

# Offshore Wind on the Horizon

## U.S. Power and Gas Weekly

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**Data Sources Used in This Publication**  
Department of Energy  
Bureau of Ocean Energy Management

To discover more about the data sources used, [click here](#).

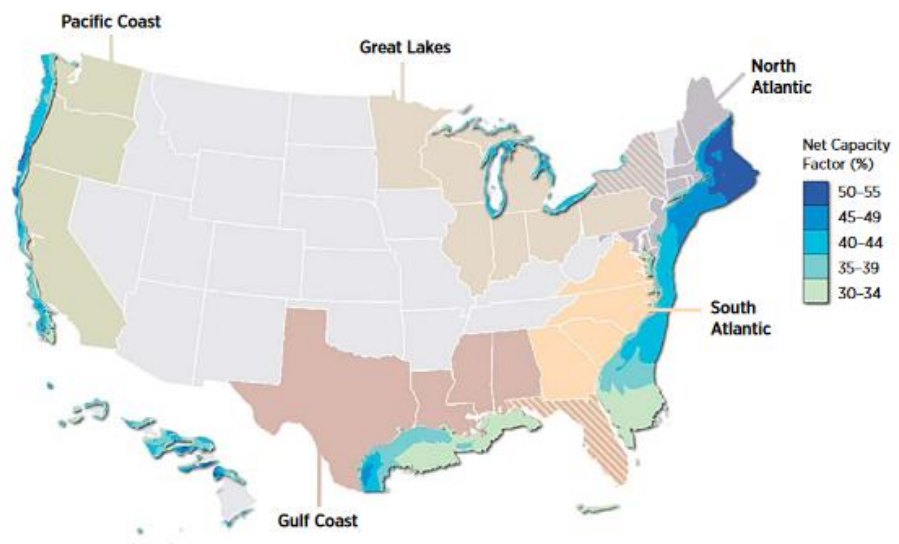
### Major Investment

Offshore wind has historically been a no go in the United States. When interest started picking up a few years ago, it only resulted in test pilot projects. In the last couple of years following state initiatives on the east coast, a number of European developers have stepped up and major projects have been announced starting last year. As a result, new multi-gigawatt projects are bringing billions worth of project investment to the eastern seaboard. With over 10,000 MW of offshore wind projects announced on the east coast, this note looks at the wider impact of offshore wind projects due online between 2021 and 2023.

### The Potential

The potential for offshore wind is weighted to the east coast due to geography (Exhibit 1). With a longer, shallower continental shelf versus the west coast, wind turbines can be sited much further out to sea and avoid opposition from the "not in my backyard" (or NIMBY) affect. Maine has some of the most potential, although early plans stalled out under its previous governor. This year the new governor has re-engaged under one of the older offshore mandates. However, it is not just Maine but the whole east coast down through South Carolina that has the ability to add offshore wind farms with >40% capacity factors. The Block Island Wind Farm, located offshore Rhode Island, was the first to be built in 2017 and is now achieving around 47.6% capacity factor at 30 MW.

