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Learn More about Wind Farms

BBLA presents the following information in order to help inform members about offshore wind farms in general, and about the current status of the proposed Orsted/Skipjack Wind Farm to be constructed in an area leased from the Federal Government about 20 miles off the coast of Bethany Beach, AND the proposed U.S. Wind Farm off the coast of Fenwick Island. The BBLA Board of Directors is not taking a formal position on either of these proposals in this writing. However, the Board is interested in tracking these local projects for our members, and as part of a national effort for exploring and fully evaluating all potential, viable forms of renewable energy, such as wind power. Please note that numerous references and examples of the most commonly heard pros and cons are provided with this article, some of which can also be found in BBLA's initial writing on wind farms.

Wind Farms provide renewable energy without burning fossil fuels, consuming water, requiring burning of fossil fuels, or requiring transportation (trucks, rail) facilities and activities. In the Delmarva region, Orsted and U.S. Wind have conducted extensive studies of wind velocities, wind reliability, and substrate to ensure that their wind energy projects will be successful, if/when they are approved and implemented. These companies have also studied, and will continue to study, a myriad of environmental, economic, social, cultural, and energy network matters, especially potential beneficial or adverse impacts to be considered during project decision making. Before proceeding, energy companies must verify that, overall, there will be sufficient wind energy produced to cover the cost of environmental compliance, construction, and operation, and to generate enough of a profit to incentivize investments (unless the project involves a non-profit, educational, or research entity).

Offshore wind farms typically benefit from higher and more consistent windspeeds, when compared to land-based wind farms, and they typically have the potential to generate more electricity at steadier rates than their onshore counterparts. Small increases in wind speed yield large increases in energy production. For example, a turbine in a 15-mph wind can generate twice as much energy as a turbine in a 12-mph wind. Faster wind speeds offshore mean much more energy can be generated with less infrastructure and lower maintenance costs. Today, wind energy is considered to be the cheapest form of "*new electricity generation.*" Wind power plants reportedly can generate electricity for less than 5 cents per kilowatt-hour, a price that is competitive with new coal-fired or gas-fired power plants. Another stated advantage is that wind farms do not produce and emit greenhouse gases or other pollutants, which is a major health benefit in comparison to fossil fuels. As the wind turns the carbon-fiber blade on the unit, a motor turns, which turns **kinetic energy into electricity**. This energy is transferred to the gearbox, which converts the slow speed of the spinning blades into higher-speed rotary motion — turning the drive shaft quickly enough to power an electricity generator. The energy produced is sent to an energy storage facility where it is stored in batteries until it is needed.

Common Pros and Cons of Offshore Wind Farms

Example Pros Cited By Supporters:

- Clean Energy is generated more efficiently, reliably, and abundantly
- Cost of wind power generation is now competitive with new coal-fired and gas-fired power plants
- No burning of fossil fuels to produce wind-generated energy
- Towers can be taller than onshore counterparts (more energy collection)
- Less intrusive physically and visually than onshore counterparts, allowing for more towers/turbines per square mile
- When sited properly, environmental impacts of construction and operation are minimal
- Tower foundations provide excellent fish and shellfish habitat
- No issues with physical restrictions such as hills or buildings that could block wind flow
- No on-shore noise issues
- Jobs during and after construction

Example Cons Cited By Opponents (some unproven and speculative):

- High construction and operation/maintenance costs paid by taxpayers in government subsidies and consumers in electric bills
- Concerns about radiation from onshore transmission cables and facilities
- Threat to birds and bats **(**between 140,000 and 500,000 collisions/yr for onshore wind) and marine life
- Turbine foundations disturb the ocean floor
- Turbines susceptible to storm and hurricane damage, winds, and waves
- Overall impacts to fish and wildlife species are not fully understood
- The production and installation of power cables under the seafloor to transmit electricity back to land can be very expensive
- Offshore wind farms built within view of the coastline (up to ~26 miles offshore, may be unpopular among residents/visitors, and may affect tourism and property values

