

September 2018

ON&T

Ocean News & Technology

www.oceannews.com



OFFSHORE ENERGY CONNECTS

The Challenges of Moving Offshore
Wind Energy to the Grid

SEE PAGES 10 AND 30

THE CHALLENGES

of Moving Offshore Wind

FROM THE OUTER CONTINENTAL SHELF TO THE GRID

By: Jonathan K. Waldron,
Partner, Blank Rome LLP

and Joan M. Bondareff, of
Counsel, Blank Rome LLP

INTRODUCTION

The Department of the Interior's Bureau of Ocean Energy Management (BOEM), operating under 2005 amendments to the Outer Continental Shelf Lands Act (OCSLA), which authorized BOEM to issue leases for energy projects other than oil or gas, has awarded 13 leases for offshore wind (OSW) farms on the Outer Continental Shelf (OCS) adjacent to the Atlantic Coast. Many of these lease holders are experienced European offshore wind developers that have opened offices in the United States. Lessees are preparing to submit Construction and Operation Plans (COPs) to BOEM; BOEM is simultaneously working on streamlining the federal review process and proposing new wind energy areas.

The first offshore wind farm in the United States, the 30 megawatt, five turbine Block Island Wind Farm, began commercial operations in December 2016 providing clean and sustainable energy to the residents of Block Island, Rhode Island. While Block Island Wind Farm is currently the only operational commercial offshore wind farm on the east coast of the United States, there are many emerging projects up and down the coastline.

In this regard, the governors and state legislatures in the Northeast have established new ambitious goals and

incentives for renewable energy including offshore wind. Between the goals set by New York Governor Andrew Cuomo, New Jersey Governor Phil Murphy, and Massachusetts Governor Charlie Baker, a total of 8,000 MW of offshore wind energy is planned for by 2030. Rhode Island Governor Gina Raimondo has also established a goal of 1,000 MW of clean energy projects by 2020. These goals now have to be implemented by state regulatory bodies in rate approvals and contracts with utilities and other offtakers for OSW.

The Trump Administration, participating in several recent OSW conferences, including Houston in July 2018, has articulated its support for offshore wind—as part of its "all-of-the-above energy" strategy towards energy independence. BOEM is moving forward with new lease sales off Massachusetts and Long Island and is asking the public for comments on additional wind energy areas to develop.

These developments mean that the public will soon share in the clean energy benefits of offshore wind—as they are presently doing for onshore wind—but questions remain: when and at what price?

This article describes some of the incentives the federal government and states are using to attract offshore wind developers and the related supply chain,

and to bring down costs of offshore wind. The article also identifies and briefly discusses some of the important technical, legal, and policy challenges that remain to establish a robust offshore wind industry that benefits the consumer as well as the developer.

FEDERAL, STATE, AND PUBLIC INCENTIVES

The Department of Energy (DOE) is funding demonstration projects as well as research into various aspects of offshore wind. For example, DOE has funded two OSW demonstration projects at a cost of \$10.7 million each, including the Lake Erie Energy Development Corporation's Icebreaker Project (LEEDCo) and the University of Maine's New England Aqua Ventus I project.

On July 18, 2018, DOE announced six million dollars in funding for research on three topics, including two million dollars to develop offshore wind instruments for environmental monitoring and mitigation. Concept papers were due on August 15, 2018. Prior to this announcement, DOE selected the New York State Energy Research and Development Authority (NYSERDA) to administer an offshore wind research and development consortium seeded with \$18.5 million. According to DOE, further research is needed on offshore conditions in deep water for floating foundations, and the impact of hurricanes on the East Coast, among other technical challenges.



An additional two million dollars will be allocated to DOE's national laboratories to continue its research on offshore wind, especially floating wind turbines.

States along the East Coast have stepped up to the plate with grants and other financial incentives, including Ocean Renewable Energy Credits (ORECs). The OREC is in effect a subsidy to offset the price of OSW. In Maryland, the OREC was set last year at a leveled price of \$131.93 per MWh and ORECs were awarded by the Maryland Public Service Commission to two projects, U.S. Wind and Skipjack (an Ørsted project). In exchange, the companies must invest in Baltimore port facilities and a steel fabrication plant.

Maryland and Massachusetts have appropriated funds for grants to promote workplace development and supply chains. Maryland just announced its grants for FY2019. Virginia just commissioned a study of its supply chain for OSW and created a new website for public input before its first OSW project goes before the State Corporation Commission in early October 2018.

New Jersey also has legislation to create ORECs to support the price of offshore wind. With the support of New Jersey Governor Phil Murphy, the Board of Public Utilities ("BPU") just issued a proposed rule to establish an offshore wind energy certificate funding mechanism or OREC to support NJ's immediate goal of 1,100 MW of OSW capacity.

Major technology companies such as Google and Apple are powered by wind, solar, or other renewable energy instead of fossil fuels. According to Forbes, Apple and Google are now both 100 percent powered by renewable energy. In addition, Google is developing a wind energy kite system (called "Makani") to harness energy from wind efficiently and its low mass technology opens up new possibilities for wind power in deepwater offshore sites.

Finally, on the incentive side, the American Council on Renewable Energy (ACORE) has launched a campaign to attract one trillion dollars in private investment by 2030 to be split between renewable energy and technologies that modernize the grid. ACORE hopes to achieve this goal by working with banking institutions and the private sector.

Makani energy kites produce electricity by harnessing energy efficiently from the wind. Photo credit: Makani.





