

**HAWAI'I  
STATE  
ENERGY  
OFFICE**

# What is Wind Energy?



**Horizontal-axis:** Spins like an airplane propeller.



**Vertical-axis:** Spins like a top.

Wind energy comes from the movement of air. We use wind turbines to turn this movement into electricity.

There are two types of wind turbines: horizontal-axis and vertical-axis. Nearly all wind turbines in Hawai'i are horizontal-axis.

## The amount of energy a wind turbine can produce depends on:



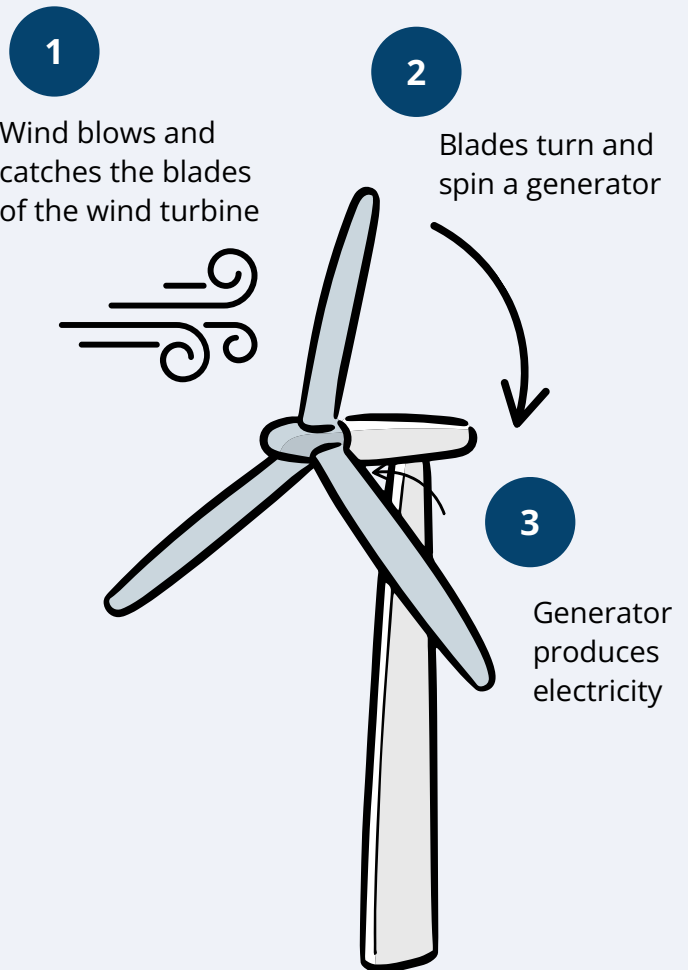
**Height:** Winds are stronger and more consistent the higher you go



**Location:** Certain places get more wind than others



**Blade Shape:** Longer blades catch more wind



**About 6.2% of Hawai'i's electricity came from wind in 2024.**

## Where Can We Harness Wind Energy?

Wind energy can be used in lots of places. In Hawai'i, wind energy is the most productive on ridgelines and offshore.

Wind energy projects need space between turbines and can take up lots of land. Luckily, the land between turbines can still be used for things like agriculture, ranching, and solar energy, all of which are done in Hawai'i.



Ridgelines - Mauka



Offshore - Makai



## Wind Energy and Hawai'i's Wildlife

In Hawai'i, wind projects have to consider protected indigenous birds and Hawai'i's only indigenous land mammal, the 'ōpe'ape'a, also known as the Hawaiian hoary bat.

Hawai'i's regulations require wind projects to monitor, minimize, and mitigate any potential harm to these species.

## Wind Energy: Key Takeaways



**Renewable:** As long as there is wind, we can make energy. Properly maintained equipment can make electricity for 20-30 years or more.



**Better for the Environment:** Does not pollute the air or water once installed, unlike fossil fuels. Wind turbine production requires industrial manufacturing, and when turbines no longer function properly, they must be properly disposed of or recycled.



**Low Start-up Cost:** Wind is now one of the lowest-cost ways to generate energy. Power is generated at a set price for the entire project term, which means no price fluctuations.



**Intermittent:** When wind speeds are too low or too high, wind turbines can't generate energy.



Learn more about wind energy at [www.energy.hawaii.gov](http://www.energy.hawaii.gov)

