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## **Regulators plan Gr. Lakes offshore wind generation**

By JOHN FLESHER

AP Environmental Writer

5:16 PM CDT, October 28, 2008

TRAVERSE CITY, Mich.

Imagine sections of the Great Lakes dotted with rows of gleaming, 12-story turbines, blades whirring in the stiff breeze as they generate electricity for homes and businesses onshore.

It's only an idea -- for now. But government regulators are bracing for an expected wave of proposals for offshore power generation in a region that never seems to run short of wind.

Despite its allure as a plentiful source of clean energy, they say, offshore wind power could affect the aquatic environment and commerce. State and federal officials are taking initial steps toward writing rules, as conservation activists watch closely.

"This is our last frontier, our wild west," said Jennifer Nalbone, navigation and invasive species director for the advocacy group Great Lakes United. "Renewable energy is the direction we want to go, but you don't want to enter it blindly."

Insiders reported on the situation during the International Submerged Lands Management Conference in Traverse City, which began Monday and continued through Wednesday.

They said anchoring large wind farms on Great Lakes bottomlands would have implications for commercial and recreational navigation, water quality, fish habitat and even flight patterns for birds and aircraft.

Wind power developers are wondering what kinds of regulatory hurdles they will encounter once they propose offshore projects, said John Cherry, a University of Michigan researcher studying the subject for the Great Lakes Commission.

"It's an unknown, so there's a huge amount of risk," Cherry said. "Everybody would like to be the second program to do it. The first will be a regulatory trailblazer."

Denmark, Sweden, the United Kingdom, the Netherlands and Ireland have installed offshore turbines, and Germany has approved nearly two dozen projects expected to go online soon. Denmark's largest wind farm has 80 turbines roughly 120 feet high, planted eight to 12 miles off the coast.

The U.S. has no offshore wind production, although projects are in the works for Atlantic waters off

Delaware, New Jersey and Rhode Island. A feasibility study is under way for a possible wind farm in Lake Erie near Cleveland.

A Michigan State University study released this month said Michigan's portion of the Great Lakes could produce nearly 322,000 megawatts of power from wind -- a huge sum equal to roughly one-third of all electricity now generated nationwide.

Harnessing that much power would require placing nearly 100,000 turbines in the lakes, a remote prospect. Still, the study illustrated wind power's considerable potential for the region.

"There is interest in the Great Lakes, and I know some companies are looking there," Laurie Jodziewicz, manager of siting policy for the American Wind Energy Association, said in a phone interview.

The lakes would present unique challenges, such as ice cover in winter, she said. Developers also worry about excessive regulatory hoops with eight states and two Canadian provinces having jurisdiction. The U.S. Army Corps of Engineers also might get involved.

Michigan's Department of Environmental Quality processed a mock application earlier this year, said Tom Graf, a specialist in the Land and Water Management Division. Officials concluded legislation might be needed to deal with questions such as where turbines could be placed and leasing rates for use of Great Lakes bottomlands.

"We may find we don't have the authority to address a lot of these issues," Graf said.

The Great Lakes states have a solid legal basis for imposing tough regulation of offshore wind energy, said Chris Shafer, a professor with the Thomas M. Cooley School of Law in Lansing. It's rooted in the doctrine that Great Lakes bottomlands are held in trust for the citizens.

He urged the states to get started on designating sites that would be off-limits to turbines, such as shipping lanes, bird migration corridors and fish spawning sites. Michigan's Institute for Fisheries Research is developing a system to identify such locations, analyst Minako Kimura said.

The states also should require companies to pay a fair market value for use of public resources, Shafer said.

"It's entirely too easy to consider that a free resource that should be provided to the energy industry," he said.

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Great Lakes, Great Peril: Oil and Water

## Wind over water

### Some see giant wind farms on horizon for the vast, breezy Great Lakes

By [Dan Egan](#) of the Journal Sentinel

Posted: Dec. 7, 2008

*Second of two parts*

**Madeline Island** - Tom Nelson is mostly bald but maximizes the hair he does have by sporting a ponytail.

Nelson likes to use what he's got.

His open-air restaurant on Madeline Island, called Tom's Burned Down Cafe, is built from the remains of a charred beer hall and erected on a foundation of discarded railroad ties and phone poles.

The kitchen and bathrooms are fashioned out of a worn-out semi trailer.

The canopy over the place is made from anything waterproof he can find. One recent incarnation was an advertising banner plucked from the garbage at Minnesota's Mall of America.

The bar's marble countertops: converted from bathrooms in the old Bayfield tuberculosis sanitarium.

