EMPIRE WIND

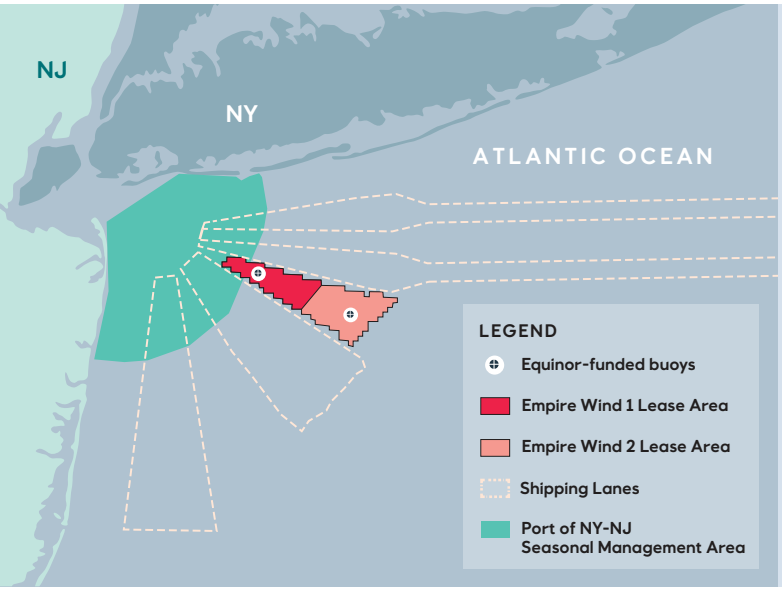
Marine Mammal Protection During Offshore Wind Construction

Offshore wind plays an important role in the global energy transition to address climate change. As Empire Wind 1 moves forward with construction, we prioritize the protection of marine mammals and ensure our operations are conducted in an environmentally responsible manner. Empire Wind's commitment to protecting marine species not only aligns with federal and state requirements but also reflects our dedication to preserving marine ecosystems.

What marine research and monitoring programs does Empire Wind invest and participate in?

- Equinor deploys acoustic monitoring buoys in the Empire Wind lease area off the coast of New York to collect near real-time data to detect the presence of marine mammals in partnership with scientists at the Wildlife Conservation Society and the Woods Hole Oceanographic Institution.
- Equinor shares data from their monitoring efforts and studies with scientists, marine users, and the public to help further the study and protection of marine mammals.
- Equinor technical specialists participate substantively in a number of regional environmental and fisheries organizations including the Regional Wildlife Science Collaborative, Responsible Offshore Science Alliance, and Environmental/Fisheries/Maritime Technical Working Groups convened by the New York State Energy Research and Development Authority (NYSERDA).
- Empire Wind has convened an expert panel of acousticians and biologists from renowned institutions like Woods Hole Oceanographic Institution and the University of Rhode Island to help inform our marine mammal mitigation and monitoring program.

Read more on Equinor's commitment to environmental protection:
https://www.equinor.com/sustainability/protecting-the-environment

