

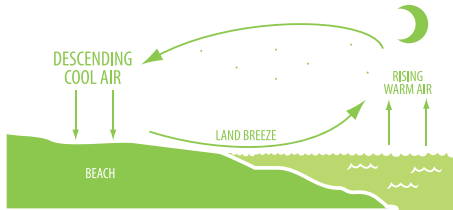
# WIND AT A GLANCE



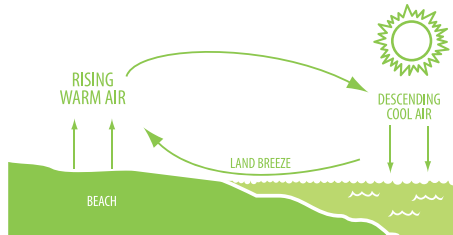
## WHAT IS WIND?

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.

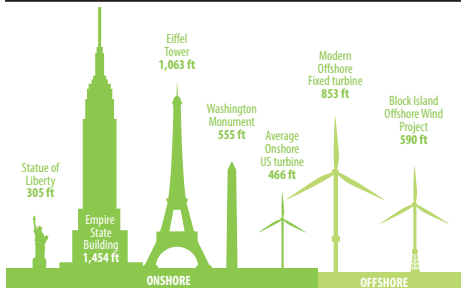
### LAND BREEZE



### SEA BREEZE



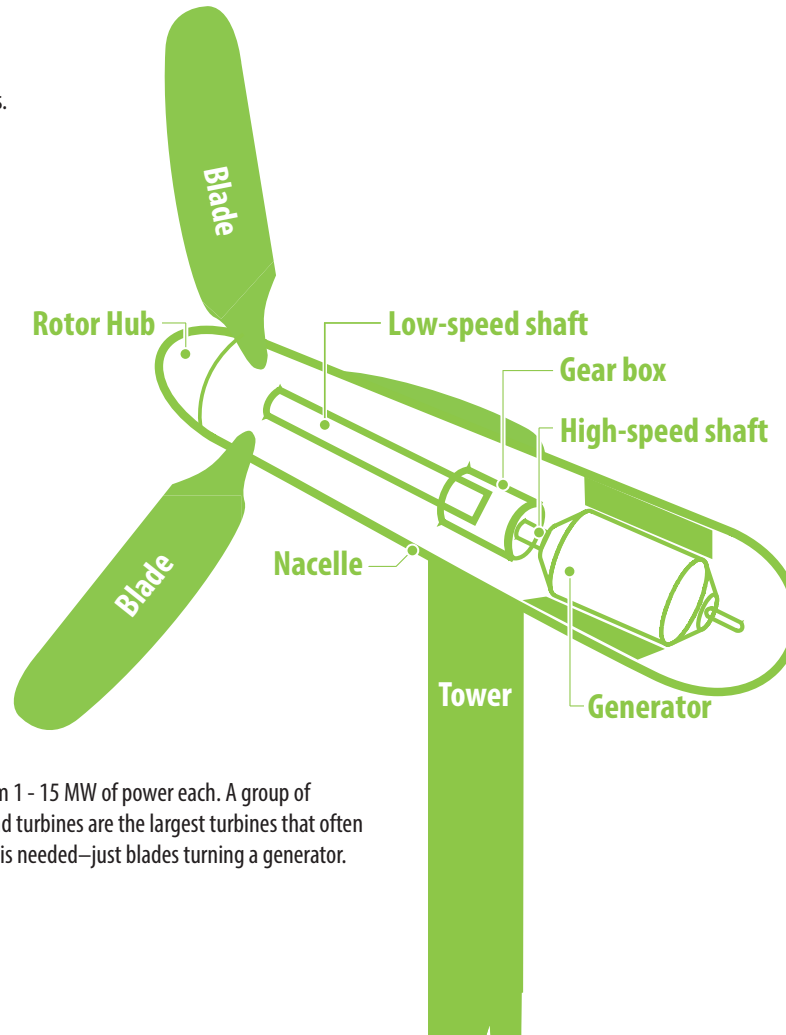
### TURBINE SIZE



## 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 moving air spins the turbine blades.
- 2 The blades are connected to a low-speed shaft. When the blades spin, the shaft turns.
- 3 The low-speed shaft is connected to a gear box. Inside, a large slow-moving gear turns a small gear quickly.
- 4 The small gear turns another shaft at high speed.
- 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 WIND STATES



TEXAS



IOWA



OKLAHOMA



KANSAS



ILLINOIS