Nelson likes to use what he's got.

So you might be surprised that he has a problem with some retired engineers who want to determine whether a wind turbine could be erected to supply electricity to the island's population, which peaks in summer at about 3,000 residents. This fall they installed a temporary 165-foot-high tower in Big Bay State Park to gauge which way the wind blows, and just how hard.

Nelson sees the year-long study as a waste of a year's worth of wind.

The 54-year-old grumbles that the Apostle Islands town should just get on with it and buy an actual wind turbine.

Standing in front of his café with a hand-painted sign on the wall that reads: "People are exactly as free and independent as they choose to be," Nelson says he'll even donate a prime piece of his own land to help liberate his island from the polluting coal power he so detests.

"It's like this: You got an apple tree, it's got some apples. We don't need a committee to spend a year deciding whether we should pick those apples."

## Wind turbines on horizon

While the island's resident gearheads are spinning too slowly for its wildcat philosopher, they are on the front edge of what many say will be an energy revolution in the Great Lakes. Literally.

Wind power has already established a beachhead on Wisconsin soil - you can see 88 Danish-built windmills stretching 400 feet into the sky just east of Lake Winnebago. They're capable of squeezing enough juice from the airstream to power 36,000 homes, according to We Energies.

Similar blades are spinning along U.S. Highway 41 in Fond du Lac County. And they're whirling near the Lake Michigan shoreline in Kewaunee County.

And now it looks like at least one might be headed for scenic Madeline Island.

Alan Fischlowitz, a retired mechanical engineer involved in the study, says it is more likely the island would install several small turbines instead of one big one. He also says nobody is thinking wind power will allow the island to completely unplug from the mainland, because there likely will be times during peak demands that the island will have to import power.

Still, he says, the goal would be for the island to produce as much electricity over the course of the year as it consumes; at times when the island generates more than it needs, the excess would be sent back to the mainland.

Gazing out at a wind-swept Lake Superior from the site of the new test tower, Fischlowitz predicts it's only a matter of time until someone plants turbines in the Great Lakes themselves.

"I think it's probably inevitable," says the retired mechanical engineer who now operates a cottage resort on the island.

He isn't alone.

Many see the lakes as simply too big, too windy and too close to power-hungry population centers not to be exploited for their clean energy.

"I see that coming," says Soji Adelaja, a land policy professor at Michigan State University. "I'd say in 10 years we'll have several large wind developments on the Great Lakes."

Wind power is, of course, controversial.

A big knock is that until power-storage technology evolves, wind farms will work only when the wind blows. Wind energy proponents counter that the sites picked for wind farms are predictably gusty, though they acknowledge wind turbines will never be a complete answer to the nation's energy issues. But they say they can be a significant part of our energy future when intelligently integrated with

traditional power plants that have the ability to pick up the slack when wind doesn't deliver.

There are also issues of cost. Wind power critics contend the industry would die without ample subsidies; proponents counter that wind makes absolute economic sense when balanced against the untallied environmental costs of coal, including the pollution the plants emit and their production of greenhouse gases that are linked to global warming.

Wisconsin lawmakers are concerned enough about the downside of traditional power generation that in 2006 they ordered utilities to produce 10% of electricity from renewable resources by 2015, which would require about a threefold increase in renewable power.

Like it or not, that's probably going to mean a lot more wind turbines on the horizon.

## **Great Lakes potential**

There are loads of potential advantages to planting the monstrous turbines in a lake bed instead of on land. The wind blows harder and more consistently, there are no neighborhoods to build around, and no neighbors to grumble about the blades' rumbling hum.

Adelaja co-authored a report released this fall that showed Great Lakes waters within the state of Michigan's jurisdiction theoretically could yield a staggering 321,936 megawatts of electricity.

A little perspective: Michigan's 10 million residents have an average electricity need of about 12,000 megawatts. Wisconsin Energies' new \$2.3 billion twin coal-fired plants at Oak Creek will generate a combined 1,230 megawatts.

Adelaja's number comes with a huge caveat; it assumes that some 100,000 windmills could be placed uniformly across the surface of Michigan's Great Lakes waters, regardless of things such as water depth, distance from shore and potential impacts on commercial navigation, wildlife migration and recreational activities.

But it was calculated to offer a glimpse of the size of the energy source hanging over the lakes.

"It's always good to start with the total resource capacity, for people to have that type of number in the back of their minds," he says.

Offshore wind farms have for years been helping to power cities in Europe, and they are headed for the U.S. coasts.

