power industry came on-line during the 1980's providing a renewable alternative to fossil-fuel generation. Located throughout the state, these plants reliably produce 9.6% of the state's total electric needs utilizing locally available wood chips. The economic benefits to the state have been far reaching. Wood-fired power plants provide a consistent market for low-quality wood providing opportunities for sound wood lot management. In 1989 alone, the plants expended \$17.8 million for the purchase of New Hampshire wood chips. The state also benefits through the creation of additional jobs, property taxes, plant expenditures for operation and maintenance and the use of wood ash as a soil enhancer on farmlands.

In celebration of Energy Awareness Month, New Hampshire's wood-fired power plants will be open for public tours on Saturday, October 19. This is an opportunity to see how wood is converted into electricity and how it may be used in New Hampshire homes and businesses. Tours will be conducted at plants located throughout the state in Whitefield, Bethlehem, Bridgewater, Alexandria, Springfield, Concord, West Hopkinton, Tamworth and Center Barnstead. Knowledgeable plant personnel will be available as guides, answering questions on wood energy and plant operations.

The Governors Energy Office promoted the tours so that New Hampshire residents may become more familiar with the plants. Often, the misgivings associated with the siting of wood-fired power plants are based on misconceptions that can be somewhat alleviated by greater contact with currently operating plants.

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 material, whole tree chips and tree stumps are now located throughout the state. As a continuing effort through project activity, NJ works 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 NJ, but it also represents a solution to a continuing a growing problem in the state - productive use for wood that does not belong as a 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

The NYSERDA in conjunction with the State of Massachusetts and the Northeast Regional Biomass Program issued an RFP entitled "Residential Wood Stove: Lessons Learned." The goal of this project is to bring the awareness of stove performance, and thus environmental impact, to the stove owner. As the technology, and cost of wood stoves increases to meet necessary performance and emission standards, there is a growing need to provide sound technical, yet understandable, information to the community at-large and to the "front line" wood heating professionals that interact with the community. Proposals have been received and are currently being evaluated.

Pennsylvania

The Warren State Hospital which has been in the planning, contract negotiation and construction for the past 5 1/2 years has been completed. Wood fuel has been

delivered to the installation and test fires have been under way. The system will be operational for the 1991-92 heating seasons. Test burns of the Mountain View School have also been completed.

Six wood energy presentations were given and assistance was given in preparing a wood energy/residue utilization seminar. The organizations that requested a program on wood energy were:

- Delaware Valley Association of Energy Engineers
- Clarion Industrial Development Authority
- American Society of Mechanical Engineers
- Pennsylvania Hardwood Industry Association
- Northeast Hardwood Industry Association
- Southwestern Hardwood Utilization Council
- Allegheny Hardwood Utilization Group

Rhode Island

Rhode Island's Central Landfill will no longer be accepting yard waste in 1993. Smaller landfills in Rhode Island are planning to close down within the next two years. The Central Landfill is running out of space, and it needs to be cleaner. Incinerator emissions are receiving objections from neighbors. Transportation costs are rising. Trash-to-energy plants have still not received permits to build and burn.

Rhode Island proposes to undertake a study to determine how to deal with the future disposal of sludge, garbage and grass in the future. The study would:

- review sludge management
- compile amount of waste on state and municipal basis
- options for anaerobic digestion and other forms of composting
- sites and alternatives

The study would result in recommendations for the future.

Vermont

The Vermont Department of Public Service, cooperating with Green Mountain Power and Central Vermont Public Service Corporation, is planning a commercial demonstration of a biomass-gasifier/gas-turbine which will be fueled by wood chips derived from forest management operations. An assessment of forest resources for purposes of siting the plant has identified more than adequate wood supplies at reasonable costs. The U.S. Department of Energy, U.S. Environmental Protection Agency, and the U.S. Agency for International Development will jointly support pre-project gasification tests of the fuels that are likely to be used in the demonstration plant. The General Electric Corporate Research Center has proposed undertaking these studies

using its fixed-bed gasifier/gas-turbine simulator facility in Schenectady, NY. A demonstration effort at the 20-MW level is expected to cost \$40-50 million and little (if any) additional scale-up work would likely be needed, since 20 MW represents a commercial size for many biomass applications.

There has been difficulty in finding a sized, dried chip for testing at General Electric in Schenectady, New York. The latest plan is to chip some air dried lumber of varied species which will be close to 20% moisture content. A sawmill owner in Coventry, Vermont has agreed to chip the lumber and produce 4-500 pounds of chips that will be taken to Schenectady to see if they meet specifications. If they do, a contract will be signed for 100 tons of this material to be shipped to Schenectady for the testing which is necessary.

TECHNICAL SUBCONTRACTS

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

The contractor, Tellus Institute had previously submitted a report which provided (1) the projections of energy use by fuel for the eleven CONEG states, including biomass resources (firewood, MSW, landfill gas) and wood products (paper and pulp, construction); (2) an estimate of the carbon dioxide and methane emissions from all of these activities (including combustion and losses in extraction and distribution); and (3) project the stocks, annual growth, demands, and net annual growth (decline) on the forests, thereby obtaining carbon uptake (or additional releases) to combine with the combustion releases.

The contractor has currently developed energy-related greenhouse gas scenarios for quantitative background -- broad efficiency improvements over time, schematic full cost dispatch (changing the dispatch order to reflect both direct and environmental costs, and perhaps more cogeneration).

- Explored the merits of alternative biomass options -- wood for electricity, wood for sectoral use, MSW and landfill energy options (and recycling), increased forest products, with expanded forest lands and stocks. Selectively compare to alternatives.
- Formulated and documented policy options analyses which included relevant interviews and other document reviews.

The final report has been written but considerable rewrite is required. Expected completion date is December 1991.

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 Phase I. The Regional Programs will contribute \$ towards this effort. CONEG will manage the contract for the region.

Budget removed.

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 reviewed by the Technical Advisory Committee (TAC) and the NRBP Steering Committee. The status of the program will be reviewed again by the TAC in December 1991 and NRBP Steering Committee January 1992.

TECHNOLOGY TRANSFER

- Prepared articles for the September 1991 publication of the Biologue.
- Distributed Northeast Regional Biomass Publications.

END

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