

RECHARGE

May 10, 2022

'Serious about going big' | California sets course for 20GW floating wind build-out

California has set floating wind goals. Photo: Shutterstock



IN DEPTH | Golden state's draft plan aims to drive gigawatts of offshore wind capacity to meet statutory goal of 100% renewable power by 2045, writes Tim Ferry

By **Tim Ferry**

California took its first steps under landmark offshore wind legislation passed late last year with the release of a draft plan to develop as much as 20GW of floating capacity by 2050 as part of the state's wider climate ambitions. The California Energy Commission (CEC) released its draft strategic plan for offshore wind energy for public comment under the mandate of legislative act AB 525, which requires submission to the California Natural Resources Agency (CNRA) by 1 June.

The draft is focused on the “evaluation and quantification of the maximum feasible capacity of offshore wind... to achieve reliability, ratepayer, employment, and decarbonisation benefits,” according to the CEC, which found that California could develop 3GW by 2030 and 10GW by 2045, while leaving room for the development of up to 20GW by 2050.

“These preliminary megawatt planning goals are established at levels that can contribute significantly to achieving California’s climate goals,” the CEC stated.

Adam Stern, executive director of industry advocate Offshore Wind California, said: “The ambitious multi-gigawatt goals set by the CEC in its draft AB 525 report are... an important milestone for the Golden State’s offshore wind industry.

“They show that California is serious about ‘going big’ on floating offshore wind to drive economies of scale and realise the substantial jobs, climate, and clean power benefits.”

California has two federal wind energy areas (WEAs), **Morro Bay off its central coast** with nearly 3GW of potential capacity, and **Humboldt off its northern coast** with 1.6GW of capacity. The Bureau of Ocean Energy Management (BOEM), the federal agency charged with regulating energy development on the outer continental shelf (OCS), announced 6 May that it had completed its environmental assessment of the Humboldt WEA and found “no significant impacts”, clearing the way for lease sales.

BOEM head Amanda Lefton promised at the Pacific Offshore Wind Summit in March **to hold lease auctions “this year”** for one or both WEAs. As the OCS drops off steeply along the US’ west coast, all of California’s offshore wind energy will be floating in waters over 1000 metres deep, a still nascent technology.

Varner Seaman, California representative for industry advocacy group American Clean Power Association, said: “California [is] on the path to becoming a global leader in floating offshore wind—with all of the environmental, economic, and energy benefits that go with it. The CEC’s draft goals align closely with the targets outlined last year in AB 525. They are ambitious, achievable targets that show the state is serious about going big on offshore wind.”

Beyond Humboldt and Morro Bay, the National Renewable Energy Laboratory (NREL) has identified another three areas with large potential, including Diablo Canyon off the central coast and Cape Mendocino and Del Norte off its northern coasts, with a total of more than 21GW of potential capacity based on NREL’s conservative 3MW per km².

NREL estimates California’s technical offshore wind potential at 200GW, and forecasts that developing 10GW of offshore wind in California would support thousands of jobs while supplying 15% of the state’s current electricity needs and \$20bn in economic growth by 2050.

100% renewable energy

California has already made substantial progress on renewable energy development, and on at least three separate occasions in recent weeks, the California independent systems operator (Caiso), the non-profit that oversees the state’s bulk electric power system, reported that renewables had powered virtually all the state’s power needs, the latest on 8 May.

Solar provides the bulk of California's renewable power off its nation-leading 18GW of utility-scale solar capacity plus another 8-9GW of behind-the-meter residential solar, supplying as much as two-thirds of the state's power needs on sunny afternoons.

But this much solar poses grid balancing challenges to Caiso, as demand tends to increase in the early evening just as solar is waning, forcing Caiso to keep a substantial amount of natural gas fired power operating to quickly step in as replacement.

“That’s where offshore wind can play a role. It is the perfect complement to solar to generate clean, reliable baseload power,” Jonah Margulis, vice president for offshore wind at Aker Offshore, told *Recharge*.

Aker is part of a consortium proposing to develop the **Redwood Coast offshore wind project near Humboldt** in northern California with an initial 150MW capacity by 2025.

Senate Bill 100 (100 Percent Clean Energy Act of 2018) mandates that renewable energy and zero-carbon resources supply 60% of all retail electricity sold and state agency electricity needs by 2030, and 100% by 2045. California has the second largest state power market after Texas, but studies indicate that meeting its renewable and greenhouse gas emissions targets will require tripling its current power production.

Hurdles remain

A draft report issued by the CEC and Caiso forecasts that meeting state renewable energy targets would require 53.2GW of utility solar; 37GW of battery storage and 12GW of wind from other states as distant as Wyoming, along with 10GW of floating offshore wind from projects along California’s central and northern coasts, 4GW of long-duration energy storage, 2.3GW of geothermal and 2.2GW of in-state onshore wind.

While offshore wind is making strides, California would need to overcome significant hurdles to realise its dreams. Port capacity is highly constrained, with few deepwater ports available besides the **Port of Humboldt**, which has already received \$10.5m from the CEC for what it hopes will be a \$56m upgrade to ready it for the offshore wind boom.

Transmission is another potential logjam. While Morro Bay WEA can leverage the transmission infrastructure of the soon-to-be shuttered Diablo Canyon Nuclear Station, Humboldt lies off its lightly-populated northern coastlines, which would require substantial grid upgrades to receive offshore wind power.

The CEC’s draft plan is the first of three reports that it will issue before an offshore wind plan is finalised by 31 June, 2023. The second report will focus on infrastructure and workforce development investments, while the third will provide a permitting roadmap for the industry. Both are due by 31 December this year.