

The U.S. is on the cusp of an offshore wind energy boom. Why aren't energy companies capitalizing on it?

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It will require specialized equipment and in-depth engineering research to stabilize offshore wind farms on the United States' east- and west coasts, says Jerome Hajjar, CDM Professor and chair of Civil and Environmental Engineering at Northeastern. Credit: Matthew Modoono/Northeastern University

When it comes to wind energy, the United States is sitting on a gold mine, so to speak.

"To me, this is like when oil was first discovered in the U.S.," says Jerome Hajjar, a professor of civil and environmental engineering at Northeastern University. It's a moment of untapped potential that, if harnessed properly, could transform the way the U.S. uses energy, he says.

Like oil, [wind energy](#) can be harvested to power the country. Unlike oil, [wind](#) energy—which is captured and transformed into electricity by giant fan-like structures called wind turbines—is totally renewable. These wind turbines can be installed in groups, either on land or at sea, to create a power plant known as a wind farm.

The country's coasts are rich with potential for [wind farms](#), but much of these coastal waters are undeveloped. There's one fixed-bottom wind farm (a wind [farm](#) with turbines attached to the soil beneath the ocean, not floating on top of it) on the East Coast, Hajjar says, off the coast of Block Island in Rhode Island.

So, why aren't more energy companies capitalizing on the offshore wind energy potential of Massachusetts and its coastal cohorts? Part of it has to do with another key East Coast feature: hurricanes.

It will require specialized equipment and in-depth engineering research to stabilize [offshore wind farms](#) on the United States coasts, Hajjar says.

And that's where he, and his Northeastern colleagues Andrew Myers, Luca Caracoglia, Jennie Stephens, and others come in.

"We're dedicated to trying to help spur this industry here," Hajjar says.

"We can do the research that's needed to help the industry build safe and

effective wind farms and in turn create a whole new workforce."

That research is already underway. This week, Hajjar and his colleagues put their heads together with industry leaders, public officials, and other academics from the U.S. and France in a conference called the French-American Innovation Day. The conference was co-chaired by Myers, who is an associate professor of civil and environmental engineering.

Organized by the Office for Science & Technology of the Embassy of France in the United States, Northeastern University, and the University of Nantes, the conference, held this year at Northeastern, converged some of the leading thinkers and doers around wind energy to trade knowledge and collaborate on building the future of wind energy.

At the end of 2018, Hajjar and his colleagues teamed up with the Partnership for Offshore Wind Energy Research to release a report that outlined a blueprint for developing comprehensive wind energy infrastructure in the United States.

Massive wind farms can be found throughout the U.S., particularly in southern California and in the middle of the country where high wind speeds create prime conditions.

But the [coastal waters](#) just off the country's eastern seaboard are also ripe with potential. They could be transformed into wind farms that provide enough energy to power the entire United States, Hajjar says.

The waters off Massachusetts in particular, says Hajjar, are like "the Saudi Arabia of offshore wind." That is to say, coastal Massachusetts has the natural resources to be a global leader in wind [energy](#) production, the way Saudi Arabia has one of the largest oil reserves in the world.

The East Coast has "supreme wind conditions" in both shallow and deep

water, Hajjar says. Massachusetts in particular, which has shallow water further from the [coast](#) than other states, is prime real estate for ocean [wind turbines](#).

"The capacity is out there," Hajjar says. "We just need to work together to build it."

Provided by Northeastern University

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