

Why Offshore Wind is Viable for Northeastern, East Central Coastal States

by Kimberly E. Diamond, Lowenstein Sandler PC

In Europe, North Sea-bordering countries have installed numerous offshore wind farms to transform strong, constant sea winds into energy.

U.S. northeastern coastal states along the Atlantic Ocean likewise have access to winds suitable for offshore turbines, particularly Martha's Vinyard, Cape Cod and Nantucket Island, and along Maine's southern coast, New Hampshire's eastern coast, and the coasts of Long Island and New Jersey, according to the U.S. Department of Energy's National Renewable Energy Laboratory's Wind Energy Resource Atlas of the United States.

The wind atlas also shows that the coastal regions of Delaware, Maryland and Virginia and together with the northeastern coastal states have access to suitable winds for offshore wind farms, but no offshore wind farms exist in the U.S.

Offshore wind energy, nevertheless, is a viable energy source for northeastern and east central coastal states with many positive features.

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Global Warming, Wind's Ecologically Positive Features

Wind power is one of the cleanest ways to produce vast amounts of electricity. Compared with other energy sources, such as coal, wind produces the same amount of power annually emissions-free, resulting in clean energy generation, or substantial amounts of avoided carbon dioxide and other greenhouse gas emissions: the major source of global warming. One utility-scale, modern wind turbine prevents more than 4,000 tons of CO₂ from being emitted annually, according to the British Wind Energy Association.

Also, offshore wind turbines have an approximate 30-year operational lifetime, but about 90 percent of their parts can be recycled and recovered. The same cannot be said for other energy generation sources.

Economic Efficiency, Grid Interconnection Factors

A significant issue confronting the electric industry is transmission and integration of wind energy into the electric grid and delivering wind-generated energy to demand centers. The current energy grid was not constructed with the vision that one day power from multiple renewable energy sources would flow through transmission lines, need to be connected to the grid at the generation source, and potentially produce surplus energy. Consequently, because of current transmission and load capacity, the existing energy grid cannot handle a large influx of wind energy. As noted in the January February 2009 issue of the Massachusetts Institute of Technology's "Technology Review," tens of billions of dollars must be invested to construct approximately 12,650 miles of new transmission

lines that connect wind farms to the electric grid.

Construction of offshore wind turbines means that new power transmission lines must be built to connect the turbines to the grid. A number of northeastern and east central coastal states, such as New Jersey, import wind energy from Midwestern states such as North Dakota, South Dakota and Nebraska, according to PJM Interconnection, a regional transmission organization that coordinates the movement of wholesale electricity in 13 states and Washington, D.C.

As less energy is lost in transmission when the point of energy generation is near the point of delivery to load centers and end users, it makes more sense financially and from an efficiency perspective to have new, more localized transmission lines constructed from offshore turbines to nearby cities than to have more extensive Midwest-East Coast transmission lines developed. Long-term cost savings and energy potential that northeastern and east central coastal states can realize from offshore wind power investment will outweigh the initial upfront, sunk costs, including those of grid interconnection.

Physical Efficiency

Offshore wind turbine blades reach high into the atmosphere, taking advantage of faster wind speeds accessible at higher atmospheric levels. Offshore winds along east central coastal state coastlines generally have a wind atlas "class 3" designation, where winds average between 11.5 and 12.5 mph. Northern state coastlines generally have a higher wind atlas "class 4" designation, where winds average between 12.5 and 13.4 mph. Onshore winds in these states generally are in the "class 1" or "class 2" ranges, where winds average 0 to 11.5 mph. Because power derived from wind is proportional to the cube of the wind speed, northeastern and east central coastal states can benefit from the potential energy-generating power of their offshore winds.

Political Viability

At federal and state levels, the adoption of offshore wind power has transcended political affiliations and garnered support among political leaders. Offshore wind power recently received bipartisan support for several measures. Sen. Sherrod Brown (D-Ohio) on April 19 introduced to Congress S.3226, the Program for Offshore Wind Energy Research and Development (POWERED) Act of 2010, for which Sens. Susan Collins (R-Maine), Olympia J. Snowe (R-Maine) and Ted Kaufman (D-Del.) are co-sponsors.

In its findings, the bill states that "technological advances for offshore wind power will be required" to enable the

U.S. to generate 20 percent of electricity generation from wind by 2030. The bill envisions the deployment of wind turbines in, among other places, U.S. coastal waters, including the territorial sea (extending from a coastal state's mean low water mark baseline to 12 nautical miles out to sea), the exclusive economic zone (extending about 200 nautical miles from the territorial sea baseline) and the outer continental shelf (extending up to 350 nautical miles from the baseline).

