



Long Island: Offshore Wind

Frequently Asked Questions

In 2019, the New York State Climate Leadership and Community Protection Act was signed into law, mandating 70% of NY's electricity to come from renewable sources by 2030 and carbon-free electricity by 2040. Offshore wind will need to play a significant role in meeting these ambitious mandates, which is why the state has implemented a mandate for 9,000 MW of offshore wind by 2035.

There are currently five offshore wind farms slated to be developed off the coast of Long Island; the South Fork Wind Farm, Sunrise Wind, Beacon Wind and Empire Wind 1 and 2. These projects will generate over 4,000 MW of clean, renewable energy and power more than 2 million homes. In 2022, the Bureau of Ocean Energy Management (BOEM) auctioned six additional wind energy lease area off the coast of NY/NJ in an area known as the NY Bight.

As New York State moves forward with these projects, it is important for all of us to know the facts about offshore wind. The United States has one small offshore wind farm off the coast of Rhode Island, but there is nearly three decades of global experience with offshore wind from across the world that we can all learn from. Countries including Belgium, China, Denmark, Finland, Germany, Ireland, Italy, Japan, the Netherlands, Norway,



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Sweden, and the United Kingdom have embraced offshore wind power. As of 2019, European offshore wind farms generate nearly 205,000 MW of renewable energy¹, or approximately 14% of the EU's power.

Before offshore wind projects are constructed, they will each be required to go through an individual site-specific environmental review process, with meaningful public participation opportunities, to ensure they are well-sited and protective of our ecosystem. The following are general frequently asked questions about offshore wind, not related to any specific project.

Why do we need to go offshore for wind energy?

New York State needs a wide range of renewable energy sources to reduce harmful pollution, mitigate the impacts of climate change, and meet renewable energy mandates. A recent study estimated roughly 80 gigawatts of new clean energy sources will be needed to meet New York's goal of a zero-emissions electrical grid by 2040². One gigawatt can power 750,000 homes.

Offshore wind brings unique benefits as part of a diverse renewable energy supply. Offshore winds tend to blow more consistently than those on land and wind speeds are often higher. Larger turbines, which can capture more energy, are feasible because there are no land-based transportation constraints, and because offshore turbines are placed at much greater distances from residences, so visual impacts are less. Because there are no landforms or built structures to create wind turbulence, offshore turbines generally operate more efficiently than onshore turbines. Additionally, offshore wind generates more electricity when energy demand is highest and it is needed the most—during the daytime (as opposed to onshore winds, which are usually more powerful at night). NYC and Long Island simply do not have the land to build large scale wind farms.

Can wind power help fight climate change?

Yes. A study of wind energy impacts in the eastern USA, conducted by the National Renewable Energy Laboratory, concluded that "Wind generation displaces carbon-based fuels, directly reducing carbon dioxide (CO₂) emissions. Emissions continue to decline as more wind is added to the supply picture."³

Offshore wind will slash greenhouse gas emissions in New York State. The first 2,400 megawatts (MW) of offshore wind energy developed to meet New York's target would reduce greenhouse gas emissions in the state by more than 5 million tons each year, the equivalent of removing nearly one million cars from the road by 2030.⁴

Does offshore wind reduce other harmful air pollution?

Yes, increasing the use of offshore wind energy to replace fossil fuel power plants improves public health by reducing harmful air pollutants that contribute to heart and lung disease. Air pollution reductions from the first 2,400 MW of offshore wind in New York would be valued at roughly \$1 billion and would avoid close to 100 premature deaths each year.⁵ On the contrary, fossil fuel power plants cause significant air pollution. Soot and particulate matter emitted from oil and gas-fired power plants cause heart attacks and premature death.

Will offshore wind turbines leak oil into the ocean?

There are small quantities of gear-box lubricants used in wind turbines. Wind turbines are constructed to prevent leaks from the gear-box. Offshore turbines are designed to prevent any fluids from being discharged into the water with three levels of containment to minimize risk of any fluid discharges. The primary systems are sealed with multiple sensors that monitor fluid performance and containment. The secondary system is in the nacelle where fluid containment reservoirs are designed to capture any leaks from a primary system failure. If both primary and secondary containment fails, the bottom of the tower has a reservoir to contain any fluids originating from the nacelle⁶. Furthermore,

all the fluids used in the turbine can and should be biodegradable. A greater concern for oil in the marine environment would come from recreational boats and petroleum-transporting freighters seen across the south shore horizon and have catastrophic spills.

Will potential environmental impacts of Long Island offshore wind be considered *before* a project can move forward?

Yes, a site-specific review process, with opportunities for meaningful public input, allows potential impacts to our waterways and wildlife to be avoided, minimized, or mitigated. It is critical that every offshore wind project that moves forward is well-sited and protects our ecosystem.

Does offshore wind impact public access, including fishing and recreational boating?

There will be no security zones around offshore wind farms. The Block Island Wind Farm, the first and only operational U.S. wind farm, shows recreational boaters are safely navigating and fishing in and around wind turbines. Any offshore wind project would only cause a short-term effect on public access, with temporary displacement of boating and fishing in the immediate area of the project during construction. However, once constructed, recreational boaters, fishermen, commercial charters, and tourists all return to the area. Turbines are spaced far enough apart to allow vessels to access the area both through and around each turbine while also maintaining safe distance from other vessels and commercial shipping lanes. Furthermore, the “reef effect,” in which the offshore turbines create an artificial reef that attract fish and other wildlife, will potentially improve and benefit the recreational fishing industry in New York.

Will wind turbines off Long Island impact radar?

Wind turbines can interfere with radar; however, improvements in technology has provided solutions. In 2014, a consortium of U.S. federal agencies

established a “turbine radar interference mitigation working group” to address the issue, with the goal of ensuring “that wind development and radar missions can continue to coexist effectively.”

