

WIND AT A GLANCE

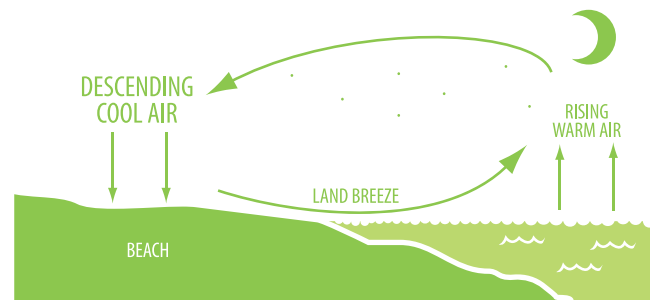


Wind energy provided about 2 percent of all energy consumed in the United States 2022.

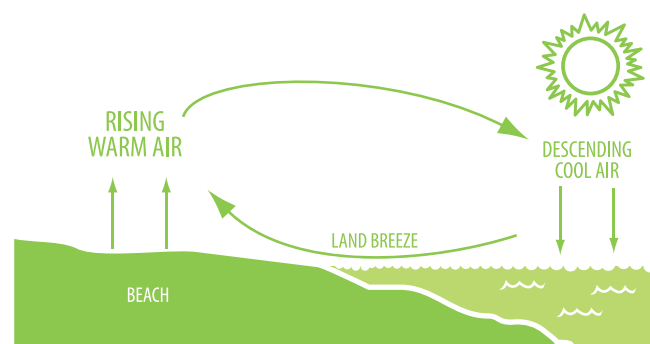
WHAT IS WIND?

Wind is simply air in motion. It is produced by the uneven heating of the Earth's surface by energy from the sun. Since the Earth's surface is made of very different types of land and water, it absorbs the sun's radiant energy at different rates. Much of this energy is converted into heat as it is absorbed by land areas, bodies of water, and the air over these formations.

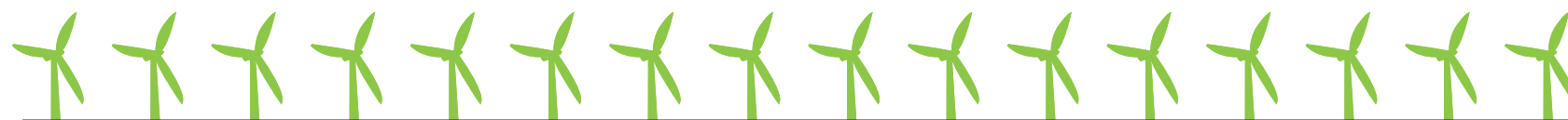
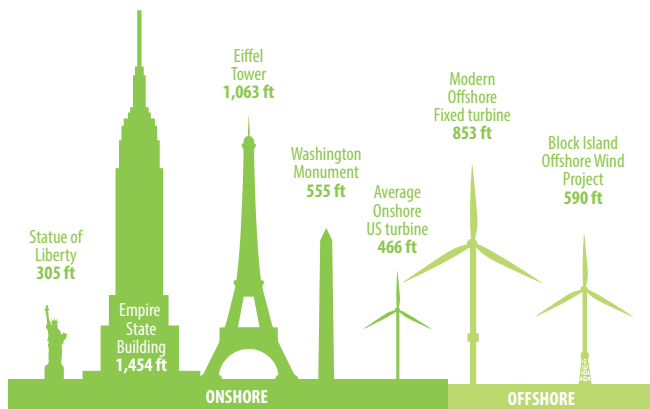
LAND BREEZE



