

# GE developing deep-water turbines

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In a development that could loom over the proposed Cape Cod wind farm, the U.S. Department of Energy this week reached an agreement with General Electric to design a wind turbine that stands taller, generates more power and can operate in

waters far deeper than Nantucket Sound.

The prototype turbine, which engineers plan to develop over five years, will be tested in waters as deep as 130 feet somewhere off the northeastern coast of the United States.

GE calls the design the next generation of turbine, standing more than 500 feet

high and producing up to 7 megawatts of electricity, which could impact a local developer's fight to build the nation's first offshore wind farm closer to shore.

The hope is that just one of the new turbines could convert stiff deep-sea winds into enough electricity for 3,000

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homes – nearly double the output of existing technology.

The technology could also cut the cost of wind power in half to about 5 cents per-kilowatt-hour compared to 9.5 cents-per-kilowatt-hour, federal energy officials say.

“Offshore wind is still in its infancy,” said Todd Alhart, a spokesman for GE Global Research. “But this is to design something that will be even more optimal for offshore wind conditions.”

The Department of Energy’s deal with GE is valued at \$27 million. The federal government has promised \$8 million to the research and development effort, with GE covering the rest.

While the test project will take three or four years to develop, a commercial model of the prototype is likely “some years away,” according to GE.

During that time, a local developer hopes to have already built a wind farm on Nantucket Sound using GE’s current state-of-the-art turbine – a 3.6 megawatt design made for shallow waters.

The turbines proposed by Cape Wind Associates for Nantucket Sound would stand about 417 feet tall, compared with the 500-plus foot prototype GE will pursue.

Opponents of Cape Wind’s plan to put 130 of the smaller turbines in Nantucket Sound say the new research venture is all the more reason near-shore projects are unnecessary – or even unwise.

But proponents insist the experience of shallow water projects is an integral part of growing the renewable energy industry.

“It’s important work, and it’s good that the U.S. government would get involved,” said Mark Rodgers, a Cape Wind spokesman. “Certainly the European Union has gotten involved in the field.”

But, he said, the emergence of deeper water projects will rely on lessons from projects closer to shore – projects like Cape Wind.

If approved, Rodgers said, Cape Wind will become a “center of gravity” for researchers and developers of wind technology nationwide.

Opponents have a much different interpretation.

The potential for deep-water wind turbines is a sound reason to hold off on building turbines near the coast, argues Audra Parker, assistant director of the Alliance to Protect Nantucket Sound.

The aesthetic impacts and public-safety risks of shallow water wind farms are unacceptable when the industry can wait

## GE turbine prototype

■ Engineers plan to develop prototype over five years.

■ It will be tested in waters as deep as 130 feet, somewhere off north-eastern coast of the U.S.

■ One turbine might produce enough electricity for 3,000 homes.

■ The potential for deep-water wind turbines, say Cape Wind opponents, is reason enough to hold off on building turbines close to the shore.

for the technology to build more powerful projects, according to Parker.

“This is what is going to further the offshore wind industry,” Parker said of GE’s public-private research agreement.

The Nantucket Sound turbines would be built about six miles from the closest landfall, whereas the deeper-water design could operate up to 15 miles from shore.

To Parker, the projected timeline for the prototype would provide federal agencies the chance to develop regulations for offshore renewable energy projects, a charge laid out in the federal Energy Policy Act

signed by President Bush last year.

Parker stressed that deeper-water projects would not only benefit consumers, but would likely be more attractive to investors. And, she said, developers could still learn from the European experience.

“We can go and do near-shore sites or we can learn from Europe’s mistakes and go further offshore and actually be a leader,” she said.

But some renewable advocates say the U.S. industry can’t simply wait for technology to evolve.

As the nation makes critical decisions about future energy sources, investors and policymakers must agree that offshore wind is on the table, said Greg Watson, vice president for sustainable development and renewable energy for the Massachusetts Technology Collaborative. And the country has to address long-term needs while building projects to meet short-term demands.

“The U.S. has no practical experience with offshore wind,” Watson said. “In the end, you’ve got to have some real world experience.”

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