Plans for 130 turbines off Cape Cod that will generate up to 420 megawatts are headed for final approval, despite Kennedy family opposition. Other Eastern seaboard states are planning similar projects.

"We've got to ask ourselves: What is different about the Great Lakes that makes us not ready to do that?" asks Adelaja. "I don't know if I have a good answer."

## **Blowback**

One reason is the lakes are fresh water, and that could create ice problems for the towers. The blades might also whack down the number of birds migrating in the region, though the National Audubon

Society has gone on record saying it "strongly supports properly-sited wind power as a clean alternative energy source that reduces the threat of global warming."

Then there are worries about what the construction work in the lakebeds could do to some fish species that are already struggling.

There are also depth issues. Existing technology basically only allows for the trunks of offshore turbines to be anchored at depths of about 200 feet. That would eliminate much of the potential wind farm areas on the Great Lakes; Lake Michigan's average depth is 279 feet.

Still, a new report by the Wisconsin Public Service Commission acknowledges that "tapping the vast wind resources on the Great Lakes has the potential to create significant quantities of renewable energy for Wisconsin."

The question is whether it is worth the cost. The 194-page report says rough estimates show building turbines in near-shore areas might be as much as three times more expensive than building on land, though even some of the authors of the report were leery of trying to hazard such a guess at this point.

A big reason lake-based wind is likely going to cost more, according to the report, is that the super-sized barges equipped with cranes that would be needed to plant a turbine in the lakebed are outrageously expensive (up to \$79,000 per day) because of their high demand by the oil industry. The report says the boats may not even be able to fit through the St. Lawrence Seaway to get into the lakes.

That argument didn't wash with the Seaway boss Collister Johnson Jr., who submitted a public comment on the draft study. He noted that some classes of construction boats, known as "jack-up barges," are indeed capable of squeezing through the St. Lawrence Seaway. He also mentioned the option of turning to the region's robust boat-building industry.

The PSC study found another potential pitfall to off-shore wind power - what to do with the windmills once they have outlived their usefulness.

"Currently, there are developed markets for recycled concrete, steel, aggregate and metals," the report states. "In contrast, there is no market for the fiberglass blades used for wind turbines."

That hasn't seemed to stop utilities in the state from investing hundreds of millions of dollars in land-based wind farms.

And it isn't stopping the City of Cleveland from ambitiously trying to corner the market on what it sees as the coming wind rush.

## **Testing Lake Erie**

It is nearing completion of a \$1 million study to determine what it will take to plant up to 10 turbines about three miles off its Lake Erie shoreline in the next couple of years that could supply electricity to 4,500 homes.

The idea is to use that relatively small wind farm to sow the seeds of something bigger. Cleveland has created a Great Lakes Energy Development Task Force with the explicit goal "to establish the Cuyahoga region as the hub for a wind energy cluster and capture a large portion of the future economic potential in research and manufacturing."

Conservationists warily watch it all unfold.

Cameron Davis, president of the Alliance for the Great Lakes, does not necessarily look forward to a day when he can see more than clouds and boats on the horizon from the beach near his Chicago home.

"Personally, I think it would be tough to see," he says. "One of the beautiful things about Lake Michigan, and the Great Lakes, is that they give us an escape from the clutter and bustle of our life on land."

While he's uneasy about the prospect of a horizon cluttered with turbines, he says, "that has to get balanced with the very real crisis that we have on our hands in being so reliant on non-renewable energy."

Dan Thomas, president of the Great Lakes Sport Fishing Council, harbors no such ambivalence.

"I thought we were concerned about natural resources, about the beauty of our natural areas and the integrity of our lakes," he says. "And now we're going to put windmills and wind farms offshore?"

Davis says that is a common concern he hears, and it doesn't surprise him.

"What has surprised me is that people do understand that we have an energy crisis on our hands and they are open-minded about lake-based wind to help meet our energy needs," he says. "Had wind energy come up as an issue three years ago, I think there would not have been the open-mindedness to it that we're seeing now."

For many people it beats the idea of having to live with another mercury-emitting chimney like the 550-foot-tall beast recently erected in Oak Creek to serve We Energies' new twin coal-fired power plants. Or more casks of radioactive waste stacking up at lakeside nuclear power plants.

Count Madeline Island restaurant owner Tom Nelson among them.

He's got no problems if he has to stare at a skyscraper-sized turbine looming over his island.

"Anybody who doesn't think that's a beautiful sight, they're short-sighted. They can't see two moves ahead in a chess game," he says. "And those are the people who've gotten us into this trouble in the first place."

