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Comments on Offshore Wind Turbines and Cables

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The urgency to move towards sustainable fuel sources has never been more relevant than it is at this time. Consumer use of fossil fuel sources contributes to carbon emissions that lead to the greenhouse gas effect, a major cause of climate change. Harvesting of these fuel sources on land and in the ocean has caused irreparable environmental damage that has warmed the climate, eliminated prey source, fractured habitat, and threatened countless numbers of marine animals.

As we weigh the ills of sourcing energy from fossil fuels against the various sustainable energy sources that are currently available, we need to exercise caution in the choices we support, and apprise ourselves of the best available information regarding these choices. As defenders of marine life and ocean habitat, the MERR Institute views offshore wind farms as a detrimental choice for fossil fuel alternatives. The adverse impacts on wildlife are substantive. The Delaware Bay and coastline afford vital habitat for migrating whales, shorebirds, and butterflies as well as providing foraging grounds for sea turtles, birthing and feeding grounds for bottlenose and other dolphin species, and winter habitat for seals. The installation of offshore wind farms, accompanied by high voltage cables under the ocean floor create an industrial fragmentation of the marine ecosystem, the effects of which will include but are not limited to, increased underwater noise pollution, obstacles to migration routes, displacement, loss of prey, and interference with the earth's naturally occurring electromagnetic fields.

The Delaware Coast is part of a long-established flyway for migrating shorebirds as they make their way up the Delaware Bay in search of horseshoe crab eggs as part of their essential diet. Delaware is one of only 5 established stopovers for nearly 1,500,000 of these birds as they make their way from Central and South America to their Arctic nesting grounds, in search of nourishment essential to their survival on this journey¹. Monarch butterflies make their annual migration across the Delaware Bay as they head to warmer climates². Large whales such as humpback, fin and the severely endangered North Atlantic right whale have used their ancient migratory pathways along the Delaware Coast for eons of time, and utilize the rich feeding grounds of the Delaware Bay and surrounding waters to feed and to teach their young how to forage on their own³. Bottlenose dolphins reside in Delaware waters for 9 months out of the year,

¹ https://web.stanford.edu/group/stanfordbirds/text/essays/Shorebird_Migration.html

² <https://www.njtvonline.org/news/video/monarch-butterflies-begin-annual-migration-from-cape-may-to-mexico/>

³

<https://books.google.com/books?id=2rkHQpToi9sC&pg=PA967&lpg=PA967&dq=North+Atlantic+Right+whales+matilineal+fidelity+to+DE+Bay&source=bl&ots=hFICHA4fuw&sig=ACfU3U3NA9PcJbNxIGZakMImWcOnYCKGvQ&hl=en&sa=X&ved=2ahUKE>

from February through October, making up the largest northerly population in existence. Sea turtles swim the world's oceans, navigating several thousand miles annually using the earth's electromagnetic fields as their guide. These will guide them to foraging grounds in the Delaware Bay, and to nesting beaches further south. Every organism in the marine ecosystem is interdependent, relying on long established feeding and breeding grounds for their survival and for the survival of their species. Fragmenting any portion of this ecosystem with disruptive forces takes its toll on every species, including humans.

Current studies show that offshore wind farms are considered an apex predator⁴, while large whales are considered the cornerstone species for the health of the planet. Whales contribute more towards mitigating climate change than any other organism or system by way of being the primary source of fertilization for microscopic phytoplankton, upon which every other organism depends. Phytoplankton in turn captures carbon and produces half of the world's oxygen⁵. This interdependent system illustrates the essential role of all organisms towards the earth's health and balance, and necessitates a big picture approach to any proposal that would create industrial intrusion into the ocean.

Delaware's tiny coastline provides essential habitat for a large biodiversity of species. Protecting these species from the devastating effects of climate change and other human impacts is imperative for the survival of all beings. Many more studies are needed to quantitatively define the impacts of underwater noise generated by the vibration of the turbines on marine species. Empirical data must first be established to define these impacts in the short or long term. We do know that wind turbines cause avoidance in marine mammals, skewing established migration routes and threatening displacement and prey loss, as well as masking (noise pollution that drowns out other sounds, such as communication between a mother and her calf) that can cause separation of mother from offspring when they can no longer hear one another against the backdrop of other invasive sounds.

Sub-sea high voltage cables are known to produce electromagnetic fields, which have the potential to interfere with species that rely on the earth's naturally occurring EMFs, such as sea turtles. Sufficient data is not available to conclusively show cumulative impacts on other species such as fish, nor are there conclusive findings to support the theory that burial of the cable will be effective in mitigating the impacts of the EMFs. It is known that sub-marine high voltage cables produce toxic emissions and thermal radiation, all of which are harmful to marine organisms and humans. Maryland rejected the proposal to run the high voltage cable onto land in their state due to the detrimental impacts it could have upon fragile ecosystems. There should be no reason that Delaware's marine ecosystem would be any less impacted, nor should it be viewed as any less valuable or worthy of protection. It seems inevitable that once the high voltage cable is brought on shore through Delaware that offshore wind turbines will be established off of the Delaware coast, opening that ecosystem to the harmful effects referenced above.

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⁴ <https://e360.yale.edu/digest/wind-farms-can-act-like-apex-predators-in-ecosystems-study-finds>

⁵ <https://greatwhaleconservancy.org/how-whales-help-the-ocean/>

In conclusion, we urge decision makers not to rush towards an alternative energy system that has not been adequately researched for long-term impacts, and in the short term is proven to be detrimental to many species of wildlife, ecosystems, and communities. There is no need to accept the lesser of the evils when we have access to existing, less detrimental forms of sustainable energy and systems, such as solar, geo-thermal, and net-zero housing designs. These decisions should not be based upon the financial incentives provided by utility companies but rather on the best interests of marine ecosystem health and that of coastal residents.