Research has demonstrated that radar can be recalibrated, replaced or supplemented by a different radar system. That approach is used at Travis Air Force Base in California. The base, whose radar was being thrown off by nearby wind turbines, in 2015 installed a light-wave radar system designed to operate at a different frequency range than its previous surveillance radar system. The airfield now peacefully co-exists with a wind farm that is less than five nautical miles away.⁷

Do offshore wind farms impact property values?

The Lawrence Berkeley National Laboratory analyzed more than 50,000 home sales near 67 wind projects across nine U.S. states, and did not uncover any impacts from wind farms to nearby home property values.⁸ Some studies have shown that property values can be temporarily affected after a wind farm is proposed for an area, before it becomes operational, but that once the wind farm is built and uncertainty and fear are resolved, property values return to pre-application levels, or higher.⁹

Will offshore wind create jobs?

Building an offshore wind farm requires 74 different occupations, including electricians, welders, ironworkers, millwrights, carpenters, engineers, concrete finishers, scientists, and vessel operators, according to the New York-based Workforce Development Institute.¹⁰ Jobs supported by offshore wind are well compensated, with average annual earnings (including benefits) of \$140,000 annually.¹¹ Offshore wind operations and maintenance jobs are long-term and would strengthen the region’s economy over the decades-long life of a wind farm and beyond. According to NYSERDA, New York’s existing Atlantic offshore wind program will create 10,000 jobs.¹² A recent study by the research group Wood McKenzie found that continued growth of offshore wind could bring 38,000 jobs to New York State.¹³

Is offshore wind power reliable?

The NYISO has indicated that New York State can take on additional wind power while providing reliable service to customers. New York State has implemented a number of system and operating practices to accommodate the growth of wind energy, including one of the nation's first centralized wind forecasting systems, which provides power grid operators with an advance estimate of how much wind energy to expect. The electric grid is designed to quickly compensate for fluctuations in both electricity generation and in demand. Grid operators keep "operating reserves" (backup generators) ready in case demand should spike or a generator should go off-line suddenly. Furthermore, when wind turbines are spread over large areas, their output becomes far more constant and even easier to accommodate.

Will offshore wind be cost effective?

Wind power requires zero fuel costs, and offshore wind prices can be locked in for 20 years or more, acting as a hedge against volatile fossil fuel prices. It is predicted that as the U.S. offshore wind industry reaches economies of scale the costs will come down; just as the cost of land-based wind energy

dropped by 69% over the last decade.¹⁴ The cost of offshore wind in Europe, (now a mature industry) is now at similar levels. Additionally, offshore wind power helps to mitigate the impacts of climate change—scientists estimate that the impacts of climate change (e.g. flooding) will potentially cost New York State \$50 billion over the next decade.¹⁵ The cost of offshore wind pales in comparison to the costs of fighting climate change.

What happens at the end of a turbine's useful life? How is it decommissioned?

Wind turbines typically have a 25-30 year lifespan. Responsibilities for decommissioning wind turbines are addressed before the wind farm is built. Typically, the developer will post a bond for the cost of decommissioning; if turbines are decommissioned, the developer will remove the structures and return the area to its previous condition. However, since the wind resource remains most developers prefer to "repower" rather than decommission wind farms. In repowering, old turbines at the end of their lifespan are replaced with new ones in the same locations.

¹ Ramirez, L., Fraile, D., Brindley, G. February 2020. Offshore Wind in Europe; Key trends and statistics 2019. Wind Europe. Available at <https://windeurope.org/wp-content/uploads/files/about-wind/statistics/WindEurope-Annual-OffshoreStatistics-2019.pdf>

² <https://www.nyiso.com/documents/20142/12610513/Brattle%20New%20York%20Electric%20Grid%20Evolution%20Study.pdf/6a93a215-9db3-d5a0-6543-27b664229d3e>

³ National Renewable Energy Laboratory, "Eastern Wind Integration And Transmission Study," 2011.

⁴ Jonathan J Buonocore, Patrick Luckow, Jeremy Fisher, Willett Kempton and Jonathan I Levy, 2016, "Health and climate benefits of offshore wind facilities in the Mid- Atlantic United States" Environ. Res. Lett. 11 (2016) 074019. doi:10.1088/1748-9326/11/7/074019

⁵ Ibid

⁶ http://www.leedco.org/files/Icebreaker_Wind_FAQs.pdf

⁷ Buffalo News

⁸ <https://emp.lbl.gov/sites/all/files/lbnl-6362e.pdf>

⁹ Hinman, J. Wind Farm Proximity and Property Values: A Pooled Hedonic Regression Analysis of Property Values in Central Illinois. May, 2010. Illinois State University, Department of Economics.

¹⁰ https://wdiny.org/Portals/0/New%20York%20State%20and%20The%20Jobs%20Of%20Offshore%20Wind%20Energy_%20WDI2017.pdf?ver=2017-05-03-150746-023

¹¹ U.S. Dept of Energy. <https://www.nrel.gov/docs/fy14osti/57511.pdf>

¹² <https://www.nyserda.ny.gov/All-Programs/Programs/Offshore-Wind/Economic-Opportunities/Workforce>

¹³ Wood Mackenzie Power & Renewables, August 2020. Economic Impact Study of New Offshore Wind Lease Auctions by BOEM. https://www.awea.org/resources/publications-and-reports/white-papers/offshore_lease_economic_impacts

¹⁴ <https://www.lazard.com/media/450784/lazards-levelized-cost-of-energy-version-120-vfinal.pdf>

¹⁵ <https://www.governor.ny.gov/news/governor-cuomo-launches-campaign-pass-3-billion-restore-mother-nature-bond-act-fy-2021-budget>



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