The bill calls upon the secretary of energy to initiate the development of a comprehensive road map to coordinate offshore wind power implementation efforts, including providing recommendations for federal support for deepwater wind farms and related research and for promoting the U.S. offshore wind market, taking into account best practices from other programs internationally, such as improving grid access policies and grid integration of offshore wind energy, streamlining the offshore wind project approval process, and providing recommendations for federal and state policies.

Signing the bill into law will help streamline the offshore wind industry and will provide the U.S. with a "tremendous opportunity to build the world's leading offshore industry and produce the bulk of our nation's electricity miles from our country's largest cities," Snowe said.

The bill echoes proposals from the Governors' Wind Energy Coalition, a bipartisan group of 29 U.S. governors that in March published its "2010 Wind Energy Recommendations" for the Obama administration. These recommendations include implementing measures to streamline offshore wind projects' permitting process, supporting deepwater and offshore wind energy technology research and development, and developing new electric transmission infrastructure to provide access to offshore wind turbines.

Federal government agencies such as the U.S. Department of the Interior (DOI) also have taken recent steps to advance offshore wind project development. Secretary of the Interior Ken Salazar made history April 28 when he announced the DOI's favorable Record of Decision granting federal approval to the Cape Wind project, a 130-turbine offshore wind farm to be constructed off Massachusetts' Cape Cod coast 14 miles from Nantucket on outer continental shelf federal submerged land on Horseshoe Shoal in Nantucket Sound.

Salazar said the 468-MW facility would be "the first of many projects up and down the Atlantic coast" and that it will help "build a new energy future for our country."

The public benefits led to his approving the Cape Wind project despite a decade of analysis and contentious debate, Salazar said.

Also, days after the bill's introduction, the DOI's Minerals Management Service (MMS)* issued the nation's first initial request for interest for renewable energy development projects on the outer continental shelf in federal waters off the Delaware coast. In 2008, the Delaware legislature approved Bluewater Wind Delaware LLC's 25-year power purchase agreement with Delmarva Power, granting Bluewater rights to build a 200-MW offshore wind farm on the outer continental shelf 12.5 miles off Rehoboth Beach. If the MMS de-

termines no competitive interest exists in the outer continental shelf area, the MMS may proceed with the noncompetitive lease process with Bluewater, which would entail, among other things, the MMS's coordination with other federal agencies, state and local governments and American Indian tribes. Massachusetts and Delaware, therefore, could be the first states with offshore wind farms.

State general assembly and gubernatorial support are also key for promoting the offshore wind industry at the state level. For instance, at the end of March, the Virginia State Assembly unanimously passed companion bills S.B. 577 and H.B. 389 calling for the creation of the Virginia Offshore Wind Development Authority. This entity would have the ability to create public-private partnerships for data collection and infrastructure upgrades, as well as apply for federal loan guarantees.

As another example, New Jersey Republican Gov. Chris Christie in March pledged to seek federal government assistance in expediting permit approval for New Jersey's proposed 350-MW offshore wind project and to halve the estimated 7- to 10-year review period for receiving offshore wind farm permits.

As background, in October 2008, New Jersey's Board of Public Utilities awarded development rights to Garden State Offshore Energy (GSOE)—a joint venture between Deepwater Wind and PSEG Renewable Generation—for a 350-MW offshore wind farm project to be constructed in the Atlantic Ocean some 16 miles southeast of Atlantic City. Other offshore developers, including Bluewater and Fishermen's Energy, also are slated to assist in developing wind farms in the same general area as GSOE. Because of permitting delays and other factors, none of these projects are under construction or operational.

"Everybody agrees that the number (of years for permitting review) needs to come down," Christie said.

Although from a different political party, U.S. Sen. Robert "Bob" Menendez, a Democrat and member of the U.S. Senate Committee on Energy and Natural Resources, supports Christie's proposal for expedited permit application review. He has vowed to push for such proposal's adoption.

The aforementioned developments are significant because the federal and state governments must take a coordinated approach to expedite permitting and develop a new policy framework that templates transmission systems needed for offshore wind farms.

Conclusion

Implementation of a new technology is never simple. Failure to invest in offshore wind power today could have a future detrimental impact. Educating the public and policymakers, removing barriers to expeditious offshore wind farm construction, and having unified state and federal policies supporting offshore wind development are crucial for successfully drawing upon wind to reduce CO₂ emissions and generate significant energy. Northeastern and east central coastal states stand to reap long-term financial and other rewards by investing in offshore wind power for their clean energy future. **ELP**

*Since the time this article was written, MMS underwent the following changes. First, per Secretarial Order No. 3299, dated May 19, 2010, Department of the Interior Secretary Ken Salazar split MMS into the following three divisions: (1) the Bureau of Ocean Energy Management, (2) the Bureau of Safety and Environmental Enforcement, and (3) the Office of Natural Resources Revenue. Second, on June 21, 2010, MMS was re-named the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE), also known as the Bureau of Ocean Energy (BOE).