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NORTHEAST REGIONAL BIOMASS ENERGY PROGRAM

PROGRESS REPORT
July 1989 - September 1989

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COALITION OF NORTHEASTERN GOVERNORS
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1.0 INTRODUCTION

The Northeast Regional Biomass Program (NRBP) was initiated in August 1983 with a grant to the Coalition of Northeastern Governors (CONEG), Policy Research Center, Inc. from the U.S. Department of Energy's Oak Ridge Operations Office. The program is designed to promote the responsible use of biomass energy in the Northeast region which encompasses eleven states(Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island and Vermont).

The Program conducted by NRBP has three basic features: 1) a state grant component that provides funds (with a 50 percent matching requirement) to each of the 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. Until recently, most state efforts to promote biomass involved 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 subprogram is a series of subcontracts for the production of reliable information and technical reports focusing on issues identified by the subprogram'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 formulation of topics for subcontracts helps to insure that the work produced under the technical subcontracts will be valuable to the state programs of the region. Cooperation between subcontractors and state officials will be built into the subcontracts 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 oversite committees that have been formulated for several of the subcontracts and grant programs.

The objectives of the Northeast Regional Biomass Program are to:

1. improve the effectiveness, coordination and planning capabilities of the state agencies in the region which have biomass-related responsibilities;

2. assess the availability of biomass energy resources;

3. provide the reliable information to private companies, residential and commercial consumers, and public institutions about the potential and versatility of biomass energy sources;

4. better understanding and mitigate the environmental impacts of the increased biomass energy use without stifling the region's ability to take advantage of its most abundant indigenous energy source;

5. transfer the results of government-sponsored and private research and development to the private sector;

6. support region-specific and interregional studies of the critical impediments to the further development of biomass energy resources; and,

7. coordinate the regional program with other federal, state and regional efforts to avoid duplication and maximize the effectiveness of NRBP dollars.

2.0 Research Highlights

CONEG in conjunction with the Wood Heating Alliance, U.S. Environmental Protection Agency and the New York State Energy Research and Development Administration sponsored the Woodstove Durability Conference in Chicago, Illinois on 9 August 1989. Nineteen stove manufacturers, as well as other organizations were in attendance.

3.0 Management Highlights

A state grant for Maryland and New York has been transmitted to each state in response to proposals submitted to CONEG.

A visit was made to the Maine Audubon Society on 17 July 1989 to review the status of the Residual Stand Damage Project.

The Program Director presented the status of the Northeast Regional Biomass Program to the New England Energy Task Force. Presentation was made in Boston, Massachusetts on 18 July 1989.

On 19 and 20 July 1989, a staff visit was made to State Offices in Concord, New Hampshire and Montpelier, Vermont.

Announcement of Grant Availability was transmitted to the eleven states of this region with a due date for submission of proposal 17 November 1989. The grant amount offered is $15,000/state compared to $30,000/state in previous years.

On September 12 - 14, 1989 the Southern Biomass Conference was held in conjunction with the 1989 National Meeting of State Biomass Energy Coordinators. The conference was held in Blacksburg, Virginia. An NRBP Steering Committee meeting was held in Blacksburg on 11 September 1989. The purpose of the meeting was to review the status of the state grant program and to select technical programs to pursue when funds become available.

4.0 Technical Programs

4.1 STATE GRANTS

4.1.1 CONNECTICUT

The state of Connecticut is conducting a study to determine the opportunities and constraints associated with burning recycled wood. They have been compiling data on air emissions and ash disposal from facilities that use processed wood waste for fuel; obtained a list of all municipal and bulk waste landfills in the state; designed a survey methodology for researching the amount and types of wood waste disposed of in landfills and began research on existing literature on the contents of construction and demolition debris.

4.1.2 DELAWARE

At this time, Delaware has no wood boiler electric facility in the state. However, Delaware is currently working on the development of the first facility of this type. A former sawmill operator, is planning to build the boiler to be used for the generation of electricity. Although a definite site has not been established he is planning construction in the Seaford, Delaware area. Seaford is also the home of E.I. Dupont, nylon manufacturer, a major Sussex County industry. E.I. Dupont is currently seeking a means of disposal of substantial amounts of scrap wood and in addition could be a potential market for electricity produced by the boiler. In addition, land prices in Seaford are very affordable and the availability for wood chips in the area should be very good. Therefore, Seaford seems to be a good choice for the location of this wood boiler electric facility.

4.1.3 MAINE

The State's first comprehensive survey of commercial and industrial energy use in Maine has seen completion of the data

gathering stage with better than 600 companies participating. The survey output will be used to produce a current profile of energy use in Maine by end use sector. This profile will then become the heart of the State's energy resources plan.

