

The winds of change are blowing

FROM B1

And in Washington, the Biden administration says it wants to start a slate of environmental reviews, make more money available to ports and developers, and offer new areas for lease off the coast of New York and New Jersey. The goal is to open the spigot on projects that promise to spur the economy while slashing harmful carbon dioxide emissions.

The nation's first and only commercial wind farm came online four miles off Block Island in 2016. It's five turbines generate a modest 30 megawatts of power for the popular tourist destination.

In contrast, Vineyard Wind will erect 62 state-of-the-art General Electric Haliade-X turbines to supply Connecticut with 804 MW of electricity — about 14% of the state's electric supply — when it plugs into the New England electric grid in 2025. Vineyard Wind, which will use port facilities in Bridgeport, is a project of Copenhagen Infrastructure Partners and Avangrid Renewables.

"Things are going to start happening fast," says Sylvain De Guise, who runs the Connecticut Sea Grant College Program at the University of Connecticut's Avery Point campus in Groton. He likens the recent developments to the coming of spring: "A couple of buds, next thing you see are some flowers and trees blooming. When it starts happening, it happens pretty fast."

To be sure, the projects face some headwinds. Commercial fishermen say wind farms threaten their livelihoods. The State Pier project is a target of critics who cite poor oversight, cost overruns and a lack of transparency.

Still, Connecticut has signed two deals to buy electricity generated offshore. And a lot of people see a huge potential for well-paying new jobs.

"It's not for the faint of heart to try to figure out how to do this. But I think the rewards are worth the effort," says David Hardy, a former U.S. Navy submariner who runs Ørsted's North American offshore wind operations.

The Day sifted through hundreds of pages of regulatory filings to take a look at where and how these massive turbines will rise from the sea bed. In the coming months, we'll follow the wind farms' progress and examine their impact on Connecticut consumers, fishermen, workers and communities.

Meantime, companies like Groton-based Thayer-Mahan are ready to jump in. ThayerMahan's cadre of young, whiz-kid engineers are developing cutting-edge technology to help the industry monitor offshore waters and marine mammals living there. The company has already signed on with Revolution Wind Farm, an Ørsted/Eversource project, where as many as 100 giant turbines could be turning 20 miles east of Block Island by 2023.

"We don't mine coal or drill for oil," says Connecticut Rep. Joe Courtney, a Democrat. "This is just completely turning that on its head, so that now we're going to be instrumental in terms of developing global energy.

"We're suddenly becoming the new Oil Patch," he says, "even though it's not oil."

s.ritter@theday.com

Hydraulic hammer

will drive the foundation 154 feet into the seabed. Total foundation installation takes 2-4 days; pile driving can be completed in 2-4 hours. The remainder of the structure, including the nacelle and rotor, will take an additional three days to install. Bad weather could change the timeline.

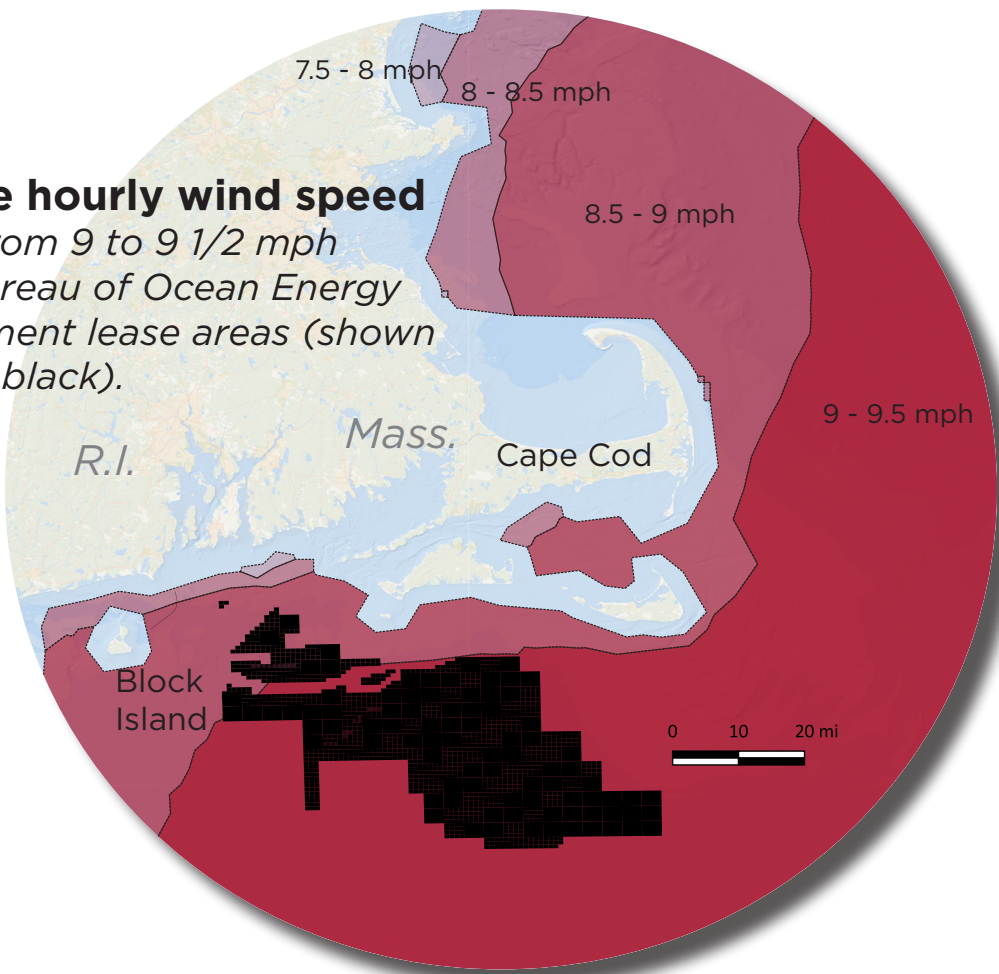
Monopile guide

The monopile

is 32 feet in diameter and is made up of several sections of rolled steel plate welded together.

Seabed

Average hourly wind speed ranges from 9 to 9 1/2 mph in the Bureau of Ocean Energy Management lease areas (shown below in black).



Jack-up lift barge

uses metal legs with spudcans attached to the bottom to lift the work vessel out of the water. Once work is complete, the legs are retracted and the vessel lowers back down to the water. The spudcans are lifted off the sea floor and the barge moves to the next work location.

Deck cargo barge

will transport foundations to the installation site.

A derrick barge

moored to the seabed may also be used to install foundations.

Mean sea level

Spudcans

Data: U.S. Bureau of Ocean Energy Management; U.S. Geological Survey; Northeast Ocean Data.org; National Renewable Energy Laboratory; Nairbay.org; ESRI; Ørsted/Eversource; Copenhagen Infrastructure/Avangrid. Illustrations are not drawn to scale; export cable routes are approximate.

The New England offshore wind lease holders have adopted a uniform turbine layout — 1 nautical mile by 1 nautical mile, east-to-west and north-to-south. The companies and industry experts say the layout takes into account concerns raised by fishermen, improves navigational safety and facilitates search and rescue operations.