Cornell University

Cornell University Renewable Bioenergy Initiative

Cornell University CURBI Renewable Bioenergy Initiative

What is CURBI?

The Cornell University Renewable Bioenergy Initiative is developing a state-of-the art research, education, and production facility that will demonstrate and evaluate multiple renewable energy technologies for conversion of locally generated biomass resources into heat, power and biofuels. The facility will provide a platform for research and an educational venue for students from Cornell and elsewhere, energy businesses, farmers, and community and economic developers.

Why do we need CURBI?

Cornell is committed to reducing its carbon footprint. This model facility will advance the science and practical use of three or more complementary renewable energy technologies and offset some of Cornell University's fossil fuel use. Experts in wildlife diversity, climate change, carbon mitigation, forest management and economic development are contributing to the development of CURBI to help ensure that environmental, social and economic impacts are adequately assessed.

What will CURBI do?

CURBI will take the organic waste generated by Cornell and turn it into energy, using multiple waste streams, including animal and food waste. Additionally, the Cornell University Agricultural Experiment Station, which is leading this initiative, manages extensive acreage of farmland and forests surrounding campus, from which appropriate agronomic crop and wood waste could be gathered. Dedicated biomass energy crops could also be produced in a sustainable manner to supply biomass for CURBI.

How will the research benefit New York?

CURBI offers a unique opportunity for scientists to assess and improve the effectiveness and efficiency of several different renewable energy technologies that could be readily adopted for use in other institutions and local communities that have access to similar sources of biomass. One of the goals of CURBI is to do hands-on testing of existing technologies that hold the most promise given New York's abundant natural resources, farms and woodlands and ample biomass streams.

Which technologies are under consideration?

Several are being considered. One, slow pyrolysis, is a process that heats biomass to a high temperature, producing combustible gas as well as a charcoal-like product called biochar. Biochar is an excellent soil supplement and it locks in carbon for hundreds of years, making slow pyrolysis "carbon negative" and an exceptionally promising green technology. Pyrolysis has attracted attention from media and public policy makers, including in the Obama

Administration, but there is no existing facility in the U.S. that generates biochar at a scale to evaluate the overall energy efficiency. CURBI would be the first. Various types of high-efficiency direct combustion and anaerobic digestion are also being considered.

How will CURBI-generated power be used?

The energy generated by CURBI will be used to heat larger facilities, such as greenhouses, or piped directly into Cornell's combined heat and power plant, or converted to electricity to supplement campus needs. CURBI will reduce Cornell's carbon footprint by supplying some portion of energy through green technology.

Where will CURBI be housed?

Several sites are being considered. An engineering feasibility study, currently underway, will determine the best location. The location will be on or close to the Ithaca campus to minimize transport miles for the biomass inputs including food, plant materials and animal waste.

How big will the facility be and when will construction begin?

CURBI is expected to occupy an area smaller than one or two acres. It is possible different technologies could be housed in separate places, but the most likely scenario involves one venue for efficiency and to make use of "stackable" technologies. Stackable means that the waste or output from one technology can be used by another to increase overall conversion efficiency. Depending on financing, groundbreaking could begin in late 2010.

Will CURBI promote economic development?

The facility is intended to be a showcase for regional communities, institutions and businesses to evaluate adaptable technologies based on local biomass and organic waste inputs. Renewable energy for the 21st century in the Northeast requires a "regional" approach, with smaller facilities using local inputs. This project will establish New York as a leader in promoting and developing regionally appropriate renewable energy capacity.

Will CURBI create jobs?

The potential for "green" job expansion from this project is great. As the technologies are refined and improved they will be adopted elsewhere. It is also possible that at some point in the future, local farmers could contract with Cornell for purchase of their biomass crops and/or waste streams.

Who is paying for CURBI?

CURBI's feasibility study is being paid for by the New York State Energy Research and Development Authority (NYSERDA), Cornell and the College of Agriculture and Life Sciences. Funding for the project is being sought. A public-private partnership is ultimately expected. The feasibility study, expected in fall 2009, will include an estimated price tag.

How does CURBI work with industry and other partners?

Although no formal partnerships have yet been made, partnerships between industry and Cornell faculty have already been formed in areas of research connected to CURBI. We encourage interested industry, economic developers and other partners to contact us to learn more about potential future research and extension opportunities related to CURBI.

Contact: Cornell University Agricultural Experiment Station, 607-255-2552, elc55@cornell.edu, www.cuaes.cornell.edu