



## **MARACOOS 2018 Annual Meeting Intro to Offshore Wind**

### **Wind Turbine Basics**

Wind turbines generate electricity when wind turns turbine blades around a rotor. The rotor in turn spins a generator, creating electricity.<sup>1</sup> Though wind speeds off the Atlantic coast are lower than the Pacific Coast, the shallow waters of the Atlantic make wind projects more feasible. Most of the wind energy resources in U.S. waters occur in waters too deep for current technology. Offshore wind turbines in shallow water are supported by a steel pile driven into the seabed, which can be up to 20 feet in diameter. Other types of foundations and floating platforms for use in deeper waters are in development. Because offshore wind tends to be stronger and more uniform than wind on land, offshore turbines tend to be larger and have greater generation capacity than onshore turbines. Electricity generated by turbines is brought to shore by high voltage cables buried beneath the seabed, where it is integrated into the power grid by an onshore substation.<sup>2</sup>

### **Bringing Power to the Shore**

Offshore wind development can be constrained by available transmission infrastructure to deliver electricity onshore. Though developer Deepwater Wind built its own transmission line to connect the Block Island offshore wind farm to the shore, other projects propose to use third party transmission lines. The proposed Atlantic Wind Connection system located along the North Atlantic Coast would create the infrastructure necessary to connect future offshore wind farms to onshore substations.<sup>3</sup>

### **Regulatory Process**

Offshore wind projects can take 10 years to go from conception to transmission. According to the Bureau of Ocean Energy Management (BOEM), it takes approximately two years for planning and analysis of project areas, one to two years to complete the leasing process, up to five years to assess and characterize the lease site, and about two years to design and

---

<sup>1</sup> [Wind Energy Technologies Office](#), Office of Energy Efficiency and Renewable Energy, U.S. Dept. of Energy

<sup>2</sup> [Offshore Wind](#), Bureau of Ocean Energy Management, U.S. Dept. of the Interior

<sup>3</sup> Pg 69, [2017 State of Wind Development in the United States by Region](#), National Renewable Energy Laboratory

construct projects.<sup>4</sup> This process allows BOEM to determine the potential effects a proposed offshore wind development may have on physical, biological and socioeconomic resources.

### **Offshore Wind in the Mid-Atlantic**

Rhode Island was the first state in the U.S. to have an offshore wind farm. The Block Island Wind Farm located off the coast of Block Island became operational in 2016. There are currently thirteen other active leases for offshore wind projects that occur within the MARACOOS region.<sup>5</sup>



*Block Island Wind Farm, Credit: Deepwater Wind*

---

<sup>4</sup> [Regulatory Roadmap](#), Bureau of Ocean Energy Management, U.S. Dept. of the Interior

<sup>5</sup> [Lease and Grant Information](#), Bureau of Ocean Energy Management, U.S. Dept. of the Interior