POSITION PAPER

OFFSHORE WIND

Summary: Pressure is mounting to build thousands of wind turbines off U.S. coasts, including in the Great Lakes. Poorly-sited facilities could pose risks to marine and migratory birds, as well as other animals.

There is mounting pressure for building offshore wind energy facilities in the United States, on the Atlantic, Pacific and Gulf coasts and in the Great Lakes. The Bureau of Ocean Energy Management (BOEM) is issuing leases for renewable energy development in the Outer Continental Shelf (for latest leasing activity see http://www.boem.gov/Renewable-Energy-State-Activities/). However, offshore wind energy development is still nascent in the US, so there may still be time to influence this potential build out.

While offshore wind energy development has potential to produce clean, sustainable energy, we should not ignore the risks it poses to our ecologically important and irreplaceable wildlife. In addition, ABC believes that whenever energy development decisions are made, the public should be offered the opportunity to fully assess a range of renewable energy alternatives. Only focusing on large, industrial-scale wind projects, whether on or offshore, does not consider potential, less harmful alternatives, including distributed solar generation on existing structures (e.g. office buildings, homes, parking lots, canals, etc.) that do not harm wildlife or alter pristine habitat.

Most of what we currently know about the effects of offshore wind energy on wildlife comes from Europe (Bailey et al. 2014). Currently, there are few offshore wind energy projects in various stages of development in U.S. states, but the current goal is 54 GW of offshore wind energy produced by 2030 (DOE 2011), which would represent around 9,000 turbines, but this could change rapidly with shifting priorities and other factors.

ABC supports the development of alternative energy as a means of reducing our dependence on fossil fuels and addressing climate change and pollution. However, as a bird conservation organization, we are also concerned about the potential adverse effects of offshore wind energy development on our nation's federally-protected and ecologically-important native birds.

Onshore wind development is known to present a real, non-trivial threat to birds and bats (Smallwood, 2014, Loss et al. 2014; Erickson 2015).

However, there are some important distinctions between onshore and offshore wind energy development and its potential adverse effects on wildlife that make having a separate policy desirable.

First and foremost, because the turbines sit over open water, it will be difficult, if not impossible, to employ existing methods of pre-construction risk assessment and post-construction mortality studies (Baily et al. 2014). Determination of post-construction mortality for birds will be particularly difficult, as carcasses will be immediately lost in water, thus precluding species identification and determination of actual numbers taken.

New automated data collection technologies, using high resolution video, infrared photography, and auditory cues (to record turbine blade strikes) may help to meet these needs in the future (e.g., Flowers et al. 2014). However, much more research is needed to test these methods and verify their accuracy. ABC strongly encourages research on new technologies that will allow accurate and pre-construction risk assessment and post-construction mortality monitoring at offshore wind facilities.

Second, a whole host of different species are likely to be affected by offshore wind energy development, including marine seabirds and other marine and freshwater aquatic wildlife, such as cetaceans (whales and dolphins), sea turtles and fish (Bailey et al. 2014). Being tied to water, federally-protected Bald Eagles are also likely to experience greater impact from wind energy development than they have previously, especially in and around the Great Lakes and when projects are sited closer to shore.

Last, comparatively little is known in the United States about the potential environmental impacts of offshore wind energy as compared to onshore wind energy, which has been in operation and studied for decades longer. Offshore marine environments are highly dynamic and can change rapidly with changing weather conditions, such as strong wind and fog; and changing ocean productivity, salinity and sea surface temperature.

Furthermore, little is currently know about the flight height of various marine avian species, which is considered the most important factor in determining a bird's collision risk (Furness et al. 2013), although avoidance is another important factor (Band 2012). Both are very difficult to measure. A recent radar study around the Great Lakes conducted by the U.S. Fish and Wildlife Service (USFWS) (Bowden et al. 2015) suggests that many migratory birds often fly at lower levels than once thought, and this may be true of other birds as well. For seabirds, which use dynamic soaring, flight height and flight behavior is related to wind speed and direction. Albatross, shearwaters and petrels with more prevalent gliding makes them less maneuverable than flappers, are highly vulnerable to offshore wind, as their flight heights bring them within the blade-swept zone of typical turbines when winds are strong (Ainley et al. 2015).