SEA BREEZE



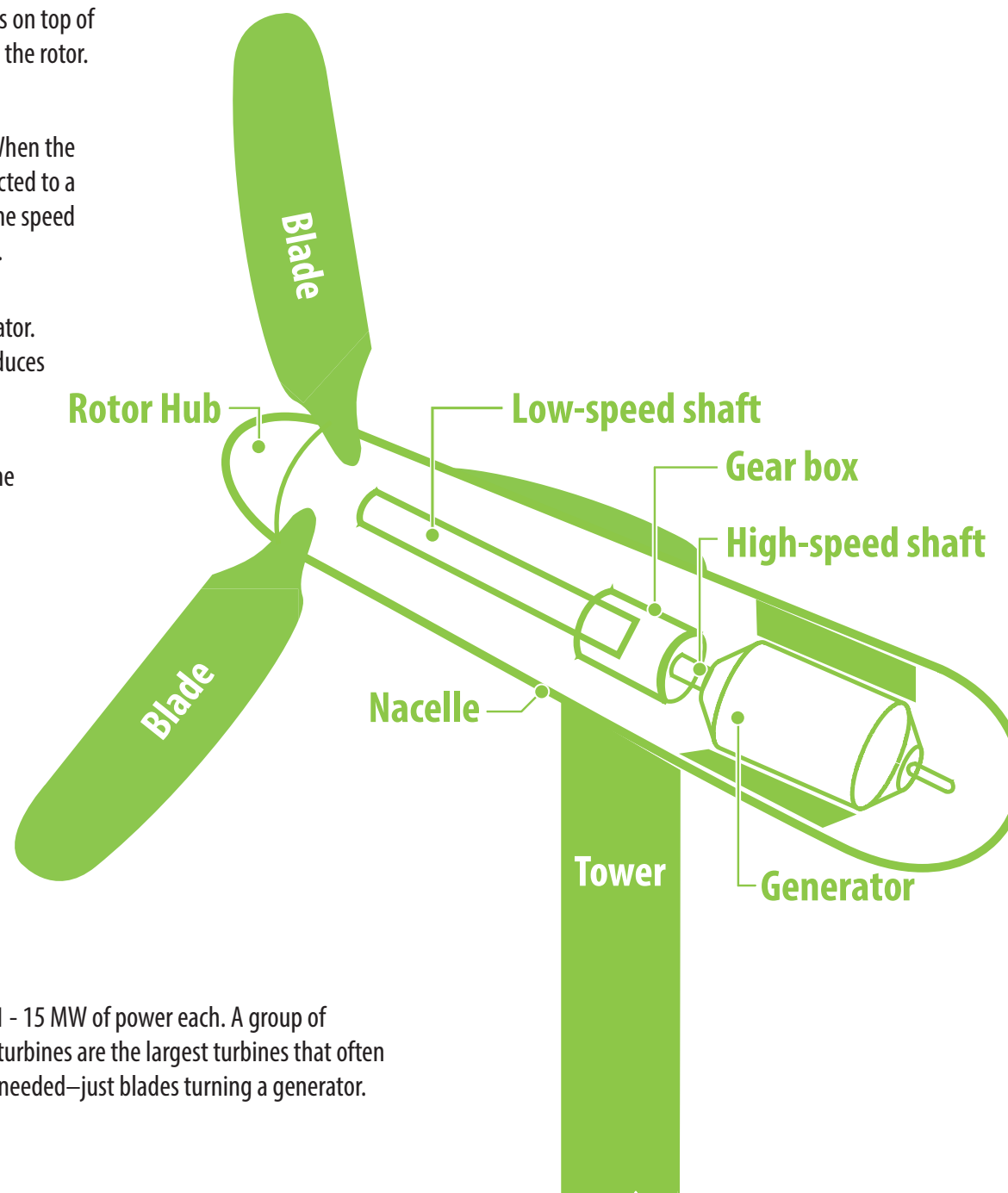
TURBINE SIZE



WIND TURBINES

Wind is harnessed and converted into electricity using wind turbines. They convert the wind's kinetic energy into motion energy that generates electricity. The following steps illustrate how.

- 1 The wind blows and pushes against the blades on top of the tower. The blades catch the wind and spin the rotor.
- 2 The rotor is connected to a low-speed shaft. When the rotor spins, the shaft turns. The shaft is connected to a gear box. The gears in the gear box increase the speed of the spinning motion on a high-speed shaft.
- 3 The high-speed shaft is connected to a generator. As the shaft turns inside the generator, it produces electricity.
- 4 The electricity is sent through a cable down the turbine tower to a transformer and then to a transmission line.
- 5 The high-speed shaft is connected to a generator. As the shaft turns the generator, it produces electricity.
- 6 The electric current is sent through cables down the turbine tower to a transformer that changes the voltage of the current before it is sent out on transmission lines



Large turbines can generate anywhere from 1 - 15 MW of power each. A group of turbines is called a wind farm. Offshore wind turbines are the largest turbines that often use a direct drive design where no gearbox is needed—just blades turning a generator.

TOP STATES FOR WIND-GENERATED ELECTRICITY



TEXAS



IOWA



OKLAHOMA



KANSAS



ILLINOIS