

## Lake Erie wind farm proposal wins \$4 million in federal funding

December 12 2012

---

A regional team including researchers from Case Western Reserve has won \$4 million to design a wind farm in Lake Erie – along with the possibility they can compete for \$46 million more to build it.

The U.S. Department of Energy announced Wednesday that Northeast Ohio's Project Icebreaker is one of seven proposals nationwide to advance in the high-stakes competition to prove the promise of offshore wind power.

LEEDco, the Lake Erie Energy Development Corp. formed in 2004, created the Northeast Ohio public-private-academic partnership behind Project Icebreaker. The organization's proposal called for the installation of nine 3-megawatt turbines seven miles off the shore. The challenge now is to determine the details of drilling into the lake's floor, transporting the structures out into the water, and finally getting them to stand – and stay – upright.

Ultimately, the goal is to demonstrate how to build a wind farm that provides power at the same cost as traditional electric plants when the cost of construction, maintenance and energy production are averaged over the 20-year life of the wind turbines.

"There are 8,000 parts in a wind turbine and every little thing we can do to reduce the cost or increase the energy produced is in play," said David Matthiesen, a professor of materials science and engineering at Case Western Reserve and the research team leader for Project Icebreaker's

research and development group.

The group includes the universities of Michigan and Toledo, the National Renewable Energy Laboratory's National Wind Technology Center and the Pacific Northwest National Laboratory.

Mathiesen is director of Case Western Reserve's Wind Energy Research and Commercialization Center, part of the university's Great Lakes Energy Institute. With support from the state of Ohio, the center erected one wind turbine on campus and two in Euclid. The turbines provide energy but are primarily [research instruments](#) used as test beds for new products, materials and technologies developed by academic and commercial partners, many of which are also involved in the offshore project.

"Wind energy research and the three [wind turbines](#) we have provide us unique opportunities to explore an important future area of energy production for the U.S.," said Jeffery Duerk, dean of the Case School of Engineering.

The energy institute supports faculty in energy research by promoting collaborations—including industry and university partnerships. Since the institute's inception in 2008, CWRU has quadrupled its level of energy-related research.

Part of the funding growth reflects increasing focus on energy across multiple engineering disciplines. In this project, for example:

- Civil engineering professors Michael Pollino and Bill Yu will test and monitor materials and designs in the department's structures lab, on both land-and water-based turbines.
- . Civil engineering professor David Zeng will test the makeup

and stability of core samples from the lake's floor. to determine which of three possible turbine foundations to use

- Mechanical and aerospace engineering professor Iwan Alexander, will investigate wind turbine noise, the wake created under different conditions and the optimal wind farm layout.
- [Materials science and engineering](#) professor Roger French will put parts and materials through accelerated weathering and aging processes to find and correct shortcomings to the 20-year life for turbines. French and his colleagues developed the process in his lab, the Solar Durability and Lifetime Extension Center.

The scientists will use field data and computer models to predict how the structures would react to waves, wind and ice. They'll test coatings designed to keep the blades free from ice build-up, enabling the turbine to keep producing energy in the worst of weather.

The Department of Energy also selected four proposals to put turbines off the East Coast, one off the West Coast, and another off Port Isabel, Texas. The Department of [Energy](#) plans to award full funding for the construction of three of the seven competing wind farm proposals once the engineering and design for each are completed next year.

Provided by Case Western Reserve University

Citation: Lake Erie wind farm proposal wins \$4 million in federal funding (2012, December 12) retrieved 1 July 2024 from <https://phys.org/news/2012-12-lake-erie-farm-million-federal.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.