Parts of a Haliade rotor heading out to sea in Europe. Photo credit: GE Renewable Energy.

ONGOING CHALLENGES TO BRINGING MORE OFFSHORE WIND TO SHORE AND TO THE CONSUMER

Some of the critical technical issues for which DOE is funding research, include connecting the wind farms to the shore and the grid, identifying areas where floating platforms will work best, and determining whether offshore wind farms in the Atlantic Ocean can withstand ever-increasing and more dangerous hurricanes.

The National Renewable Energy Laboratory (NREL) is doing extensive research on floating wind farms. At a recent conference in Houston on floating technology, NREL's Walt Musial addressed potential advances in floating technology and urged the oil and gas industry to apply their knowledge to this work.

Another critical technical issue will be how to store the wind energy during times when the wind may not be blowing and when to distribute it to the grid. In this regard we note that Deepwater Wind has established a partnership with Tesla's Elon Musk to develop the technology to store offshore wind energy.

Two European companies—Equinor (formerly Statoil) and Masdar—have just installed a new battery system at the Hywind Scotland floating wind farm that will allow electricity produced at the farm to be transported by cable to an onshore substation where 1 MW batteries are placed that will know when to hold back the power and when to send it to the grid. This can be a model for battery storage in the United States.

General Electric (GE) has introduced a new 12 MW offshore wind turbine, the Haliade-X, which GE calls the most powerful and most efficient wind turbine in the world. Larger turbines such as the Haliade-X should serve to bring down the cost of offshore wind and perhaps reduce the number of turbines. These new generation turbines promise to significantly bring the cost of wind energy down to compete with other energy sources and provide more incentives to invest in wind energy.

Installing giant turbines on top of fixed and floating platforms remains a challenge as does getting work crews to the wind farms and back safely. U.S. Jones Act companies can bring equipment to the platforms and do work on the offshore wind farms and some

companies are already providing these services, e.g., Blount Boats to Block Island Wind. U.S. yards have not yet built the larger cable-laying and heavy-lift vessels that can perform the more complicated tasks of installing the wind turbines. They may do so in the future but the cost of building these vessels in U.S. yards and competing world-wide for projects may continue to be an impediment to development in this area.

Conflicts with other users of the ocean must continue to be addressed early on in the planning stages. Military users, the shipping community, and the commercial fishing industry need to ensure that their uses of the OCS are protected. The Navy has initially placed large areas off the coast of California off limits to future offshore wind farms at the same time the state has been moving forward with plans for OSW. It remains to be seen how these use conflicts will be resolved in new Wind Energy Areas.

Policy challenges include how ratepayers will react to the higher costs of energy from these early projects. Ratemaking bodies in several states including New Jersey and Virginia are dealing with these challenges now. This will remain a challenge as the Production Tax Credit

("PTC") will end after 2019. At the same time, the price of offshore wind is coming down dramatically especially in Europe and will likely do the same in the United States with developing technology and expertise. A Forbes article reported data from a Lawrence Berkeley National Laboratory study indicating that the market value of electricity generated by offshore wind will soon exceed its cost in New York and New England—if you take into account jobs created.

Private companies with goals to be more sustainable may step up to the plate and take the power from the offshore wind farms. This is the basis for the ACORE \$1 trillion challenge to private investors. Private offtakers can purchase the wind to run their plants either through direct Power Purchase Agreements (PPAs) or Virtual PPAs to offset usage of fossil fuels from new wind farms not adjacent to their plants.

CONCLUSIONS

The technical, policy, and legal challenges described above offer opportunities for scientists, engineers, lawyers, and policymakers, including Congress, to offer solutions and assistance to further help create this new U.S. energy industry. May the offshore winds continue to blow strong and steady and consumers soon reap the benefits of clean energy.

Jonathan K. Waldron is a partner in Blank Rome's Washington, D.C., office. He is the former chair of the firm's Maritime & International Trade Practice group and concentrates his practice on maritime, international, and environmental law, including maritime security. He can be reached at waldron@blankrome.com.

Joan M. Bondareff is of counsel in Blank Rome's Washington D.C., office. She focuses her practice on marine transportation, environmental, regulatory, renewable energy, and legislative issues. She can be reached at bondareff@blankrome.com.

REFERENCES

Offshore Wind Advanced Technology Demonstration Projects at the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy: www.energy.gov/eere/wind/offshore-wind-advanced-technology-demonstration-projects

Marcacci, Silvio. "Google And Apple Lead The Corporate Charge Toward 100% Renewable Energy" Forbes. Web. 12 April 2018. www.forbes.com/sites/energyinnovation/2018/04/12/google-and-apple-lead-the-corporate-charge-toward-100-renewable-energy/

Klump, Edward. "Offshore wind: Interior official sees 'opportunity' for oil and gas" E&E News Reporter. Web. 12 July 2018. www.eenews.net/energywire/stories/1060088849

"ACORE Sets Investment Goal of \$1 Trillion by 2030 for U.S. Renewables" American Council on Renewable Energy. Web. 19 June 2018. <https://acore.org/acore-sets-investment-goal-of-1-trillion-by-2030-for-u-s-renewables/>

O'Boyle, Mike. "Is Offshore Wind About To Hit Cost-Competitiveness In New York And New England?" Forbes. Web. 02 May 2018. www.forbes.com/sites/energyinnovation/2018/05/02/is-offshore-wind-about-to-hit-cost-competitiveness-in-new-york-and-new-england/



Floating platforms are well-suited for wind farms off the Pacific Coast.