Nelson lives adjacent to the town's recycling center, which sits on a parcel he sold to the town. He's on high ground with a great western exposure. Perfect, he says, to catch the breezes and shoot them into the island power grid.

All that wind is right on his doorstep.

And Nelson wants to use what he's got.

"The blades would be coming over my house, but I wouldn't care," he says. "I'd love it."

canoe network ... news

## Wind turbine production would boost troubled manufacturing

Great Lakes make Ontario a prime location

By NORMAN DE BONO

London and the region's manufacturing future may lie in the wind.

The energy industry needs wind turbine manufacturers and the area's troubled manufacturing sector, with under-used plants and skilled, but under-employed workers, should consider making the massive wind turbines that are popping up across Southern Ontario, says Great Lakes Wind Network director Ed Weston.

"This is a chance to tap into a hot market," he said. "Wind development is a hot topic right now and this is the manufacturing centre of North America. This is the place to get manufacturing done."

Southern Ontario is blessed with "big winds" off the Great Lakes making it a natural place for wind farms that are growing by Lake Huron and Lake Erie, and manufacturing the turbines is a natural extension of that, he added.

Governments across North America are mandating more energy be taken from alternate sources, driving unprecedented demand in the turbine industry. Yesterday, near Port Alma, east of Wheatley in Chatham-Kent, Ontario Premier Dalton McGuinty helped open a 44-turbine wind farm on the shore of Lake Erie.

The Kruger Energy Port Alma Wind Power Project will produce enough clean electricity for 30,000 households.

In 2007, 4,000 turbines were installed in the U.S. and Canada, but just more than 40 per cent of those were made in North America, with a bulk made in Europe. Industry projections state the industry will grow 30 per cent, per year, over the next five years.

There are now about nine manufacturers making turbines, but only one is in Canada, in Quebec.

The waiting list for turbines is two years and while forecasts suggest 10 more manufacturers will soon begin production, there be room for local producers that can manufacture at a lower cost, as shipping the massive blades and motors is very costly.

"The most cost effective way to put up wind turbines is to have a local supply chain. If you do that, you have an advantage," he said.

In the U.S. it's been mandated that 20 per cent of its energy be from alternative sources by 2030. Of all the alternative energy offered, wind is the least costly, about seven cents per kilowatt, comparable to coal.

"Wind is the most commercially viable alternative energy out there," Weston said. "What manufacturers in this area need are skills in machining and fabrication and that exists here."

Denmark is the world leader in wind turbine use, with 20 per cent of its energy coming from wind and Spain is second with 12 cent. Canada and the U.S. both get about one per cent of its energy from wind.

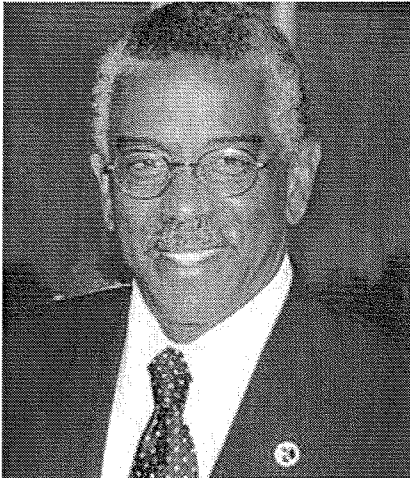


**Ontario Premier Dalton McGuinty speaks at the opening of a 44-turbine wind farm near Port Alma. (Canadian Press)**



## WWJ Newsradio 950

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Keith Cooley during his tenure with the state of Michigan

Posted: Tuesday, 02 December 2008 4:54PM

### **NextEnergy Boss Sees Sharp Job Growth In Renewables**

Within a relatively few years, Keith Cooley believes that Michigan could see hundreds of thousands of new jobs in renewable energy technologies.

And Cooley is in a place to help make that happen -- he's the new CEO of NextEnergy, the state's renewable energy industry accelerator.

In interviews with WWJ Newsradio 950 and GLITR Tuesday, Cooley said Michigan has particular advantages during a national tipping point of transformation away from a petroleum-based economy.

Michigan offers good opportunities for wind power, along with a huge agriculture and wood industry from which to draw waste for renewable power and fuels. There's also access to the world's largest supply of fresh water and an industrially savvy work force for whom the Midwestern work ethic is more than just a saying.

Cooley said he's also expecting to spend more time in Washington, D.C. than his predecessor, NextEnergy's initial CEO, Jim Croce. That's mostly because he's expecting an Obama administration to be friendlier to renewables, and this coming Congress to be greener as well.