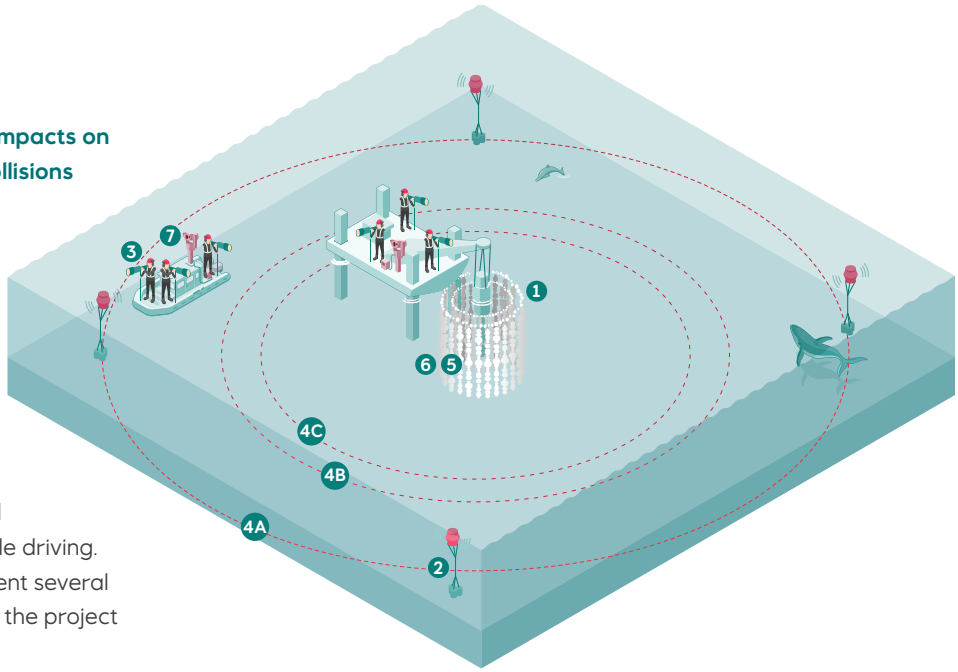


Equinor ocean monitoring helps make New York's coast safer for whales

Since 2016, Equinor-funded buoys detecting whales southeast of New York City have been used by NOAA to designate vessel "Slow Zones." This is the first buoy detection program prompting a speed warning to vessels to reduce threats to whales. Equinor's coordination with Woods Hole Oceanographic Institution and the Wildlife Conservation Society on this buoy system is helping make New York's coast safer for whales and exemplifies the proactive leading role Empire Wind's commitments and partnerships can play in safeguarding these majestic marine mammals.

You can access Equinor's buoy findings in near real-time here:
https://whalesofnewyork.wcs.org/
Check back often to see which whales have been detected!

Empire Wind 1's efforts to minimize construction impacts on marine mammals focuses on preventing vessel collisions with protected species, as well as reducing underwater noise from pile driving, which will be used to install the foundations for the turbines and the offshore substation.



Protecting marine mammals during construction

The foundations for Empire Wind 1's turbines, called monopiles, are installed through a process called pile driving. Once pile driving begins, Empire Wind 1 will implement several protective measures to reduce potential impacts of the project on marine mammals:

1. SEASONAL PILE DRIVING CLOSURE

No pile driving will occur from January through April. This seasonal pile driving closure will limit pile driving to months when North Atlantic right whales are least likely to be present. This seasonal closure is due to years of studies to track the migration patterns of whales in the New York Bight.

2. ACOUSTIC MONITORING

Real time acoustic monitoring detects marine mammals before they enter exclusion zones. Additional acoustic monitoring buoys will be deployed around the pile being driven, and will listen for whales and dolphins including the North Atlantic right whale. Pile driving cannot begin if whales or dolphins are detected within specific zones.

3. PROTECTED SPECIES OBSERVERS

Empire Wind 1 uses the latest marine mammal detection technology, along with independent, trained, NOAA-approved Protected Species Observers (PSOs), to make sure we detect marine mammals before they approach the construction area.

A minimum of 6 PSOs with high powered binoculars will be on the lookout for marine mammals before, during, and after pile driving. At least 3 PSOs will be on the installation vessel.

You can learn more about PSOs here: https://youtu.be/kDivxZW1yYY

4. CLEARANCE & SHUTDOWN ZONES

Independent and NOAA-approved PSOs monitor and document marine mammals and enforce clearance zones.

Clearance zones ensure no marine mammals are in the area before pile driving begins—if marine mammals are observed in the zone, pile driving is delayed until they leave the area.

In addition to the 10 km (6.2 miles) acoustic monitoring zone (**4A**), there is a 2 km (1.2 miles) clearance zone (**4B**) where no pile driving can start unless the zone is visible to PSOs and no whales are seen for at least 30 minutes prior to starting pile driving.

There is also a 1.5 km (0.9 miles) shutdown zone (**4C**) within which pile driving is stopped if a whale enters during construction, unless it presents a major safety or structural risk.

Finally, if a North Atlantic right whale is detected visually or through acoustic monitoring **at any distance** pile driving must stop until the animal has cleared the area.

5. NOISE-REDUCING BUBBLE CURTAIN

Before construction begins, a double bubble curtain is created by releasing air at the seafloor around the pile driving. This process creates two rows of air bubbles that absorb and deflect the sound.

6. SOFT START

All pile driving for Empire Wind 1 begins at reduced energy—known as a "soft-start," this gives marine mammals the opportunity to move away from underwater noise before pile driving activity is increased.

7. INFRARED CAMERAS

To assist PSOs, infrared cameras with image recognition software will automatically detect whales using state-of-the-art technology.

Have a question about Empire Wind?

Contact empirewind@equinor.com
To sign up for project updates, visit www.empirewind.com

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