

PICTURE IT: COMPANY SHOWS HOW WIND TURBINES WILL LOOK ON YOUR LAND



Courtesy of Environmental Design and Research of Syracuse

REAL OR IMAGINED?

Can you tell the difference? *



Courtesy of Environmental Design and Research of Syracuse

By **Tim Knauss**
 Staff writer

When people learn that giant wind turbines may be coming to their town, they have all kinds of questions. Will the turbines make noise? Will they bother the cows? Will they kill birds and bats?

But, most of all, people want to know: How will the turbines look?

To answer the latter question, wind developers often turn to a small Syracuse company, Environmental Design & Research, which has developed a national reputation for creating visual simulations of wind farms.

EDR provides a variety of services in Upstate New York — landscape architecture, engineering and environmental permitting — but its reputation for simulating wind farms has landed the company jobs from Cape Cod to Hawaii.

Increasingly, the work takes EDR into the heart of controversy.

When opponents and supporters bicker over the proposed Cape Wind project in Nantucket Sound — as they have for more than five years — it is EDR's simulations of what the project would look like from shore that form the basis for the debate.

Ditto for the controversial wind park that was proposed five miles off Long Island's Jones Beach. The Long Island Power Authority eventually decided

not to build that project.

"Believe me, I would just as soon not be involved in any controversial projects," said John Hecklau, a principal at EDR who started the firm's environmental services section. "But it seems to happen a fair amount."

Indeed, the more controversial a project's visual impacts, the more likely that EDR will be called in, he said. The key to survival in that environment: rigorous accuracy.

"The bottom line is, people are concerned about how it's going to look outside their window," Hecklau said. "And I understand that. It's very reasonable."

EDR became a consultant to the wind industry early on.

In 1999, the company handled all the environmental permitting — including visual simulations — for Madison Wind Farm in eastern Madison County, the first commercial project in New York state.

The company also worked on the state's second and third wind developments, Fenner and Maple Ridge. Since then, EDR has landed work on more than 30 wind power developments from here to Hawaii.

Kristen Goland, Northeast wind permitting manager for PPM Energy, said her company has employed EDR on projects throughout the region, including Maple Ridge Wind Farm.

"They do very excellent work," she

said.

Besides working for developers, EDR has consulted with towns and the federal government in their reviews of wind farm proposals.

EDR, which has 46 employees, was founded in 1979 as a landscape architecture firm. Hecklau, a wildlife biologist, joined in 1988 to add expertise in environmental permitting and ecological analysis. The firm soon got involved in permit applications for landfills and for power plants, the analysis of which often included visual impact studies.

In 1998 came the job that brought EDR's visual simulations to the fore.

PG&E Generating Co. incurred the wrath of preservationists, environmental groups and others with its proposal to site a 1,080-megawatt gas-fired power plant in Athens, Greene County, near a scenic stretch of the Hudson River.

Even the state parks commissioner opposed the plant because of its potential impact on the view across the river from Olana. The state-owned tourist site once was home to 19th century painter Frederic Church, whose work epitomized the Hudson River School of landscape painting.

PG&E hired EDR as a consultant to provide visual simulations. The regulatory review of the project dragged on for more than two years. The key issue: visual impacts.



John Berry / Staff photographer

GORDON PERKINS, project manager at Environmental Design and Research in Syracuse, says creating computer simulations of what wind farms will look like is much more complicated than using a photo-editing program to paste turbines onto a picture. He starts by plotting turbine locations on a topographic map and calculates where they can be seen from, based on their height. To verify the computer's calculations, EDR workers typically fly several large helium balloons at the height of the turbines and drive around them in a five-mile radius. Perkins also records the GPS locations of fixed objects. Images are then created to simulate the views from 10 to 20 locations.

"That became a real baptism by fire," Hecklau said. "Everything we did was challenged."

Ultimately, computer simulations by EDR provided the basis for altering the design of the plant to lower the height of its cooling towers and eliminate the emission of steam plumes, lessening the visual impact from across the river. With the changes, state officials approved construction.

"It was very satisfying in the end, because the position we took and the findings we presented really prevailed," Hecklau said. "That really was a turning point for our visual work. It really stepped it up into the major leagues."

Soon after, the wind power business took off and so did EDR's role in it.

Making an accurate estimate of visual impacts is a lot more complicated than just "Photoshopping" images of wind turbines into a picture. Gordon Perkins, project manager at EDR, provided this simplified overview:

To establish the "viewshed" from which a project will be visible, Perkins plots turbine locations on a topographic map and calculates where they can be seen from, based on the height of the machines.

To verify the computer's calculations, EDR workers typically fly several 15-foot-long helium balloons at the height of the wind turbines and drive around them in a five-mile radius.

Images are then created to simulate the views from 10 to 20 locations with a clear line of sight to the wind farm.

Perkins starts with a photograph of the site. He uses a 50-millimeter lens, which closely approximates natural human vision, he said. He records the latitude and longitude of the camera's position and its height off the ground.

Perkins also records the GPS location of fixed objects in the foreground of the photo: houses, telephone poles, silos and so on. If there aren't enough fixed objects, he'll also use surveyor stakes or balloons.

With topographic data, Perkins uses software to create a three-dimensional model of the site. He overlays images of the turbines. He marks the locations where the objects from the photo — the houses, silos and surveyor stakes — should fit.

Then he lines up the photo with the model.

A final touch: Computerized "virtual sunlight" is added to create shadows for the wind turbines that match the season and time of day that the original photo was taken.

Given EDR's frequent position in the middle of controversy, the company does everything it can to make simulations accurate, Hecklau said.

"What gets us our next job is being able to not only do the work, but defend the work," he said. "When you're up there and everything you've done is being dissected, you want to be able to say, there's a reason we did it and here's why it's right."

Among EDR's next jobs is one that may be the most controversial yet.

The company has been hired to produce visual simulations for the proposed New York Regional Interconnect high-voltage transmission line. The planned 190-mile-long line from Oneida County to Orange County has drawn fire from a wide variety of opponents.

Hecklau said he's not ready to talk about that one yet.

You can contact staff writer Tim Knauss at tknauss@syracuse.com or 470-3023.

* Answer:

The "real" photo is the second one. It shows a wind turbine erected at Maple Ridge Wind Farm, formerly known as the Flat Rock Wind Power project, in Lewis County. The top photo is a computer simulation that was created by Environmental Design and Research, of Syracuse, to show what the turbine would look like.