"I'll be making sure Michigan gets its share of this growing industry," Cooley said. "Over time, I want to see us focus on the two or three big plays in this new industry, along with the Michigan Economic Development Corporation, the Department of Labor and Economic Growth and the state Centers for Energy Excellence."

Cooley said Michigan has lost hundreds of thousands of manufacturing jobs, but has the opportunity to gain many of them back in energy -- for instance, by building wind components here that currently must be imported.

That won't replace all the lost jobs, but Cooley said gains in the life sciences, health care and homeland security should help too.

"I think we're talking hundreds of thousands of jobs, and they'll be great paying jobs, and jobs that people can go home from feeling pretty proud that they're contributing to sustainability for our state and our nation," Cooley said.

Despite the national economic meltdown, Cooley said he's continuing to see growth in demand for renewable energy expertise. Every square foot of the NextEnergy Center's 18,000-square-foot business incubator is now filled -- and on one recent day, every square inch of the 45,000-square-foot building was being used (the rest includes offices and conference

facilities).

"There's a demand for space that wasn't there a year, a year and a half ago," Cooley said.

Before joining NextEnergy, Cooley was director of the state Department of Labor and Economic Growth. Before that, from 2002 to 2006, he was CEO of Focus:HOPE, the Detroit civil and human rights organization. He has a bachelor's degree in engineering physics and a master's in nuclear engineering from the University of Michigan, where he also competed on UM's 1966 Big Ten championship gymnastics team. He began his career in 1968 as an experimental physicist with General Electric Corp., and later spent 25 years, from 1972 to 1997, with General Motors Corp.

Print Current Page



Everything Michigan

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## Public gives green light to wind farm

Posted by Jeff Alexander | The Muskegon Chronicle November 06, 2008 10:05AM

The winds of change may soon be coursing through Oceana County in the form of alternative energy.

Voters in Elbridge Township Tuesday approved a zoning ordinance change that will permit construction of a \$120 million commercial wind farm. The referendum on the wind farm passed 323-78.

John Deere Wind Energy and Michigan Wind LLC of Big Rapids want to erect 30 wind turbines on 5,000 acres of land just east of Hart. If approved by state officials, the project would be one of the largest commercial wind farms ever built in Michigan.

Completion of the project could speed Michigan's efforts to generate more clean energy from the wind, sun and other sources, said Imad Mahawili, executive director of Grand Valley State University's Michigan Alternative and Renewable Energy Center in Muskegon.

"This project is really good news for the state," Mahawili said. "It could be a great example of how Michigan could meet its renewable portfolio standard."

The state Legislature and Gov. Jennifer Granholm recently passed a law that requires utilities to generate 10 percent of Michigan's energy from renewable sources -- wind, solar, biofuels and hydroelectric dams -- by 2015.

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**"As far as the township is concerned, we've done what we need to do. Now it's up to the companies to proceed with acquiring state permits and acquiring leases."**

*— Elbridge Township Supervisor Walt Wheeler.*

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Mahawili said the Oceana County project will be a test of whether commercial wind farms can be profitable in West Michigan.

"Wind energy is expensive," Mahawili said. "The bottom line for this wind farm is that it has to be economically viable; it has to make a profit."

If it succeeds, more wind farm developers will stream into the state, Mahawili said.

John Deere and Michigan Wind built a \$99 million wind farm last year near Bad Axe, in the Thumb area of Michigan.

The Elbridge Township project, which would generate 60 megawatts of electricity, is one of two new wind farms proposed in West Michigan.

White Pines Wind Farm LLC, a subsidiary of BP Alternative Energy, is seeking a permit from the U.S. Forest Service to erect 20 to 28 large wind turbines in the Manistee National Forest, north of Ludington.

Elbridge Township Supervisor Walt Wheeler said he was pleased that township voters approved the zoning change that will allow the wind farm to proceed.

"I was hoping the vote would be decisive, and it was," said Wheeler, who was re-elected as supervisor Tuesday. "As far as the township is concerned, we've done what we need to do. Now it's up to the companies to proceed with acquiring state permits and acquiring leases."

Numerous property owners in Elbridge Township could make money off the wind farm. The owners of the project will pay property owners for the right to erect massive wind turbines and other equipment on private property.

Developers of the proposed wind farm have said the project is not a done deal. The companies must conduct environmental studies and acquire state permits before construction begins.

If all goes according to plan, Wheeler said, construction on the wind farm would start in the summer of 2010 and be completed later that year.

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