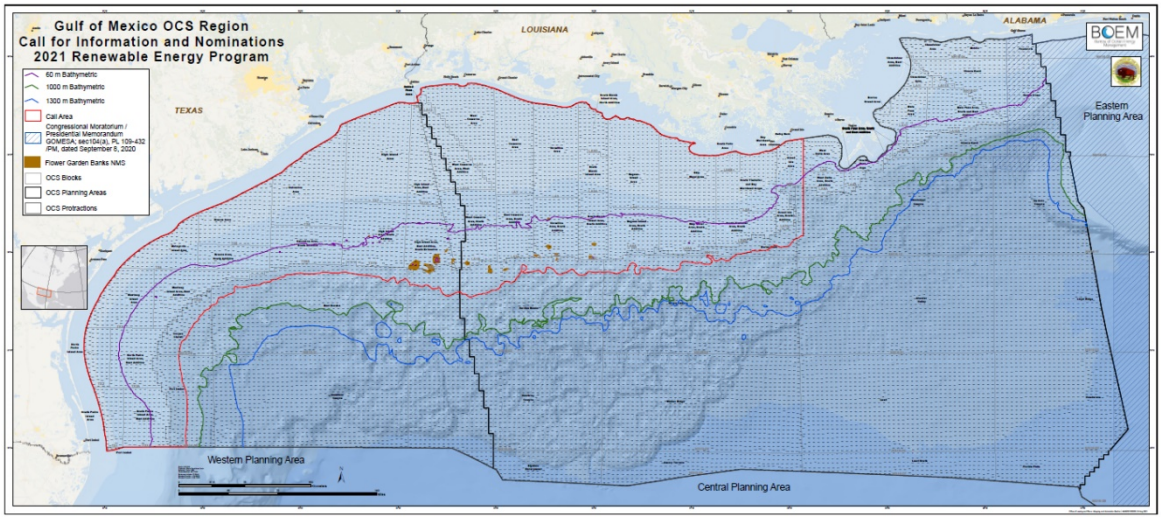
FAQ: Offshore Wind Siting in the Gulf of Mexico

Where could wind energy development occur in the Gulf of Mexico?

The Bureau of Ocean Energy Management (BOEM) is relying on input from industry, state and federal partners, the Gulf of Mexico (GOM) Intergovernmental Renewable Energy Task Force, stakeholders, and the public to inform a decision on what areas should be made available for wind leasing. In late 2021, BOEM published a Call for Information and Nominations (Call) to request information from the public and determine industry interest in commercial offshore wind energy development in the GOM. The Call Area is intentionally broad to afford flexibility in decision-making process and will likely be narrowed in later stages. The Call Area includes the area located seaward of the GOM's Submerged Lands Act boundary, bounded on the east by the north-south line located at 89.858° W longitude, and bounded on the south by the 400-meter bathymetry contour and the United States-Mexico maritime boundary established by the Treaty between the Government of the United States of America and the Government of the United Mexican States on the Delimitation of the Continental Shelf in the Western GOM beyond 200 Nautical Miles.

You can find the Wind Call Area details here: https://www.boem.gov/renewable-energy/state-activities/gulf-mexico-activities.



How will BOEM consider other uses of the GOM during the offshore wind development process?

Throughout the National Environmental Policy Act (NEPA) process and at multiple stages, BOEM evaluates past, existing, and likely future uses of the coastal and ocean environment for multiple-use conflicts and other potential impacts. This includes identifying and balancing impacts to other users of the GOM, such as commercial and recreational fisheries; military activities; vessel traffic; and oil and gas development.

BOEM is partnering with the National Oceanic and Atmospheric Administration's (NOAA) National Centers for Coastal Ocean Science (NCCOS) to adapt their Aquaculture Opportunity Areas Atlas tool for offshore wind siting in the GOM. This marine spatial planning tool will include up to date ocean user data and will assist BOEM in siting offshore wind energy areas in locations that minimize impacts to sensitive species and habitats, fisheries communities, and other marine industries.

How is BOEM engaging with the fishing community regarding offshore wind energy development?

