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## Inside Illinois

### Campus moves toward supplementing power with wind turbines

By Sharita Forrest, Assistant Editor  
217-244-1072; [sforres@illinois.edu](mailto:sforres@illinois.edu)

Once ubiquitous on the prairie, windmills all but disappeared from the Midwestern landscape during the past century, rendered obsolete by public utilities. However, the South Farms may soon be sprouting a crop of wind-powered turbines to help meet the energy needs of the UI's Urbana campus.

The Facilities & Services Division is considering installing one to three wind turbines on the South Farms to help augment power generated by Abbott Power Plant.

Lee DeBaillie, an engineer in the Planning Division of F&S, is awaiting a feasibility study from Navigant Consulting, a firm based in Chicago that helps organizations explore opportunities in renewable and distributed-energy technologies.

Initial funding for the project will come from a \$2-per-semester fee that students began paying in fall 2004 to fund renewable energy and energy-efficient technologies. Students approved the fee in a referendum on March 5, 2003. Students for Environmental Concerns, an environmental advocacy group on campus, proposed the renewable energy program and the referendum to F&S, the Campus Sustainability Committee and Illinois Student Government. The UI became the first school in the state to institute a student fee in support of clean energy when the UI Board of Trustees approved it in June 2003. The fee will raise \$140,000 – 160,000 annually for “green” projects, depending upon student enrollment.



*Click photo to enlarge*

Photo: National Renewable Energy Laboratory

**Energy source** One or more wind turbines may be installed on the South Farms to supplement the electricity generated by Abbott Power Plant. The turbines would be funded in part by a student fee for renewable energy sources.

  
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Photo: National Renewable Energy Laboratory

**Clean air** Each turbine could provide up to 1 percent of the electricity needed on campus, without the air pollution and atmospheric emissions produced by coal or natural gas.

“It really got campus units on board when the students suggested the fee,” DeBaillie said. “That’s seed money that we can use to attract grants, and when we pool all that, suddenly the turbines make economic sense and are a good return on the investment.”

DeBaillie said he will apply for a grant from the Illinois Clean Energy Community Foundation, which has helped fund other wind-power projects in the state, and plans to investigate other funding sources as well for the remainder of the project costs.

The turbines, which can be as tall as 400 feet and cost up to \$2 million each, would feed energy into the campus electrical distribution system. The most common type of wind turbine is a three-bladed, horizontal-axis type that is placed so the blades face downwind. Wind turns the blades, which rotate a shaft connected to a generator to produce electricity. They are environmentally friendly because they do not produce the pollution and hazardous waste that come from burning fossil fuels or nuclear power.

Each turbine could provide about 1 percent of the campus’s needed electrical energy, which in FY04 totaled more than 396 million kilowatt hours, DeBaillie said.

“Generally, the buildings nearest the turbines will tend to use the turbine energy, but it just gets fed into the whole power grid, and you can’t track where it’s going exactly,” DeBaillie said. “It will feed the whole campus, but as we get more buildings on the south campus, they’ll tend to pull energy from the producer that is nearest them, and the wind turbines would be closer than the power plant.”

The feasibility study will aid in the final site selection. The turbines, which can take up about an acre each, will need to be located at the highest elevation possible to take advantage of higher

While earlier models of wind turbines tended to be noisier, advances in technology and careful placement of the turbines have helped minimize sound, much of which may be masked by wind noise or ambient noise in the surroundings. According to a study on the American Wind Energy Association Web page, at a distance of 425 yards, a typical wind turbine's noise level is approximately 50 decibels, about as noisy as a household refrigerator.

"They're fairly quiet," DeBaillie said. "You don't hear them much beyond a quarter-mile, and then they tend to blend into the background noise."

Another factor to be considered when selecting a site for the turbines is the potential impact on research programs on the South Farms, such as crops that are being grown in natural settings, said Robert Easter, dean of the College of Agricultural, Consumer and Environmental Sciences.

Thus far, indications are that the turbines would have little or no detrimental effects on agriculture, and they likely would provide new opportunities for research and teaching, particularly in the department of agricultural and biological engineering, which works with the state's rural electrical industry, Easter said.

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News Bureau, University of Illinois at Urbana-Champaign  
807 South Wright Street, Suite 520 East, Champaign, Illinois 61820-6219  
Telephone 217 333-1085, Fax 217 244-0161