**Exhibit 1** United States Offshore Capacity Factor

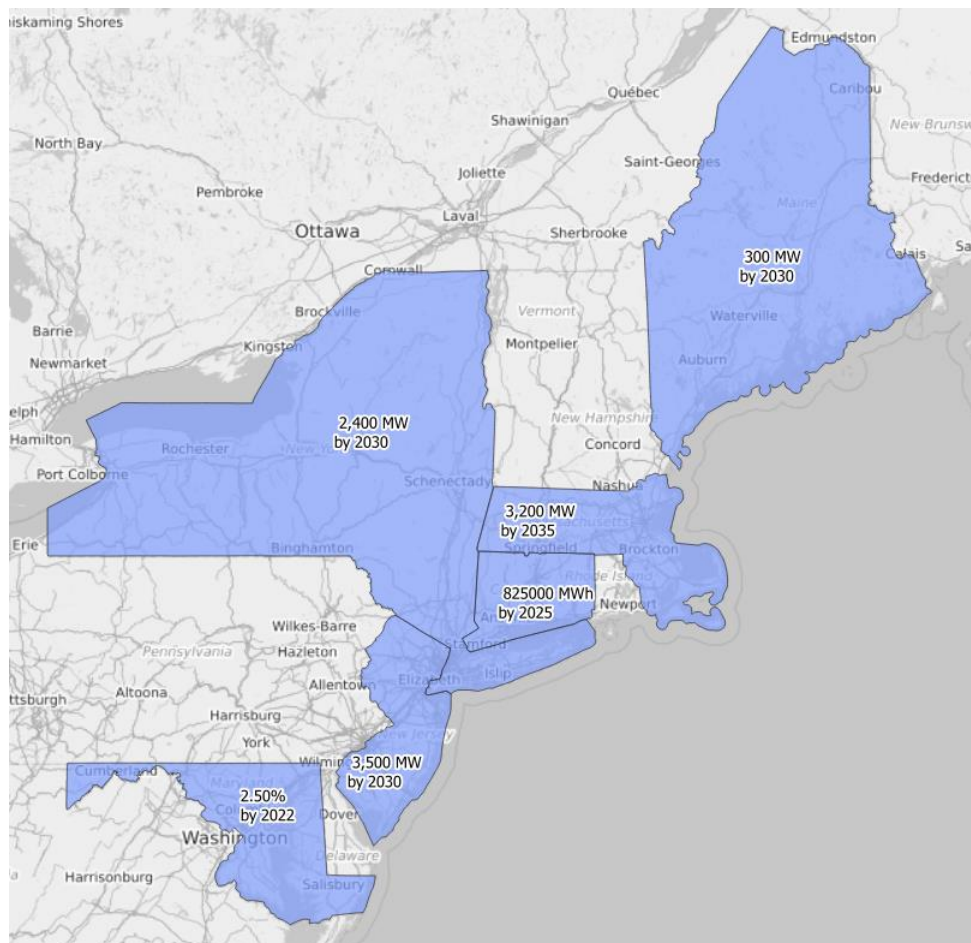


Source: DOE

### State Actions

A number of major state mandates have come to pass in the last couple of years—summarized in Exhibit 2. Maine's mandate is an old one that requires 5,000 MW of general wind capacity by 2030 with at least 300 MW coming from offshore. The New England Aqua Ventus project recently received a green light after being stalled by the previous governor. Newcomers such as New Jersey, Massachusetts, and New York have all been big hitters—passing legislation to require 3,500 MW, 3,200 MW, and 2,400 MW of wind capacity, respectively. Massachusetts requires half by 2027 and the remainder by 2035, while New York and New Jersey projects are due by 2030. New York may become the biggest of these with plans from the governor to increase the mandate to 9,000 MW by 2035. These states are not wasting any time and have already initiated RFPs or selected projects to start fulfilling their mandates. Connecticut and Maryland have also required offshore wind. In Connecticut it isn't a capacity requirement, but a generation ask of 825,000 MWh per year. Maryland requires that 2.5% of generation should come from offshore by 2022, which would be about 480 MW. All told, these requirements amount to at least 10,180 MW of capacity online over the next decade.

**Exhibit 2** State Offshore Wind Mandates



### **Project Status**

The Bureau of Ocean Energy Management is the main agency required to review and sign off on offshore projects. While state and other federal permits are needed, the first step in siting these projects is a BOEM lease. While several are still in the site assessment plan (SAP) phase and subject to change, near 3,300 MW already have approved SAPs, signed leases, and have entered the construction and operation planning (COP) phase. The biggest permitting headwind for these projects appears to be NOAA's National Marine Fisheries Service. Although the 3,300 MW currently awaiting completion of their COP phase could see further revisions during the permitting stages, their final timetable for COP is expected to be October, and we believe these projects will make it to the finish line. Some of the other projects on the drawing board among the 10,000 MW mandated are still liable to revision and change.