A few general observations are provided to help BBLA members learn about wind energy projects in general. Tower foundations are now typically made of steel. Rocks are placed on and around the foundation for scour protection (measures to prevent loss of seabed sediment around foundation bases), a critically needed safety feature. For the projects being proposed near Bethany Beach, the foundations and scour protection will cover less than 1% (possibly less than 0.5%) of the seabed per wind farm. The seabed will remain 99% sandy and undisturbed, preserving horseshoe crab and other aquatic habitat. For those interested in electromagnetic fields and potential impacts on the marine environment, studies have shown that impacts are "*none to negligible*" since the cables which transport generated energy to shore are wrapped, sheathed, and armored to protect both the cables themselves and the

environment. Also, cables would be buried some 6 feet under the surface of the ocean floor [note: when approaching the shore, companies switch to horizontal directional drilling (HDD) to go 60 feet under the dune, but for most of the export cable route, burial is ~6 feet deep]. Noise generated from pile driving during construction will be short-term and managed to occur when marine mammals are clear of the project area. A soft start with mild "tapping" is typically used for 30 minutes to allow animals to get even farther away before true pile driving begins, and sound reduction technology will be used to further reduce noise (i.e., double bubble curtains).

Interestingly, The National Audubon Society (*Smithsonian* April/May 2022, p. 43) has endorsed offshore wind energy projects in general, believing that in most, if not all cases, the turbines will be located far enough off-shore to be beyond areas of bird density. While there may be random, unavoidable bird strikes, compare that to the birds and bird habitat affected by coal mines which destroy and degrade thousands of acres per mine. Whales, such as the Right Whale, avoid operational noise, such as construction noise, and once the towers are in place there will be no impacts on whales or other marine species. According to the *Smithsonian* and other studies, once the environment settles down a bit after initial construction, studies have shown that fish and shellfish not only come back, but they often come back in greater numbers because of the habitat diversity created by the tower pads and rocks placed for scour protection. The same Smithsonian article talks about the Block Island Wind Farm, some of the arguments for and against the project, how ultimately energy costs declined once the wind farm was operational, and that energy supply became more reliable when compared to the fossil fuel plant it replaced.

One concern shared by many people is what happens when a wind energy project reaches its life expectancy. It is certainly possible that a project could be rehabilitated and updated, as needed, and its use extended for a period of time. If a project is to be decommissioned, then energy companies are required by federal and state law to remove all of the infrastructure and restore the ocean floor to its pre-project condition. Blades can be broken down and recycled for use in other products thereby avoiding concerns about old turbines filling up landfills. Industry experts expect that 30-40 years from now when these two projects might be decommissioned that recycling technology and opportunities will have improved and expanded significantly. Another consideration is that local jurisdictions might prefer that after the towers are removed, that the scour protection be left in place for fish and shellfish habitat.

One issue that is sure to be front and center for property owners and tourists, especially because perceptions of visual impacts are so subjective, is how wind farms might affect the ocean viewshed. First, looking at preliminary project planning information for both Orsted and U.S. Wind, it appears that the closest turbines to Bethany Beach and Fenwick Island shoreline will be between 17-20 miles. Preliminary studies have shown that "the effects of any sized turbine array diminish rapidly once placed more than 8 miles offshore." At Block Island, rental rates, occupancy rates, and monthly revenue for AirBNB properties all increased after a wind farm was constructed. This is not to say that the increases were caused by construction or the wind farm, rather it indicates that construction of the wind farm did not adversely affect tourism or diminish the general trend towards steadily rising rental rates and occupancy. The 2019 Block Island Wind Farm Study, as reported in *Science Direct* assessed Block Island tourism statistic against two nearby resorts that were out of the viewshed to control for overall tourism

