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Administration, Calif. Agree to Build 4.6 GW of Pacific Offshore Wind

Floating offshore wind turbine foundation (left) designed by Stiesdal Offshore Technologies, will be tested in Norway this year for likely California project use, while GE Research and marine industry tech firm Glosten are developing a floating version of the industry leading 12-MW Haliade turbine (right). Image: Stiesdal Offshore Technologies, left; GE Renewables, right



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The Biden administration and California announced a pact May 25 to accelerate offshore wind development in two areas of deeper Pacific Ocean waters to move the U.S. along in meeting President Joe Biden's goal of 30 GW of offshore wind capacity by 2030. The agreement includes new buy-in from the U.S. Defense Dept. which has blocked development in the past, citing use of large ocean areas for weapons testing and military training.

Sector participants point to White House pressure to address the issues, with a nudge from California Gov. Gavin Newsom, who asked the administration "to step in and resolve the conflict," says one offshore wind development executive.

Under the new agreement, the administration foresees leasing three offshore wind areas to support up to 4.6 GW of commercial scale generation—about 3 GW in a 399-square-mile area off Morro Bay in central California with an estimated 380 turbines; and 1.6 GW off Humboldt County near the Oregon border. "DOD has agreed it can meet operational needs while accommodating offshore wind," said White House National Climate Adviser Gina McCarthy in a May 25 briefing.

President Biden set the U.S. offshore wind generation target in a January executive order.

State and local regulators in California, with a push **from industry entrepreneurs**, have pursued offshore wind development since 2016. The U.S. Interior Dept. agreed two years later to open 1,200 sq miles of ocean for development and proposals were offered for projects near Morro Bay and Humboldt Bay—but DOD opposition stymied progress.

DOD Backs Off Opposition

"Climate change is a threat to DOD operations," said Colin Kahl, Defense undersecretary for policy in the briefing, adding that the department "is committed to doing our part." He said DOD "will work across government to find creative solutions to maintain readiness and fight climate change," contending that negative effects of West Coast offshore wind development "have been mitigated. I am satisfied there is no tradeoff."

Sector participants welcomed the actions. "Today was a great outcome directly related to President Biden giving direction to Interior and Defense to find common ground for sea space where offshore wind could be compatible with the needs of both." said Jim Lanard, CEO of Magellan Wind, a firm seeking to develop West Coast projects partnered with Copenhagen Infrastructure Partners. "The breakthrough came with the instruction to collaborate."

Magellan's partner firm is developing the 800-MW Vineyard Wind offshore wind energy project off Massachusetts, which just received its federal approval to start construction after setbacks during the Trump administration. It will be the first commercial scale U.S. offshore wind project.

Gov. Newsom said the state is committing \$20 million in its 2021-2022 budget for offshore wind development, subject to legislative approval, including accelerated permitting for projects and upgraded port infrastructure. A May 25 state announcement said funding would include \$11 million for Port of Humboldt upgrades, \$8.6 million for environmental reviews and studies, and \$1.4 million for an "engineering and design-build study for a North Coast offshore wind project."

The wind power capacity would offset nuclear power as a clean energy source in meeting state goals that call for 100% clean energy by 2045, when the Diablo Canyon nuclear power plant closes in 2025, said Newsom.

"This is an important investment and sign of things to come," said Adam Stern, executive director of advocacy group Offshore Wind California.

"We are talking about game changing investment in a green energy future," said Newsom, who anticipates "a lot of interest" from both domestic and international project developers.

The U.S. National Renewable Energy Lab estimates there is more than 800 GW of energy potential available for floating offshore wind technologies off the West Coast, where water depth exceeding 200 ft cannot support current fixed-base turbines.

The government agreement sets up federal leasing as early as mid-2022, with Interior Secretary Debra Haaland noting a June 24 federal-state meeting to launch the process. "I am excited about opportunities for collaboration," she said.

Industry observers expect it to occur after leasing is completed for ocean tracts in the New York Bight south of New York City, which were announced earlier this year.

Newsom said the state would push efforts to "fast-track" approvals for floating turbines and other technologies. "We value the process but not paralysis of the process," he said.

Developers Get Ready

German energy partner EnBW and California developer Trident had signed a deal in 2018 with the city of Morro Bay to build a 1,000-MW project by 2026. Principle Power LLC, which is developing and testing its WindFloat technology in Europe, and partners, were picked also that year by a northern California utility in Eureka to co-develop a 100-MW to 150-MW project about 20 miles off Humboldt Bay.

U.S. and European players Magellan, Orsted North America Inc., Shell, RWE, Tepco Renewable Power and Equinor also are pushing west coast work.

"We thought the California issues with DOD would be resolved three or four years ago, but we really didn't lose much because during that time energy prices fell and technology improved," says Magellan's Lanard. "We will catch up quickly."

Floating wind technology also has taken leaps, **with the U.K.** a global leader, followed by France and Norway. In the U.S., Maine and Oregon also have taken steps to push projects, with the former's estimated \$100-million concrete platform set to start construction next year.

GE Research and marine industry technology firm Glosten **say they have designed a 12-MW floating version** of GE's fixed-base Haliade-X turbine, the most powerful offshore wind turbine in operation. "The new design would be tethered to the seafloor to keep it upright and steady," GE says, adding that concept turbines are 853 ft tall, with a rotor diameter, of 720 ft, and can generate 67 GW-hours of electricity a year. Turbine development has U.S. Energy Dept. funding.

Also under way is the **TetraSpar Demonstration Project**, which its sponsors Shell, RWE, TEPCO Renewable Power and Stiesdal Offshore Technologies say will be "the world's first full-scale demonstration of an industrialized offshore foundation." Set to launch this year at a Stavenger, Norway test site, TetraSpar is a tetrahedral structure foundation assembled from tubular steel components that backers say offers cost and assembly advantages.

A 3.6 MW Siemens Gamesa Renewable Energy wind turbine will be mounted on the foundation, with the combined structure then towed 10 km to the test site at a 200-m water depth, moored to the seabed with three anchor lines and connected to the electrical grid.