ABC therefore encourages the USFWS, Department of Energy (DOE), Bureau of Ocean Energy Management (BOEM) and other U.S. natural resource agencies to systematically study the species-specific effects of offshore wind energy on federally-protected birds and other wildlife and their habitats.

It also encourages immediate research on ways to mitigate the effects of offshore wind turbines on birds, including ways to detect and cease wind turbine rotation when large numbers of birds are present, as well as employ appropriate lighting that does not attract birds (May et al. 2015).

ABC is concerned that mitigation methods for birds have not been adequately tested for their efficacy in reducing bird mortality (Baily et al. 2015, Wang et al. 2015) and agree with a recent Department of Energy's Office of Energy Efficiency and Renewable Energy statement that, "…technologies to minimize impacts at operational facilities for most species are either in early stages of development or simply do not exist." (DOE EERE 2014). The collective challenge is to have precaution-based mitigation that seeks to increase the resilience of the populations in the absence of empirical evidence of mortality.

As with onshore wind energy development, siting is critical in order to reduce risk of wildlife fatalities (Dewitt and Langston 2006). In the case of birds, abundance (exposure) is one factor, along with vulnerability and hazard, contributing to risk (Marques et al. 2014; Fox et al 2006). It is therefore particularly important that we begin to understand where and why birds are concentrating in certain areas, and avoid those areas whenever possible.

Offshore wind facilities should not be placed in or near marine protected reserves, near populations of rare or endangered species, large breeding colonies, or in major migratory pathways. For seabirds which regularly transit between island nest sites and open-ocean feeding areas, seasonal closures, buffers or corridors around colony sites should be considered to minimize wind impacts. Of course, the definition of "near" may vary from species to species, as some birds travel long distances to forage. In addition, the ocean is a dynamic habitat and conditions (e.g., upwelling, concentration of food species) may change with changing conditions, thus influencing distribution and concentration of wildlife.

Steps must also be taken to require mitigation and compensation when public trust resources, including federally-protected birds, are killed by offshore wind turbines, even after every precaution has been taken. This may be particularly difficult if accurately estimating bird kill proves impossible in open water situations. If so, we may have to rely on modeling to develop compensation models (e.g., Band 2012).

As with onshore wind energy development, ABC favors mandatory, rather than voluntary permitting guidelines for offshore wind energy that will effectively protect our nation's native birds from this rapidly expanding industry. ABC also favors independent assessment of

risks preconstruction and monitoring of bird deaths post-construction to remove any potential conflicts of interest. Any pre-construction risk assessment should include consultation with avian experts that are not paid employees of wind energy companies, but who are intimately familiar with the local avifauna and their habitats.

A non-affiliated avian advisory group could help to make informed decisions about the potential impacts of any potential offshore wind energy development. Having such a group plugged into the NEPA process where they can advise on scoping, methods, and data interpretation would provide additional safeguards.

Transparency is also important, as our nation's birds are a public trust resource. The public has a right to know how many and what kinds of birds are being killed at wind energy facilities. However, since most offshore wind projects are occurring on federal lands, we hope that all monitoring will be public.

ABC recognizes that offshore wind energy, especially when it is positioned long distances off the coast, could offer some advantages over onshore wind energy in terms of its risk to birds, and technological advances are allowing turbines to be installed in deeper water (Bailey et al. 2014). In addition, at least for the distances that they remain underwater, associated electrical cables do not have to be placed on towers, where they can pose a significant risk to birds through collisions and electrocution (Manville 2005). However, once they do reach shore, associated power lines and towers located close to the shoreline could pose additional obstacles to birds that could result in significant mortality, again, depending on siting.

ABC also encourages government regulators to develop a better process for assessing cumulative impact when making wind energy development decisions (see Goodale and Milman 2014, Brabant et al. 2015). Estimating the potential impact of one wind energy facility is very different from assessing the impact of several facilities in the same area (Busch et al. 2013).

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