

Pioneering Energy Crops in the Northeast

Project Update: Salix Consortium



Energy crops for electricity production are becoming a reality. Led by Niagara Mohawk Power Corporation, the Salix Consortium, formed in 1994, is an association of 20 corporations with industrial, government, farming, and research organizations. The Consortium supports commercial development of willow trees as fuel for generating electricity. These fast-growing trees, developed through genetic engineering (specifically to maximize growth and pest resistance) are grown for utilities across the Northeast region to mix with coal in power plants using a process called cofiring.

THIS PROJECT

DEMONSTRATES COFIRING

OF FAST-GROWING WILLOW

TREES WITH COAL IN

UTILITY POWER PLANTS.

Long-Term Goals

The Salix Consortium has two objectives:

1. It aims to establish willow trees as a commercial biomass energy crop in the Northeast and upper Midwest regions. It will attempt to develop a reliable market for willow at a cost of less than \$2 per million Btu by 2003.
2. It will demonstrate and measure the environmental and economic benefits of cofiring willow with coal in existing electric power plants.

Several power companies have already announced tentative plans to participate. New York State Electric and Gas Company's (NYSEG) Greenidge Station (recently

acquired by AES Corp. of Arlington, Virginia) may cofire willow trees grown near the plant. Since 1997, the Greenidge Station has cofired wood from non-willow sources. Further north on the shores of Lake Erie, Niagara Mohawk will cofire willow grown on 600 acres near its 600-MW Dunkirk Station, recently acquired by NRG Energy, Inc. For cofiring with coal, the energy input from biomass is expected to be 10% to 20% of the total.

In addition to these plans, the Salix Consortium planted willow at trial sites throughout the Northeast to lay the basis for eventual scale-up to commercial operation.

Recent Accomplishments

During 1999, Salix participants made a number of advances, including:

- Planted a total of 300 acres of willow near the Dunkirk Station and an additional 34 acres in four areas of central New York.
- Completed 90% of the construction to retrofit the Dunkirk Station for willow cofiring.
- Installed biomass cofiring systems equipment and conducted test burns of willow at NYSEG's Greenidge Station.
- Produced more than 1,500,000 willow cuttings at State University of New York at Syracuse-College of Environmental Science and Forestry (SUNY-ESF) and Saratoga Tree Nursery. This is an 85% increase over 1998.
- Modified and tested two willow planting devices at Cornell University and used these extensively in 1999 spring planting tests on 200 acres.
- Expanded the campaign to create a successful market environment for a commercial Salix Energy Enterprise.



Willows such as these planted by the State University of New York will soon be providing clean, renewable energy from utility power plants throughout the Northeast region.

Daniel Peck / PIX05084

Near-Term Plans

Work during 2000 will include:

- Plant an additional 235 acres of willow near the Dunkirk Station during spring 2000; harvesting is scheduled for the winters of 2001 through 2003. The increased planting area includes 25 acres planted by a local landowner.
- Test the cofiring retrofit of Dunkirk Station.
- Complete a feasibility study for cofiring at the Connective Vienna Station.
- Study environmental benefits, avian biodiversity, root dynamics, soil sustainability, and productivity of willow plantings at SUNY-ESF.
- Analyze ash samples from cofiring at the Greenidge, Dunkirk, and Seward stations at GPU, Inc., and test the ash for suitability for use in portland cement.

Project Participants

- AES Corporation, Arlington, Virginia
- Antares Group, Inc., Landover, Maryland
- Burlington Electric Department, Burlington, Vermont
- Cornell University, Ithaca, New York
- Electric Power Research Institute, Palo Alto, California
- FORECON, Inc., Jamestown, New York
- Montreal Botanical Gardens, Montreal, Quebec, Canada

- NRG Energy, Inc., Dunkirk, New York
- National Renewable Energy Laboratory, Golden, Colorado
- New York State Electric & Gas Company, Binghamton, New York
- New York State Energy Research and Development Authority, Albany, New York
- Niagara Mohawk Power Corporation, Syracuse, New York
- Oak Ridge National Laboratory, Oak Ridge, Tennessee
- Ontario Hydro, Toronto, Ontario, Canada
- South Central New York Resource Conservation and Development, Norwich, New York
- State University of New York at Syracuse, Syracuse, New York
- University of Toronto, Toronto, Ontario, Canada
- U.S. Department of Agriculture, Washington, D.C.
- U.S. Department of Energy, Washington, D.C.

For More Information

Visit the Biopower Web Site:

<http://www.eren.doe.gov/biopower>

For copies of print documents on renewable energy, call DOE's Energy Efficiency and Renewable Energy Clearinghouse (EREC) 1-800-DOE-EREC (1-800-363-3732)



The Dunkirk Power Station in New York



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