An annual residential energy use survey has been conducted every heating season -- with the exception of the 1982/83 heating season -- commencing with the 1978/79 season and continuing on through the 1988/89 heating season. Using these 10 years of data, the Office of Energy Resources has produced a 10 year statewide trend line study of residential wood heating patterns. Longitudinal profiles are available for amount of wood burned, amount purchased, prices paid, and substate breakouts by six heating regions. Profiles are also available by selected demographics.

4.1.4 MARYLAND

The Maryland Department of Natural Resources has submitted a proposal for a grant. The state of Maryland proposes to develop an in-depth business plan identifying the best methodology to process wood products and raw woody material now going to area landfills. The plan will deal with all the salient wood disposal and marketing problems for the area.

A contract has been prepared and forwarded to the state of Maryland for signatures.

4.1.5 MASSACHUSETTS

The Massachusetts Executive Office of Energy Resources (EOER) was asked by the Hubbard Lumber Company of Royalston, Massachusetts to aid in developing a cogeneration plant on the company site. The proposed plant would be fueled by forest residue and the thermal energy cogenerated would be used to dry lumber for Hubbard and surrounding mills. Capacity of the kiln would be 1,000,000 board feet. Contact has been made with cogeneration developers in the region who specialize in wood-burning cogeneration plants.

At the request of G&S Mill, EOER has contacted the Department of Environmental Protection, Air Quality Division, asking for the establishment of standards that are consistent from one project to another, that are uniform from one region to another, and that are adjudicated speedily. DEP has informed EOER that new regulations are being drafted which may help G&S' problem. The dialogue is continuing.

EOER has sponsored the development and publication of a cogeneration handbook, titled, "Guidebook on Regulatory Procedures for Development of Cogeneration and Independent Power Production in Massachusetts". The handbook is being prepared by HMM Associates, Inc., in association with Palmer and Dodge. Publication is expected by October 1989.

4.1.6 NEW HAMPSHIRE

Activities have concentrated on updating the list of New Hampshire Cogeneration Facilities and updating the contact people at these facilities. While updating the list, the Governor's Energy Office (GEO) had the opportunity to discuss the current situation of supply and demand for chips. Many of the foresters and wood procurement people involved with supplying the small power producers have indicated that there is an over abundance of wood chips on the market.

A listing of New Hampshire Cogeneration Facilities is attached.

4.1.7 NEW JERSEY

Five new industrial wood energy conversions were accomplished. These conversions all involved secondary wood processing companies which have installed wood fired furnaces and boilers fueled by wood residues they generate. The completed conversions now bring the statewide total aided by the NJ Biomass program to 22 companies involving in excess of 200,000 cubic yards of residues annually. Multiple benefits result from the application of this particular type of energy technology since very high disposal fees are avoided, landfill space is conserved and cost effective energy is produced.

Wood chips, stumpwood grindings, and secondary wood processing residues continue to be marketed as a part of New Jersey State Forest Services assistance. Largely within the past two years, eight stationary stumpwood grinders and many portable grinders have begun operating in the state. Much of the aid provided has consisted of assisting businesses in locating markets for their products. Generally these markets have been within the landscaping, horticultural and wood energy industries.

4.1.8 NEW YORK

The state of New York is currently reviewing proposals submitted in response to their request for proposal entitled, "An Analysis of Energy Intensive Materials from Wood". New York has delayed signing the sixth year grant until a contractor is selected in order to insure the subgrant statement of work and other requirements are consistent with those proposed by the selected contractor.

4.1.9 PENNSYLVANIA

The state of Pennsylvania has been very active in the promotion of the use of biomass as an energy source. Assistance has been provided on a broad base. Two recent meetings exemplify the assistance provided.

Meetings addressing co-firing wood/coal were held with two Pennsylvania electrical utilities (Pennsylvania Power & Light

Company, Pennsylvania Electric Company). Stressed were the volumes of wood residues produced in areas such as the Commonwealth's forest products industries, non-wood industrial wood waste (pallets, crating), and finally urban demolition wood - the majority being landfilled at substantial cost. An attempt was made to convey the idea that an opportunity may exist to co-fire in a facility with a compatible stoker system to reduce their current fuel costs and improve emissions in a generation plant that is not or may be barely meeting state and/or federal air quality regulations, while simultaneously reducing the wood residue disposal problem of their major service customers. Wood residue directories, CONEG's recycled wood waste study, co-firing studies, test burn reports, and lists of facilities with utility and industrial size boilers currently co-firing were provided to each utility representative.

A meeting was held with the physical plant engineer, environmental engineer, production manager and VP of marketing for Witco Inc., Kendall Oil, to discuss the advantages (environmental and economics) of co-firing their boilers with wood. Presently they are using coal. They were particularly interested in this option since one unit will need some work in the near future.