industry trends. Both Orsted and U.S. Wind have done studies, and will continue to do studies, along with robust public involvement activities, to compile information, comments, and views as they move forward. The author of this article has seen several artists' renditions and photographs of actual wind farms and it is the author's opinion that at a distance of 17-20 miles, the towers will be barely visible, and invisible in early morning sun or overcast/stormy conditions. People will certainly see safety lights at night, but these lights will be programmed to only be on when boats or airplanes are within a certain distance. It will be up to residents, property owners, or visitors to decide if the impacts to the viewshed are of concern or not. Members are encouraged to participate in public participation opportunities and let the companies and local government officials know their views on the viewshed and all other issues discussed above (and those not discussed). US Wind continues to conduct nearshore geophysical survey operations within about 3 nautical miles of the Delaware shore accompanied by Protected Species Observers and an Offshore Fisheries Liaison to help avoid and minimize impacts. US Wind Mariners Briefings can be found on the US Wind website. These briefings describe ongoing work and provide a map and photos.

Orsted, based in Fredericia, Denmark, has an 80,000-acre Federal Lease area for Skipjack 1 & 2 off the coast of Fenwick Island, Delaware. According to the Orsted website, "*Skipjack Wind will generate clean, renewable energy for the Eastern Shore, powering ~290,000 homes in the region. Ørsted has been partnering with local businesses since 2017 to develop Maryland's first offshore wind project, Skipjack Wind 1, off the coast of the Delmarva Peninsula. With the proposal to develop Skipjack Wind 2, we're hoping to achieve even more together. Skipjack Wind 2 will secure the region's central position in the new American offshore wind industry for decades to come – not only as a hub for new manufacturing and port facilities to serve this growing sector, but also as a training center for the new green workforce. The benefits of the emerging offshore wind industry will be felt throughout Maryland and Delaware*." Orsted is currently searching for a suitable site to construct an energy transfer station, and the latest information is that the company hopes to be online producing energy in ca. 2026.

U.S. Wind, based in Baltimore, Maryland, has an 80,000-acre Federal Lease area off the coast of Ocean City, Maryland. "*US Wind was founded in 2011 and has established itself as Maryland's leader in offshore wind development. In 2014, US Wind acquired an 80,000-acre federal Lease area off the coast of Maryland. In 2017, Maryland approved the company's 270 MW MarWin project and, in 2021, the state approved the 808 MW Momentum Wind project. US Wind is majority-owned by Renexia SpA, a leader in renewable energy development in Italy and a subsidiary of Toto Holding SpA. Toto Holding SpA has more than 40 years of experience specializing in large construction and infrastructure projects, primarily in the energy, transportation, and aviation sectors. In 2020, Apollo Global Management, an investment firm with $400 billion in assets under management, made their first global offshore wind investment in US Wind.* [Information quoted from a March 31, 2022 News Release.] US Wind has developed the required *Construction and Operations Plan* which is a cradle-to-grave roadmap US Wind will follow for the life of the project, development through decommissioning. The COP is currently under review by the Bureau of Ocean Energy Management (BOEM).

The BBLA Board will continue to monitor the progress of these wind farm projects and keep members informed. For those readers interested in a better understanding of the effects on fish species, tourism, and economic issues, the following two publications may be helpful.

Evaluation of Potential EMF Effects On Fish Species of Commercial or Recreational Fishing Importance in Southern New England (OCS, BOEM Study 2019-049), U.S. Department of the Interior, Bureau of Ocean Energy Management, Office of Renewable Energy Programs. Prepared under Contract 140M0119F0012 by CSA Ocean Sciences, Inc., and Exponent. https://espis.boem.gov/final%20reports/BOEM_2019-049.pdf

Sustainability and Tourism: The Effect of the United States' First Off-Shore Wind Farm On The Vacation Rental Market by Andrew Carr-Harris and Corey Lang, Department of Environmental and Natural Resource Economics, University of Rhode Island, April 22, 2019. https://www.sciencedirect.com/science/article/abs/pii/S0928765518302902