BOEM engages with the fishing community directly through public comments submitted as part of the NEPA review process and indirectly by working with the Gulf of Mexico Fisheries Management Council and associated advisory panels (e.g., Shrimp Advisory Panel), the Gulf States Marine Fisheries Commission, the National Marine Fisheries Service (NMFS), fishermen's associations, and state-sponsored fisheries task-forces. Fishing is a nationally important industry and an important cultural aspect of coastal communities. BOEM is committed to regularly engaging with commercial and recreational fishermen to ensure we fully understand their concerns – ecological, cultural, and economic.

BOEM understands that wind energy development and the placement of wind turbines can be incompatible with certain types of commercial fishing and BOEM will continue to work with NMFS, industry, state governments, and the fishing community to better understand and address concerns. BOEM will also update and improve engagement practices by incorporating feedback received through our current outreach efforts.

Are there siting/design considerations and mitigations to address potential impacts to navigation and safety?

Yes, to ensure navigational safety all structures will have appropriate markings and lighting in accordance with United States Coast Guard (USCG) requirements for Private Aids to Navigation. Turbine locations will also be charted by the NOAA and may include a physical or virtual automatic identification system at each turbine.

A Navigational Safety Risk Assessment is required the be included in every offshore wind project's Construction and Operations Plan (COP), and is used by the USCG to evaluate the impact of the installation on other marine users and potential for it to interfere with vessels, aircraft, or other authorized users of the air space and the sea surface, water column, or sea bottom prior to approval.

In addition, BOEM can impose restrictions on development or require specific mitigation measures if necessary. As such, BOEM evaluates any recommendations regarding the placement of wind turbines and considers facility design alternatives that reduce potential impacts to navigation and safety through the environmental assessment process. For example, based on input from stakeholders, wind energy facilities along the U.S. Atlantic coast have adopted a uniform 1 x 1 nautical mile grid turbine layout to allow for safe, predictable navigation of vessels through offshore wind farms.

FAQ: Navigational, design, and decommissioning concerns for offshore wind facilities

Will areas in and around wind turbines and other structures exclude vessel traffic and fishing activity?

BOEM does not have the authority to restrict vessel traffic in and around offshore wind facilities, and the USCG has stated that safety zones and buffers would be evaluated on a case-by-case basis. The USCG has also indicated that they intend only to implement restrictions during construction, but specific final determinations will be made at a later stage when more information is available. As an example, the USCG implemented a 500-yard safety zone around the wind turbine locations at Block Island Wind Farm during that project's construction activities.

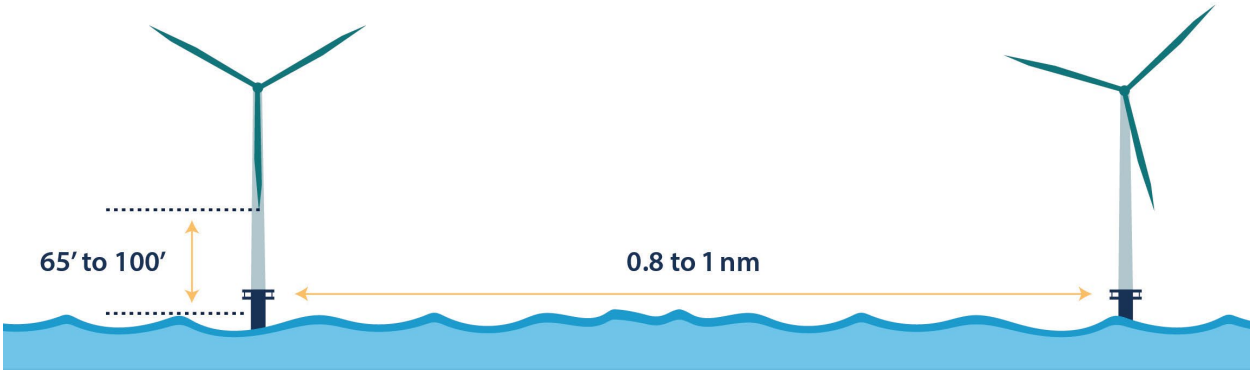
Will electrical transmission cables be buried under the seafloor?