4.1.10 RHODE ISLAND

The Governor's Office of Energy Assistance signed a contract with the Town of Bristol to conduct analysis of the landfill to determine the composition of refuse and the degree of decomposition and presence of methane and other gases. Each party will put up $17,500. The town of Bristol is negotiating a contract to have the work accomplished. A Primary Wood Processing's Guide for the state of Rhode Island is in preparation.

4.1.11 VERMONT

The state of Vermont is in the process of making the final preparation for a conference to be held in Fairlee, Vermont. The special conference will present the most up-to-date on the following:

- Role of biomass fuels in responding to global warming and air pollution concerns.
- Environmental impacts of wood-burning, including air emissions, ash disposal and forest harvesting.
- Federal and State air quality standards for wood stoves, furnaces and boilers.
- New low emission, high performance wood-burning technologies.
- Wood stove installation and safety.

- o Proper operation to reduce emissions.

- o Opportunities for cogeneration power from wood using small scale 5-500 KW systems.

4.2 TECHNICAL SUBCONTRACTS

4.2.1 Evaluation of Residual Stand Damage Following Whole Tree Partial Cutting in Northern Hardwood Forest Types

The objective of the project is to determine the forest management practices that will keep residual stand damage to a minimum in whole-tree partial cutting whole-tree thinning is the preferred silvicultural practice in producing chips for wood fuel industry. Acceptable forest the demand of the woodfuel industry will not result in unacceptable levels of damage to residual forest.

The project will include a field study to examine residual stand damage in hardwood and mixed hardwood conifer stands in Maine, New Hampshire and Vermont. Twelve of the Eighteen sites have been selected for evaluation. Measurements of these sites will be undertaken during the identified. Contractor: Maine Audubon Society. Completion Date: October 1989.

4.2.2 Long Range Plan

Five years following the first five-year plan completed by the Steering and Technical Advisory Commitees of the CONEG Policy Research Center, the same process was revisited. Steering committee members, Technical Review committees associated with specific projects and biomass experts from around the region convened in five different meetings from June 1988 to August 1989 to discuss future priorities. Each meeting had a different issue focus.

The planning process, staffed by the Technical Development Corporation, with assistance from C. T. Donovan Associates, divided the areas of investigation into four discrete categories:

(1) Residential woodstove usage;
(2) Institutional/Industrial Wood usage;
(3) Municipal solid wastes/urban wood wastes;
(4) Forestry issues.

For each issue area, three major cross-cutting perspectives merited attention: (1) environmental impacts; (2) economic impacts; and (3) fossil fuel displacement, for its national security implications.

The criteria for recommending new project ideas have not changed over the years. They remain:

- o consistency with the 1983 NRBP objectives;
- o regional significance;

- o opportunities for cost-sharing;
- o contributions no one else is currently making;
- o useful technology transfer tools;
- o consistency with available resources.

The recommendations for future projects emerge from discussions in each issue area. Publication of the Long Range is scheduled for November 1989.

4.2.3 Woodstove Study

The Northeast Woodstove Study, co-sponsored by CONEG Policy Research Center Inc., has just completed its third phase. Measuring the emissions of twenty-five stoves operating under normal conditions in upstate New York households. The results indicate that EPA certified stoves can perform demonstrably better than conventional airtight stoves. The study also revealed two more troubling realities: (1) certified stoves, particularly catalyst stoves, show a pattern of rapid degradation in their performance in the course of one heating season; and (2) the difference between field performance and laboratory certification testing performance is so vast as to question the appropriateness of the certification testing procedure.

The final report for the Woodstove Study is scheduled to be published in December 1989. New York State Energy Research and Development Authority had had responsibility for the study and will make the distribution.

4.2.4 Energy Implication of Alternative Solid Waste Management Systems

The research conducted under this project will produce a technical document for the benefit of (1) state energy and environmental officials and (2) landfill and resource recovery developers in the Northeast region.

As its principal tool, the project will employ a user friendly computerized tool, called WastePlan, developed by Energy Systems Research Group, Inc. (ESRG) for purposes of integrated solid waste planning. WastePlan was originally developed for the U.S. Office of Technology Assessment (OTA) and is now being applied in Michigan, Manhattan and other jurisdictions.

WastePlan will be equipped to analyze system-wide implications of alternative recycling/composting scenarios for recoverable energy available to landfill and resource recovery facilities within any specified geographic area. This project will prepare a series of scenarios based on actual state recycling/composting goals and statutes which will illuminate the impacts of each scenario. An analysis and final report will describe the trade-off concept, model structure, scenario assumptions, findings and policy implication. Contractor: Energy Systems Research Group, Boston. Completion Date: October 1989.

5.0 Technology Transfer

On 18 July 1989, the Northeast Regional Biomass Director presented the status of the Regional Program to the New England Energy Task Force. In addition to the presentation, copies of the Five Year Report were distributed.

