



COASTAL VIRGINIA OFFSHORE WIND

Monopile Foundations



Coastal Virginia
Offshore Wind



Steel monopile foundations to be installed on the Coastal Virginia Offshore Wind commercial project are being delivered and staged at Portsmouth Marine Terminal.

KEY HIGHLIGHTS

- Up to 272-feet long, almost the size of a football field (~90 yards)
- 31 feet in diameter, about the size of 2 mid-size sedans parked bumper-to-bumper
- Average weight nearly 1,500 tons, which is more than 6 Boeing 747s
- Foundations are manufactured by EEW SPC and will be installed by DEME Offshore US.

QUESTIONS & ANSWERS

What are monopile foundations?

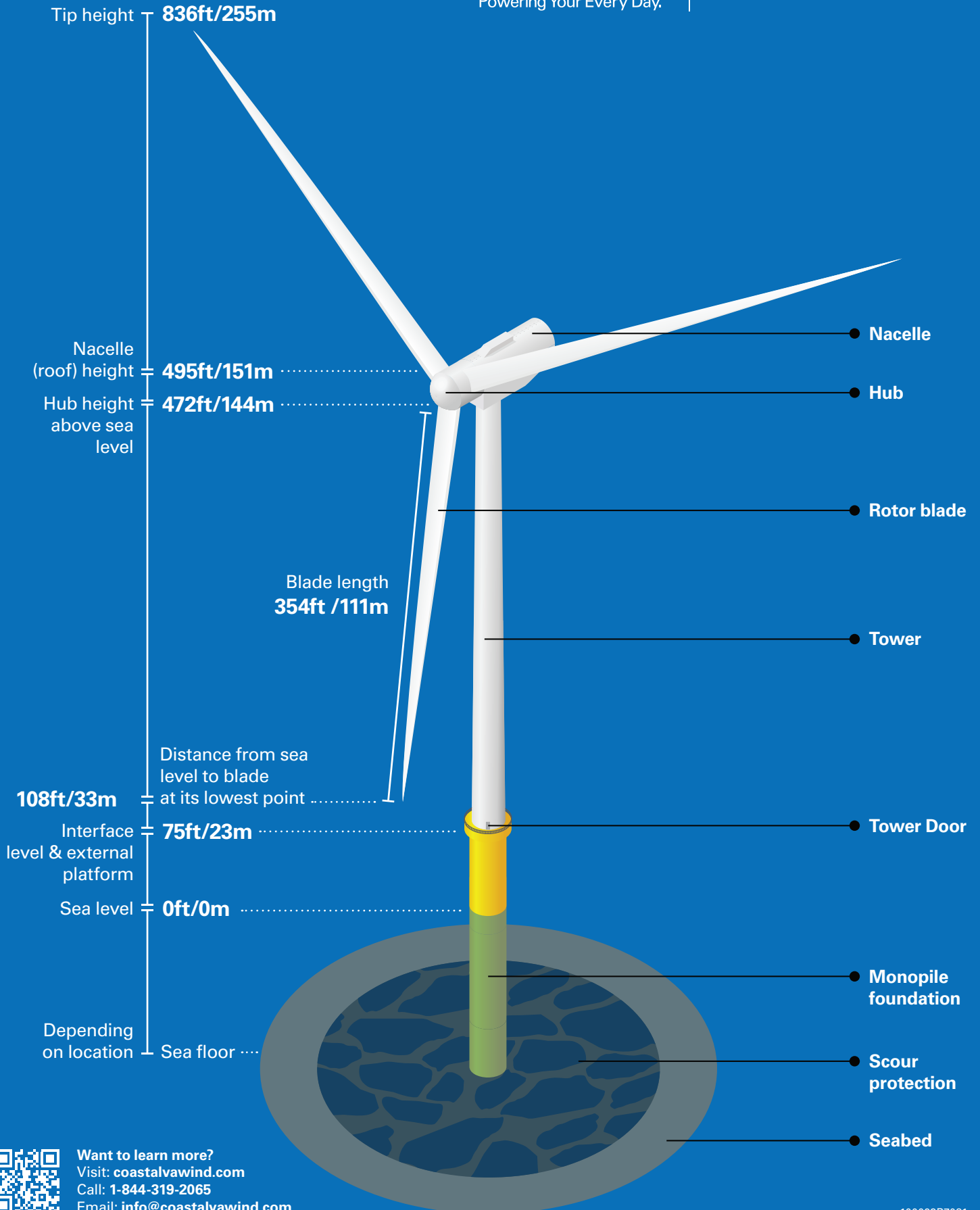
- Monopile foundations are the single vertical, steel cylinder pile driven into the seabed to support the wind turbine generator. They are also the entry points for the inter-array cables that transmit the generated power from the turbines to the offshore substations.

How are they made?

- The plate steel is placed in rollers to achieve the curved shape. The curved pieces are then welded together from the inside and outside to create a “can,” which are then joined together.
- There is a flange installed on the top of the monopile, and entry holes for cables along the monopile. A portion of the monopile is primed and coated (the uncoated portion will be beneath the seafloor). Additionally, the monopiles are marked for construction and operational purposes (depth for insertion, cardinal directions, etc.).

How are they installed?

- On the installation vessel, the monopile is placed in a large mechanism called the “gripper,” which upends the monopile into the vertical position. With the assistance of the vessel’s large crane, the monopile is lowered to the seafloor.
- Once the monopile is in position, we will utilize two methods to reach the target depth. One is vibro-hammering, a method that vibrates the monopile causing the seafloor to soften, which allows the monopile to be slowly pushed downwards.
- We will also utilize a hydraulic impact hammer. Once the monopile reaches a particular target depth, we will switch to the impact hammer, a straight directional hammer to drive the monopile to its target depth.
- During the installation process, we will deploy a double big bubble curtain, a ring of bubbles around the installation area created by pressurized air to dissipate the sound power by breaking up the sound waves as they pass through the wall of bubbles. We will also employ PSO (Protected Species Observers) to ensure marine mammals and other marine life are not close when construction activities are commencing.



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Visit: coastalvawind.com
Call: 1-844-319-2065
Email: info@coastalvawind.com