

POTENTIAL ENVIRONMENTAL IMPACTS OF FLOATING OFFSHORE WIND IN CALIFORNIA'S FEDERAL LEASE AREAS

Impacts from Noise



MANY OCEAN SPECIES rely on sound to communicate, feed, navigate, and interact with their environment. Noise from some types of human activity has the potential to displace or harm marine and coastal species by affecting their behavior or causing physical injury.¹ The noise that floating offshore wind energy development will generate will vary during the different phases of pre-construction surveying, construction, operation, and decommissioning (See also Fact Sheet 2. Impacts to Marine Mammals from Pre-construction Surveys).

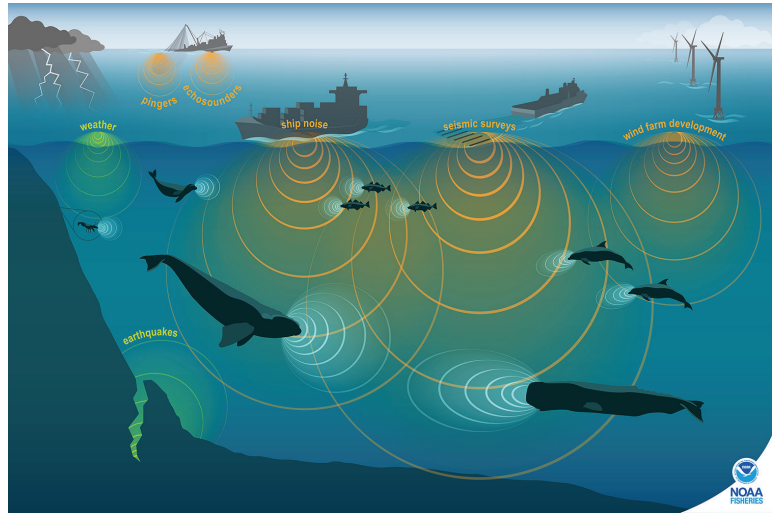


Research Shows

- **Construction noise will be generated by activities such as vessel traffic, cable installation, anchoring, and burial. These noises will be localized and temporary, but have the potential to overlap with the frequencies that marine mammals can hear and use to communicate.**^{2,3} The majority of floating offshore wind energy construction will occur in ports before turbines will be towed out to sea, so many of the noise impacts will be focused on bay and nearshore species.⁴
- **In fixed-bottom wind farms, the noise created from pile driving activities during construction is of greatest concern for displacement or injury of marine mammals,^{5,6} but these impacts can be largely avoided for floating offshore wind.**⁷ Some floating turbine configurations may use pile driving to set mooring line anchors, but the noise impact will be less than fixed-bottom wind farms and other low-noise techniques are available.⁷
- **The operation of an offshore floating wind farm will generate noise that is continuous and relatively low-level sound compared to natural sounds,^{5,8} although the exact characteristics will depend** on the number and type of turbines and local oceanographic and weather conditions.⁹ Operational noise is thought to deter seabirds and reduce collisions with offshore wind farms.¹⁰
- Operational noise from fixed-bottom wind farms in shallow nearshore environments typically does not exceed ambient background levels, which means the effects on species should be minor to negligible.^{5,11} Some marine mammals and fish may change behavior at close distances, but it is thought to be low risk for causing any physiological damage.^{3,5,12}

RESEARCH SHOWS CONTINUED

- There is little data on noise impacts from decommissioning, however, and any species that aggregate around turbines may be affected by ship noise or dismantling activities.⁷
- **Ship traffic is expected to increase across all phases of offshore wind energy development.⁷ Ship traffic noise, especially from larger commercial ships, can impact marine mammals and some fish by masking their ability to use sound** (for communication, navigation, feeding, etc.)¹ Floating offshore wind energy is expected to involve less offshore vessel traffic than fixed-bottom offshore wind farms because construction is done on shore and maintenance by helicopter is possible.⁹ In contrast, vessel noise increases may be higher for nearshore and bay species.
- **The ocean soundscape is complex. Long-term studies are needed to ensure that potential noise impacts from floating offshore wind can be separately understood from other ocean noise created by humans,** such as commercial vessel traffic.³



Credit: NOAA fisheries. The marine soundscape is made up of all sources that contribute sound to the environment. Soundscapes include sounds made by humans (anthropogenic; orange sound waves), the environment (natural sounds; green sound waves), and by biological sources (animals: marine mammals, fish, and invertebrates; blue sound waves).

References

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