Blowhard

Offshore wind power — the good, the bad and what it means for us

BY CAPT. JOHN MCMURRAY

"Whoa … ," I muttered as we approached an array of almost 200 monstrous structures. This wasn't one of Europe's larger wind farms but it was awe-inspiring and surreal. We were in the Thanet Wind Farm, about 15 miles off of the U.K.'s southeast coast. I, along with a few other commercial and recreational fishing interests, were invited on an offshore wind power fact-finding mission by the Ocean Conservancy, because it's getting very clear that such wind farms are coming to U.S. waters, likely sooner than you think.

Because wind is clean, renewable and sustainable, using it to generate electricity provides an appealing alternative to generators powered by oil, coal or natural gas. At sea, wind blows harder and longer, and suitable sites are more readily available to enable large projects to operate. Yet there are costs. As ocean users, we should be aware of them.

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Any red-blooded angler's first thought is that wind power arrays will be fish magnets, particularly in the mid-Atlantic where, minus a handful of hard-bottom areas and a sparse network of artificial reefs, it's basically all sand. There's plenty of science out there indicating that fish concentrate around objects placed in the sea. To anglers that's intuitive. When fly-fishing for many marine species, we look for "structure." But if anglers can't access such arrays, they become far less attractive.

Access has not been an issue thus far in the U.K. Anglers and charter vessels have complete right-of-entry to the sites. There is a 50-meter (164-foot) *recommended* safety zone around each turbine. Commercial boats may enter as well, although it's obvious that trawlers would have problems. So by default, such arrays become hook-and-line-only zones, which most readers of this column would agree isn't a bad thing.

However, in the North Sea, the Swedish, Danish and German governments shut fishermen out, based on environmental and safety assessments as well as a simple cost-benefit analysis. The risks to cables, potential liability within the farms and related search-and-rescue issues were all driving factors. In the North Sea region, fisheries aren't regarded as a national priority and the countries' fishermen simply didn't engage in the political process, while environmental groups pushed for no-fishing zones. A combination of those factors effectively doomed fishing within the boundaries of the farms.

It's unlikely that would happen off our coasts. The federal Bureau of Ocean Energy Management (BOEM) has stated on

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its website that it does not intend to restrict vessel traffic in and around offshore wind facilities. If a safety zone or buffer were implemented, it would be by the Coast Guard, which has said publicly that it has no intention of establishing such zones. If a safety zone is ever deemed necessary, it would follow formal proposed and final rule-making procedures, including public comment. Could the developers themselves exclude anglers? It would be very unlikely. They would need to go through an extensive public process to do so, and given the public's historical use and its desire for continued access, they would likely fail.

NOISE POLLUTION

However, during construction, which may last one to two years, anglers would be prohibited from entering the area. Also, pile-driving during wind farm construction creates high levels of underwater noise, which likely would drive fish and marine mammals away. In Europe, there are requirements that developers avoid causing such circumstances by emitting pings that repel marine animals before conducting any activity that might endanger them, and in some cases, construction crews simply aren't allowed to work during migration periods. Such regulations are part of the permit process here. There will also be considerable turbidity as construction stirs up bottom sediments. Marine predators simply don't like such murky water. Yet studies have shown that both fish and marine mammals not only return in abundance but also increase post-construction.

However, the risk that sediment will cover reefs before and after construction has been a concern.

There is also concern about noise and vibration generated by operating wind farms. U.K. studies indicate that the amount of noise and vibration is negligible compared with both natural and previous man-made noise and vibration. Yet some U.K. fishermen indicate there has been a lack of cod since the wind farms went into operation.

FARMING WIND While there are many pluses to harnessing wind to use for electricity, we must remember that there's a cost for every reward.

WHEN AND WHERE

There is significant concern about the electromagnetic field (EMF) produced by the lines that transfer electricity to shore. Electric fields are detected by sharks, skates and rays and are used by these animals to find prey, mates and orientation. Magnetic fields are also detected by tunas and salmon, as well as lobsters, turtles and cetaceans, and are likely used for navigation and homing.

When will we see construction along our coasts? In coordination with the relevant states, BOEM has identified several Wind Energy Areas (WEA) off the Atlantic coast that appear most suitable for renewable energy development. A number of states on the Atlantic coast have initiated planning for offshore wind projects, and developers are pursuing leases.

Readers have likely heard about Cape Wind, which was issued the nation's first commercial lease in 2010, allowing it to construct and operate 130 turbines in a 25-mile area in Nantucket Sound. While the company has completed nearly all the regulatory requirements, it is undergoing litigation, making the actual construction date uncertain. BOEM has also issued a commercial lease to Bluewater Wind Delaware for the right to submit one or more plans to support the development of a wind farm in a 96,430-acre area located in federal waters off Delaware, but the company has not completed its geophysical survey work or submitted final construction plans.

BOEM is in advanced planning stages in a few areas along the Atlantic coast. These include a small area about six miles due south of Boothbay, Maine, a large area off of Rhode Island about 30 miles due east of Montauk, New York, and a large pie-shaped area in the New York Bight about 35 miles south of the western end of Long Island. In addition, BOEM has issued "interim policy" leases for two small areas about 20 miles off of New Jersey and is processing an interim policy lease application for a small area about five miles off of Tybee Island, Georgia. "Interim policy" leases allow for limited activities such as the construction of a meteorological tower.

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Yet we are many regulatory steps away from construction on any of those sites.

In state waters, a small demonstration project, consisting of five turbines, approximately three miles southeast of Block Island, Rhode Island, looks like it may happen quite soon, which would make it the nation's first offshore wind project. In Maine, a small model of the country's first floating wind turbine will be installed off Castine, and testing will escalate for a pilot wind park off Boothbay Harbor. Fisherman's Energy, a company run, strangely enough, by a fishing family, is also close to becoming fully permitted to construct a small-scale demonstration project off the coast of Atlantic City, New Jersey.

In short, I can't see how these wind farms won't be good for recreational fishing. There may be some temporary effects during construction, but fish will aggregate around such structures. In the unlikely case anglers aren't allowed access, there will still likely be an increase in productivity, and benefits may be seen along such arrays' perimeters. Commercial fisheries may be adversely affected, but other maritime jobs will be created. And over time, offshore wind will likely benefit our national energy situation.

Information on the planning process and the status of offshore wind leases, including opportunities for comment, can be found on the BOEM website at boem.gov.

ATTRACTION CHAIN

Structure attracts bait, bait attracts the fish, and fish attract fly-fishermen.

Analysis of existing wind farms in the English Channel and North Sea have shown an increase in biomass by 50 to 150 times, most as available food for predators. Such structures provide a hard, stable substrata for colonization of marine organisms, including seaweeds, mussels, barnacles, tubeworms, hydroids, sponges, soft corals and other invertebrates. These organisms attach permanently to the structures and attract various free-living invertebrates and small fish, which in turn attract larger organisms, thereby increasing species diversity, biomass and productivity. Given that such wind farms are relatively new, the colonization of the foundations will probably progress over the coming years, which will likely lead to higher diversity and biomass of species. Such biomass increases are particularly steep if hard substrate structures, such as offshore wind farms, are placed in soft substrate environments.