### **Projects**

Last week we reviewed a number of projects in the New England region (see [New England: Winds of Change?](#)). Major state initiatives have driven these large project announcements that are now underway. Ørsted and Equinor are the major developers that have so far won contracts to operate these wind farms. Equinor landed the large Empire project for New York at 1,800 MW. Meanwhile, Ørsted has built up a portfolio of projects, including the operation of Block Island Wind Farm, the 400 MW Revolution Wind Project, 130 MW South Fork Wind Farm (on hold), 1,100 Ocean Wind, 120 MW Skipjack Wind Farm, and the 12 MW Coastal Virginia Offshore Wind Farm. They are already in development on the 2,000 MW Sunrise Wind Farm and the Garden State Offshore Energy Farm. Vineyard Wind and Bay State Wind are pushing some of the nearest online date schedules. Vineyard is still hoping to start construction by the end of the year on its 800 MW project for Massachusetts and be online later next year. Bay State Wind for Massachusetts and US Wind are shooting for 2021 online dates.

**Exhibit 3** Offshore Wind Project Table

Name	State	Capacity	Status	Year	Acres
Block Island Wind Farm	Rhode Island	30	Operational	2016	
New England Aqua Ventus	Maine	12	SAP	2020	N/A
Bay State Wind	Massachusetts	2,000	COP	2021	187,523
US Wind	Maryland	248	SAP	2021	79,707
Vineyard Wind Farm	Massachusetts	800	COP	2021	166,886
Skipjack Wind Farm	Delaware	120	COP	2022	26,332
South Fork Wind Farm	New York	130	SAP	2022	97,498
Coastal Virginia Offshore Wind	Virginia	12	SAP	2022	112,799
Revolution Wind	Rhode Island	400	COP	2023	67,252
Ocean Wind	New Jersey	1,100	SAP	2024	160,480
Empire Boardwalk Wind	New York	1,800	SAP	tbd	79,350
Kitty Hawk	North Carolina	1,500	SAP	tbd	122,405
Liberty Wind	New York	1,200	SAP	tbd	132,370
Garden State Offshore Energy	New Jersey	680	SAP	tbd	70,098
EDF Renewables Lease	New Jersey	tbd	SAP	tbd	183,353
Equinor Lease	Massachusetts	tbd	SAP	tbd	128,811
Mayflower Wind Lease	Massachusetts	tbd	SAP	tbd	127,388

Source: Morningstar.

**Displacement Effect**

Due to offshore wind, ISO New England, NYISO, and PJM will all see a further fuel mix change in the coming years. While coal and oil have so far been the inefficient target of cheaper gas, renewables will now extend the ongoing displacement of coal on the east coast. New England and New York only tend to call on coal here and there over high demand periods. In PJM, on the New Jersey side of transmission coal is also stripped out. Because coal is now a smaller target for displacement, wind power will instead start cutting into natural gas demand in the region. The potential gas displacement from the initial 3,300 MW of offshore wind, at a conservative 40% would amount to as much as 0.76 Bcf/week. If the more than 10,000 MW worth of wind projects on the horizon are all built, then we could see displacement of over 2.3 Bcf/week — and that will start causing some disruption on gas demand.

**End Result**

There are final permitting hurdles for these projects, but the size and scope of announcements backed by state requirements are bringing the offshore wind industry to life in the U.S. With expertise and experience coming from Europe, the project list has grown fast over the last year. With some leases still being announced, the current list is surely not the end. State mandate required 10,000 MW, and that is likely just the beginning. We expect to see more projects announced as the U.S. gets comfortable with offshore wind. Given these additions, the resulting fuel mix shift puts further downward pressure on older fossil fuel plants, potentially including the very natural gas assets that themselves caused coal retirements in the past 15 years. ■■

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