

# Sea Grant-Funded Researchers Explore Offshore Wind Energy Prospects

► Substantial wind resource exists off Mid-Atlantic coast




Delaware Sea Grant researchers are investigating whether offshore wind turbines could play a major role in meeting the Mid-Atlantic region's energy needs. *Photo by Jonathan Lilley*

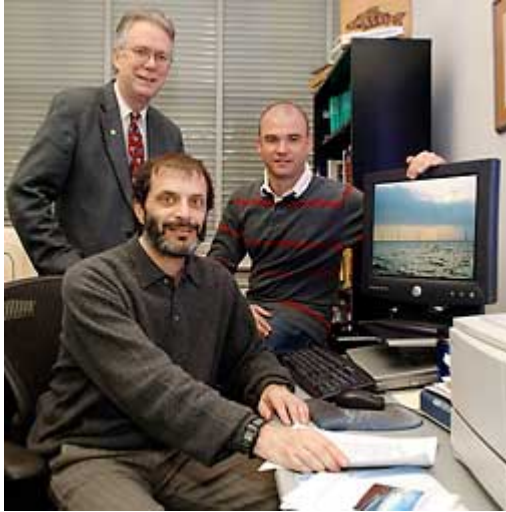
By Ron Ohrel, Delaware Sea Grant

*Note: This article contains excerpts from two articles previously posted on the University of Delaware's UDaily web site: [www.udel.edu/PR/UDaily/2007/jan/wind011607.html](http://www.udel.edu/PR/UDaily/2007/jan/wind011607.html) and [www.udel.edu/PR/UDaily/2007/feb/wind020107.html](http://www.udel.edu/PR/UDaily/2007/feb/wind020107.html).*

Delaware's electric power generators are currently powered entirely by fossil fuels, which emit carbon dioxide—a greenhouse gas widely recognized as contributing to global warming—into the atmosphere. Environmental and other considerations have led some scientists and policymakers to explore alternatives to fossil fuels. One of those options is offshore wind power.

Researchers at the University of Delaware and Stanford University recently learned that the wind resource off the Mid-Atlantic coast could meet the energy needs of the adjacent nine coastal states from Massachusetts to North Carolina, plus the District of Columbia—with enough left over to support a 50 percent increase in future energy demand.

***More than 90 percent of the 949 Delaware residents responding to the survey supported an offshore wind option even if wind power were to add between \$1 and \$30 per month to their electric bills.*** 



In a 2006 survey of more than 900 Delaware residents, University of Delaware marine policy scientists Jeremy Firestone (seated) and Willett Kempton (left) and doctoral student Andrew Krueger found strong public support for offshore wind power as a future energy source for the state. *Photo by Kathy F. Atkinson*

Using that information, University of Delaware researchers Willett Kempton, Jeremy Firestone, and Richard Garvine are determining the potential for establishing wind power facilities off the Delaware coast. The scientists are working to identify potential sites for offshore facilities, the laws and policies to best regulate possible development, possible economic and environmental impacts, and opinions of coastal residents regarding offshore wind power.

Surveying Delaware residents, Firestone and Kempton found strong support for offshore wind power as a future source of energy. When asked to select from a variety of sources to help the state increase its energy supply, more than 90 percent of the 949 Delaware residents responding to the survey supported an offshore wind option—in which whirling wind turbines as tall as 40-story buildings would be erected off the coast to generate electricity—even if wind power were to add between \$1 and \$30 per month to their electric bills. Fewer than 10 percent voted for an expansion of coal or natural gas power at current prices.

“Based on our results, Delaware could become the Denmark of the United States when it comes to relying on offshore wind power as a major energy source,” Firestone said. “Delawareans are amazingly supportive of it.” Firestone further noted that this study debunks the myth that coastal residents will not support in-view developments.

In a project funded by the Delaware Sea Grant College program, the scientists and their graduate students surveyed more than 700 out-of-state visitors to Delaware's beaches in July 2007 to explore how an offshore wind farm would affect tourism. Analysis of that survey data is ongoing.



Delaware Sea Grant researchers are surveying beach visitors this summer to assess the potential impacts that an offshore wind farm could have on tourism.

The Delaware state legislature has indicated interest in securing nonpolluting sources of electricity and in May 2007, four Delaware agencies ordered Delmarva Power & Light to negotiate to buy power from a proposed offshore wind farm, which could be the first in the United States. Contingent on the success of those negotiations, nine Delaware municipalities have agreed to purchase power for 20 years from the offshore wind farm. This is the first such agreement in the United States. If negotiations are successful, this single offshore wind farm would provide 17 percent of the electricity for the entire state, while tapping only 3 percent of the state's potential offshore wind resource. The bid price for wind-generated electricity was less than that of a coal gasification plant of the same electrical capacity. "I think interest in wind power and other renewable energy sources is now growing not only in Delaware, but nationally due to the rising cost and long-term supply issues associated with traditional energy sources, as well as other concerns such as global warming," Kempton said.

Kempton and Firestone are part of a research group at the University of Delaware College of Marine and Earth Studies that is exploring the science, resource and policy implications of offshore wind power. The group offers a graduate course on offshore wind power, including science, engineering and policy.

Kempton said University of Delaware students are interested in the topic, and he has seen increased enrollment across campus in the course.

"We now have a number of graduate students who have completed their studies or are presently working toward a degree in this area," he said.

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