The standard commercial practice is to bury submarine cables 3-10 ft deep in waters shallower than 6,562 ft (2000 m). However, cable depths may vary by project and depending upon bottom type and other factors. For example, cables may be buried as deep as 32 ft under the seabed to mitigate local hazards, depending on water depth and bottom type. Other mitigation measures include adding protective covering, such as concrete mattresses (concrete block sections connected by metal braided cables).

What is the average height above sea surface and distance between wind turbines?

Project parameters, such as the turbine height, vary from project to project and are described within the Construction and Operations Plan (COP). In the operator's COP, an 'air gap' (the distance between the mean high sea level and the lower sweep of the turbine blades) is also defined and fishers and other offshore users may use this information to ensure avoidance of the blades. Based on current technology, the lowest point of the rotor sweep would be 65-100 ft above the surface. If taller turbines are installed, rotor sweep would be approximately 200 ft above the surface.

Spacing between turbines is determined on a project-by-project basis weighing multiple variables, including minimizing wake effects between turbines. Current projects along the U.S. Atlantic coast propose spacing of 1 x 1 nautical miles between turbines to optimize safety for vessels navigating through offshore wind facilities.



How long is the typical lifespan of an offshore wind farm and will structures be removed after the expiration of a lease?

A typical offshore wind lease is valid for approximately 30 years. Before facilities may be installed under an approved COP, a lessee must provide financial assurance that covers the decommissioning of all structures, cables, and obstructions.

Within two years of cancellation, expiration or other termination of the lease, the lessee would be required to remove all devices, works and structures from the site and restore the leased area to its original condition. Bottom-founded structures and related components are typically removed at least 15 feet below the mudline to avoid interference with future lessees and other activities in the area. Rights-of-way facilities (such as electrical transmission cables) may stay in place as long as they are being used and properly maintained, pending BOEM approval.

Do cable from floating windmills heat the water column?

Unburied cables have a limited ability to heat the water column because constant water flow dissipates any generated heat. Likewise, buried cables have a negligible capacity to heat the water column. Lastly, impacts to marine life from the heat created by cables are expected to be negligible. Design and installation mitigations may be employed to reduce potential heating impacts, such as cable burial and increasing conductor diameter.

FAQ: Potential impacts to commercial and recreational fisheries from OSW development in the Gulf of Mexico

How does BOEM assess impacts to fisheries from offshore wind development?

BOEM analyzes proposed activities on the Outer Continental Shelf (OCS), including offshore wind, for potential impacts to marine species and habitats, multiple use conflicts, and access to OCS resources. Assessments include National Environmental Policy Act (NEPA) reviews at various stages of development and consultation with federal agencies and tribal governments. In some cases, these processes include public comment and coordination with stakeholders, industry, and regional fishery management councils. Not all activities warrant the same level of review or engagement.

BOEM scientists use the best-available science to inform their analyses. This information is typically gathered from publicly available peer-reviewed publications and state and federal government reports. BOEM also funds research to investigate the effects of offshore wind and other OCS exploration and development activities. For example, BOEM has funded studies investigating potential effects to marine species from electro-magnetic fields and underwater sound and impacts to commercial and recreational fisheries because of offshore wind development. Based on the information accumulated through research, BOEM scientists identify the types of activities that could affect various species and physical resources or impede other activities, evaluate the potential for impacts, and consider the range of mitigations that could be used to reduce or avoid potential impacts. This information is used to advise leadership and inform decision-making.

For a list of completed environmental studies related to offshore wind impacts to fisheries (including links to final reports), please see https://www.boem.gov/renewable-energy-research-completed-studies.

If fishermen are displaced or economically impacted, will compensation be available from the Federal government? If so, how?

There currently is no mechanism for BOEM to directly compensate fisherman for economic impacts related to displacement or otherwise reducing access to a particular species or habitat. The Energy Policy Act of 2005, which granted BOEM lead management authority for marine renewable energy projects on Federal offshore lands, did not establish a compensation fund for commercial fishing gear damaged or lost as a result of obstructions arising from renewable energy projects. The Fishermen's Contingency Fund (authorized under the Outer Continental Shelf Lands Act, the fund is managed by NOAA) compensates U.S. commercial fishermen and other eligible citizens and entities for property and economic loss caused by obstructions specifically related to oil and gas development activities on the OCS and does not extend to offshore wind development.