During this period, 67 copies of various NRBP publications have been requested from a number of organizations.

Articles were prepared for the Biologue.

On September 12 - 14, 1989, the Southern Biomass Conference and the 1989 National Meeting of State Biomass Energy Coordinators was held in Blacksburg, Virginia.

NEW HAMPSHIRE COGENERATING FACILITIES, May 1989

Facility	Capacity	Fuel	Operating	Contact Person
BioEnergy West Hopkinton, N.H.	12.0 MW	Wood Chips 180,000 Tons/yr	On-line	Harry Smith 746-5833
Owner BioEnergy				
Facility N. H. Hospital Plant Concord, N.H.	2.0 MW	Sawmill Residue 50,000 Tons/yr Forest Residue 50,000 Tons/yr	On-line	224-1461
Owner Concord Steam				
Facility Foss Manufacturing Hampton, N.H.	3.0 MW	Diesel Fuel 600,000 Gal/yr	On-line	Paul Heald 926-7641
Owner Foss Manufacturing				
Facility TIMCO Barnstead, N.H.	4.0 MW	Wood Waste and Chips 65,000 Tons/yr 75% sawmill 25% chips	On-line	Phil Rog 269-5900
Owner TIMCO Corp.				
Facility James River Berlin, N.H.	17.5 MW	Bark Waste 300,000 Tons/yr #6 fuel oil 8,000,000 Gal/Yr	On-line	James Watson 752-4600
Owner James River				
Facility Dartmouth College Hanover, N.H.	4.4 MW	#6 fuel oil 3,000,000 Gal/yr	On-line	Dick Plummer 646-2485
Owner Dartmouth College				

Facility	Tillotson Rubber Dixville Notch, NH	.6 MW	Sawmill Residue 30,000 Tons/Yr	On-line	Tom Tillotson 255-3161
Owner	Tillotson Rubber Company				
Facility	Groveton Paper Groveton, NH	5.0 MW	266,000 Tons/Yr 75% Whole tree 25% Sawmill #6 Fuel Oil 4,075,000 Gal/Yr	On-line	Roger Gingue 636-1154
Owner	James River				
Facility	Bridgewater Steam & Power Bridgewater, NH	20.0 MW	Wood Chips 200,000 Tons/Yr	On-Line	Paul Cavicchi 968-9602
Owner	G2S Construction, Gilford				
Facility	Pinetree Power Bethlehem, NH	15.0 MW	Wood Chips 200,000 Tons/Yr	On-Line	444-9993 (General Information) Wood Procurement 786-2289
Owner	Pintree Power, INC.				
Facility	Whitefield Project Whitefield, NH	15.0 MW	Wood Chips 200,000 Tons/Yr	On-Line	837-9328 (General Information) Wood Procurement Jan Van Loon 536-4802
Owner	Whitefield Power & Light				
Facility	Stewartstown Steam Stewartstown, NH	15.0 MW	Sawmill & Forest Residue 200,000 Tons/Yr	Proposed	Chuck Hewett (207) 774-6400
Developer	Swift River/Hafslund Portland, ME				

Facility	Spaulding Fibre Rochester, NH	16.0 MW	Coal and/or Wood	Proposed	Richard Sadowski (617)938-9380
Developer	Wormser Engineering Woburn, MA				
Facility	Hemphill Power & Light Springfield, NH	16.0 MW	Sawmill & Forest Residue 200,000 Tons/Yr	On-Line	Chris Mullen 763-2562
Developer	Thermo Electron, Waltham, MA Durgin & Crowell, Springfield, NH				
Facility	NH/VT Solid Waste Facility Claremont, NH	5.0 MW	Solid Waste 200 Tons/Day	On-Line	John Cook 543-1201
Developer	Wheelabrator Environmental Systems Hampton, NH				
Facility	Alexandria Power Station Alexandria, NH	13.5 MW	Sawmill & Forest Residue 200,000 Tons/yr	On-Line	Al Lippincott 744-6355
Developer	Legeis Energy Boston, MA				
Facility	Pinetree Power Tamworth	25.0 MW	Wood Chips 220,000 Tons/Yr	On-Line	Eric Heggeseth 323-8187
Developer	Pinetree Power, Inc.				

Facility	New England Alternate Fuels Swanzey, NH	17.0 MW	Waste & Wood Chips 220,000 Tons/Yr	Proposed	Chuck Hewett (207) 774-6400
Developer	NEAF - Swift River/Hafslund				
Facility	Concord Regional Cooperative Concord, NH	12.0 MW	Municipal Solid Wate 500 Tons/Day	Under Construction	Ron Ford 753-8411
Developer	Wheelabrator Environmental Systems Hampton, NH				