



Long voyage: the US wind power industry has had to contend with multiple jurisdictional obstacles

## Harnessing Pacific wind

**THE US WEST COAST HOLDS UNTAPPED POTENTIAL FOR OFFSHORE WIND. PHILIPPA MAISTER REPORTS**

**F**orget Hollywood. Forget Silicon Valley. The new great hope for California is the mighty Pacific Ocean and the powerful winds that drive its great waves, offering a fresh source of renewable energy to power homes and industries.

An executive order issued in the first week of Joe Biden's US administration set an ambitious national goal of deploying 30 gigawatts (GW) of offshore wind energy by 2030, breaking sharply with the former president Donald Trump's administration. For decades, the sector has been stymied by regulatory minefields involving multiple federal and state agencies, as well as litigation and a 10-year moratorium imposed by the Trump administration.

### East coast leads the way

In May, four months after Mr Biden's announcement, Vineyard Wind near Massachusetts became the first commercial-scale offshore wind farm in the US to win federal approval — after a five-year process.

Vineyard Wind "is not about the start of a single project, but the launch of a new industry", rejoiced the company's chief executive, Lars T Pedersen.

The company is a joint venture between Avangrid Renewables, a subsidiary of Spain's Iberdrola Group, and Denmark's Copenhagen Infrastructure Partners (CIP). At least another

11 offshore wind farms along the US east coast are in various stages of review by the federal Bureau of Ocean Energy Management (BOEM).

Prominent among them are foreign companies benefiting from the dearth of a US industry. Developers such as Denmark's Ørsted A/S, Norway's Equinor and Aker Offshore Wind, the Netherlands' Shell, the UK's BP and France's EDF Group are eyeing US ventures.

### Time to catch up

With the ball rolling on the east coast, the Biden administration threw its weight behind offshore wind power along the Pacific coast on the other side of the country. It aims to trigger billions in annual capital investment, create thousands of jobs in supportive infrastructure and new US supply chains, and combat climate change. Accordingly, on May 25, federal agencies in collaboration with California's governor Gavin Newsom announced an agreement to advance areas for offshore wind in the state.

Off California's Humboldt coastline, BOEM recently gave the go-ahead for an environmental review of 207 square miles of open water in preparation for a mid-2022 auction of leases for floating offshore wind turbines. Ocean Winds, a joint venture between Portugal's EDP Renováveis and French utility company Engie, has announced it will bid for a lease to construct a commercial-scale floating wind farm. The project is a joint venture with Aker Offshore Wind, in partnership with US-based Principle Power ▶



## WHEN WE GET TO LARGER PROJECTS OVER 0.1GW, WE WILL SEE MUCH MORE COMMERCIAL BANK FINANCING



and Redwood Coast Energy Authority.

A second area, still awaiting the go-ahead, consists of 399 square miles off central California's Morro Bay. Leases for this area will be auctioned on the same date as Humboldt.

Together, the government estimates, they could supply up to 4.6GW of clean energy, enough to power 1.6 million homes. Multiple leases could be granted.

A joint venture between Seattle-based Trident Winds and EnBW North America – a subsidiary of German renewable energy company EnBW – to develop Castle Wind, a floating wind project in the Morro Bay area, intends to bid.

In all, 14 wind-energy developers have signalled interest in commercial leases in California waters, a BOEM spokesman said. Success will depend on winning over environmentalists and commercial fishermen, who see their livings as imperilled, as well as technological challenges.

### Tech and financing challenge

Wind farms off the Californian shore will face different conditions from those in the east coast's relatively shallow seas. The continental shelf off the Pacific coast plunges to depths of 600–1000m. As a result, the enormous wind turbines that will be deployed there cannot be anchored to the ocean floor in the same way, but will instead have to float on a platform, with mooring lines connected to anchors in the seabed below.

The technology underlying such installations is advancing rapidly. Floating platforms have been used for decades by the oil and gas industry, which, though late to the game, is now developing and investing in offshore floating wind, says João Metelo, former chief executive of Principle Power.

Nevertheless, most major banks are not yet prepared to finance floating offshore wind, Mr Metelo says, noting that a 1GW installation could cost about \$3bn. However, he says financing will not be an issue until 2024–2025, by which time banks will have had experience in Europe and Asia.

"When we get to larger projects over 0.1GW, we will see much more commercial bank financ-

ing, with typical project finance structures," Mr Metelo says. "More work needs to be done understanding the turbines and floating system, but derisking will be complete in a couple of years."

Keith Martin, who specialises in tax and project finance in the law firm Norton Rose Fulbright's Washington DC office, says more than 40 lenders have expressed interest in lending to finance US offshore wind projects, though there is more caution about floating wind farms.

Mr Martin notes that the typical "capital stack" of a US offshore wind project consists of three elements: tax equity, debt and sponsor equity. Tax equity financing is provided largely by banks and repaid partly in tax benefits, instead of entirely in cash. "The tax benefits on an offshore wind project can amount to 44 cents per dollar of capital costs," Mr Martin says. "The tax credits on a \$3.5bn offshore wind project could amount to \$900m."

At the federal level, congress approved a 30% investment tax credit for offshore wind farms. A \$3bn Energy Department loan guarantee programme is earmarked for offshore wind projects, \$230m in grants was authorised to modernise port infrastructure, and funding for research and development projects was provided.

California has joined the funding frenzy. Mr Newsom has proposed a down payment of \$20m for projects to ready the state for the new industry. Several other tax credits also apply.

Adam Stern, executive director of Offshore Wind California, an industry coalition, says membership of the organisation has been growing rapidly. He is encouraging the state to set a goal of at least 10GW of offshore wind capacity by 2040.

He notes, however, that the state's transmission system needs significant upgrades to make full use of wind energy. "To realise the promise of offshore wind and reach these ambitious goals it will be crucial to conduct environmental studies, upgrade port infrastructure, build an offshore wind supply chain, and streamline federal and state permitting, while protecting wildlife and cultural resources," Mr Stern says. "This is a huge opportunity, if done right." ■