However, in accordance with NEPA, BOEM must identify and analyze environmental, economic, and social impacts related to the approval and construction of offshore wind facilities. Mitigation measures to reduce potential impacts are evaluated in this process and may be required as a condition of approval of a wind lessee's Construction and Operations Plan (COP). Non-governmental compensation might become available. For example, some U.S. Atlantic offshore wind developers have established fisher compensation funds to address losses.

What are the effects of electromagnetic fields (EMFs) and heat from the energized cables?

EMFs are physical fields produced by electrically charged objects. Operation of turbines does not generate EMF; however, once the cable becomes energized it will produce a magnetic field. Cables will be buried beneath the seafloor and are wrapped in a sheath that eliminates direct electric fields and reduces magnetic and induced electric fields. The EMF decays quickly with distance from the cable and burial helps minimize potential exposure.

BOEM has completed several studies related to understanding the effects of EMFs on fish and invertebrates in other regions of the U.S. Current research suggests that, while some species (e.g., such as skates, sharks, and lobster) are sensitive to EMF, detrimental effects to populations are not expected. Some marine species are observed to respond to EMF, but the fields do not act as a barrier to movement.

Buried cable would generate sufficient heat to raise the temperature of the surrounding sediments by as much as 10 to 20°C above ambient temperatures within 1.3 to 2 ft of the cable. However, typical cable burial depths would limit potential exposure to substrate heating effects. These factors will be more fully considered in the NEPA analyses conducted for proposed activities when more detailed information is available.

What are the potential impacts of underwater noise from offshore wind development to fish and invertebrate species?

A wide range of sounds can be generated throughout the life of a wind energy development project, each with different relevant characteristics. Most of the sound sources used during high-resolution geophysical surveys are out of the hearing range of fish and invertebrates. In addition, many of these sources have very narrow beam widths and very short pulse durations, meaning it is highly unlikely that they would affect nearby fish or invertebrate fauna. The sounds generated during percussive pile-driving, however, are high intensity and some of the acoustic energy overlaps with the hearing range of fishes and invertebrates (which is generally < 1 kHz). Once turbines are operational, low-level continuous noise is generated but this is very quiet, generally quieter than natural wind-generated ocean noise, and is unlikely to affect marine life.

BOEM takes into account sound and exposure-related effects during the NEPA process. For additional information, please refer to our BOEM Center for Marine Acoustics website: Center for Marine Acoustics | Bureau of Ocean Energy Management (boem.gov).

What are the potential hydrodynamic impacts of offshore wind developments?

The underwater infrastructure for offshore wind facilities may impact the hydrodynamics within and around wind farms. Above-water structures may affect hydrodynamics by changing the wind field. Current modeling and observational studies of offshore wind developments have identified potential impacts resulting from changes to local or regional hydrodynamics through modification of oceanographic parameters including turbulence, mixing, and vertical stratification of the water column. The magnitude of the effects depends on the type and size of turbine foundation (for example, a jacket foundation type is expected to have less of an effect than a monopile foundation).

A limited number of studies have documented localized impacts (i.e., within an offshore wind facility footprint) on fishes due to sediment resuspension or sedimentation, temperature change, nutrient transport, larval transport, and substrate availability. These studies generally conclude that hydrodynamic impacts on fish and invertebrate communities cannot be distinguished when compared to natural variability.

How does BOEM consider cumulative impacts such climate change?

BOEM analyzes cumulative impacts such as those relating to climate change and regional stressors (e.g., hypoxic zones, fishing activity, oil spills) through the NEPA process. BOEM utilizes the best available science when conducting these analyses and works with other federal agencies such as the NMFS, the Gulf of Mexico Fisheries Management Council, and associated advisory panels and technical committees to obtain additional information needed to appropriately incorporate cumulative impact considerations into the environmental assessment process.