

5 turbines in the works for wind power project in Lake Erie

By **John Funk, The Plain Dealer**

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With Tom Breckenridge

A local nonprofit development group racing to erect the first offshore wind turbine in the Great Lakes has reached an agreement with **General Electric Co.** to supply five turbines for a \$100 million demonstration project in Lake Erie.

The Lake Erie Energy Development Corp., known as LEEDCo, and Gov. Ted Strickland are to announce the deal in Dallas today during the annual conference of the **American Wind Energy Association**.

The cutting-edge turbines would stand 300 feet above the lake and be clustered six miles or so off Cleveland's shore, northwest of the city's drinking water crib.

Each of the colossal machines, at 225 tons apiece, would generate 4 megawatts, making them the largest in the nation. The total generating capacity of 20 million watts, or 20 megawatts, is enough to power up to 16,000 homes, at least while the wind is blowing.

The plan is to have the turbines generating power at the end of 2012, said LEEDCo president Lorry Wagner.

"This is not just about making power, it's about creating jobs," Wagner said in an interview. If the turbines are running by then, northern Ohio will have a chance to become the hub of an offshore wind power industry, LEEDCo and **Lake Erie Energy Task Force** officials say. Both GE and LEEDCo see the project as the first step in standardizing and lowering the cost of building very large wind turbines in the Great Lakes.

Financing has to be worked out, but state and federal tax credits and possibly loans or grants would be needed.

The turbines would account for about half the project's costs. The rest would be in the purchase of the towers, foundations on the lake bottom, an underwater power line to the shore and engineering expenses.

LEEDCo is interviewing finalists for project developer this week and expects to select one within a month. Several of the contractors have global experience.

The project is step one of a 10-year plan to build more than 200 turbines in the lake by 2020, generating a total 1,000 megawatts.

GE open to putting plant near site

"Our hope would be after the demonstration project that GE finds it desirable to manufacture here," Strickland said in an interview.

GE has agreed to give "strong consideration" to building an assembly facility in the region if there are enough orders. A company official did not say exactly how many orders the company

would need but noted that offshore turbines are so large -- much larger than typical land-based turbines -- that they must be built close to where they will be installed.

One thousand megawatts -- the 2020 generating goal -- is slightly less than the amount of power generated by FirstEnergy Corp.'s coal-fired power plant in Eastlake but more than by its Davis-Besse nuclear power plant near Toledo.

For conventional power plants, one megawatt is enough to supply the electrical needs of 800 homes. For wind turbines, the equation is not so simple because wind does not blow every minute of the day.

The design of the GE turbines will be based on slightly smaller turbines that have been operating in the brutal winters of Norway overlooking the Norwegian Sea since 2005.

Project faces variety of obstacles

But LEEDCo faces daunting hurdles. Among them:

- Approval from at least 16 federal and state agencies, including the U.S. Army Corp of Engineers, the Ohio Department of Natural Resources and the Public Utilities Commission of Ohio. LEEDCo has yet to file any permit applications but does meet weekly with an interagency task force, the Lake Erie Offshore Wind Team, that Strickland created 18 months ago.
- Concerns that the turbines will harm birds and bats. A \$350,000 study is under way, including radar, laser and acoustic identification of bird and bat flight paths. The proposed site will need a four-mile radius of air space in which few if any birds have been detected.
- How to anchor the towers in Lake Erie. Engineers must determine whether to sink steel piles down to bedrock, typically some 60 to 80 feet below the "glacial till" on the lake bottom. If pilings are needed, officials are uncertain whether the region still has the capacity to produce enough of the heavy steel that would be required.
- A way to get the power to shore. Underwater cables from the turbines to shore would need right-of-way approval from the state.
- The impact of winter ice. Plans call for an ice cream-cone shaped foundation at the water's level, which forces the ice down and breaks it, hopefully saving on cost, LEEDCo's Wagner said.
- A means of paying for the project. Financing details are still tenuous -- and could be more complicated than the engineering, said Wagner.

Nationally recognized wind-farm financing experts from KeyBank, who are members of LEEDCo's related organization, the Lake Erie Energy Task Force, are analyzing all the financing proposals, said Wagner.

Financing would include hefty federal tax credits, state tangible-tax credits still pending before Ohio lawmakers and cash from a power purchase agreement that LEEDCo must still negotiate. LEEDCo has identified two electrical substations on shore close to the proposed lake site. One is owned by Cleveland Public Power, the other by FirstEnergy.

Both are interested in buying the power.

"We've had discussions with the developer and are certainly interested in wind facilities in our region," said FirstEnergy spokeswoman Ellen Raines.

State law requires that by 2025, FirstEnergy's power deliveries include 12.5 percent generated by renewable technologies, such as wind turbines.

CPP spokeswoman Shelley Shockley said the city has been in discussions and hopes to buy the power. The city has set even higher renewable energy standards than the state law. Wagner and LEEDCo consultant Richard Stuebi of NorTech, a regional technology-development group, would not divulge the asking price of the power they hope to sell.

Turbines made in Norway

A GE official said the turbines would be made in Norway and shipped here, down the St. Lawrence Seaway. They would probably be delivered to Cleveland's port, officials said. A specialized ship needs to be built to haul the massive turbine components to the demonstration site. LEEDCo is talking with several companies about building a large, pontoonlike vessel. One of the firms is believed to be Great Lakes Towing Co., which operates near the mouth of the Cuyahoga River.

LEEDCo is the only wind developer hoping to build in the lake but not the only such developer in the state. Wind developers in Ohio have focused much of their attention on rural western regions where there is consistently more wind at the 300-foot level.

In March, the Ohio Power Siting Board approved permits for three land-based wind farms with a total generating capacity of 500 megawatts. While not in Northeast Ohio, one of them, for 27 wind turbines generating 48 megawatts, was proposed by Cleveland-based JW Great Lakes Wind for Hardin County, east of Lima.

Despite the hurdles of building here, LEEDCo believes it will have a permit-ready site by next year and win the race to erect turbines in the Great Lakes.

"It's not like going to the moon," Wagner said, "but it's a difficult challenge."

The group's pact with GE culminates a four-year effort, officials said.

"The first project will be a good project but will have things that nobody has ever done before in Lake Erie," said Wagner.