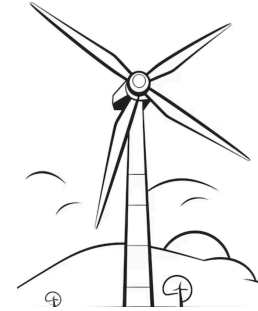


Title: Speed and Energy

Name _____

Phenomenon: Watch the video of the windmills or look at the picture:
What questions do you have?

- 1.
- 2.



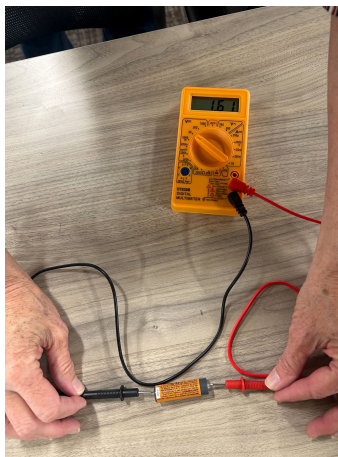
Introduction:

Windmills can be seen in many places today in Utah. They are part of the energy production in Utah that powers our home, school, hospitals and businesses. Windmills are located in areas with the most wind. In this activity, you will test how the speed of the wind affects the energy a windmill can produce. You will finish this lesson by constructing an explanation to describe the cause-and-effect relationship between the speed of an object and the energy of that object.

Materials: Windmill motors with blades, “leads” with clamps, AA batteries, fans or blow dryers

Procedures:

1. Start by placing the leads by taping them in place one on each end of the AA battery. Set the voltage on the voltmeters to 20 by turning the dial to the left. Place one end of each lead in the black and red areas on the voltmeter. The dial will show how much energy the battery is producing:



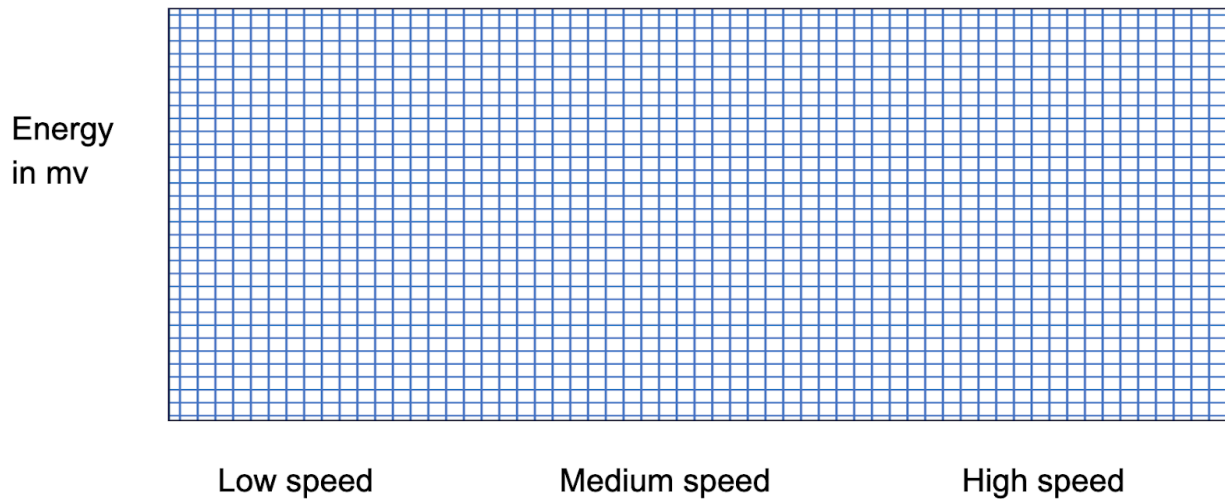
2. Your windmill will transfer the speed of the moving air into a form of energy (electricity). Find the small openings on the sides of the motor to clip the leads to.

3. Place a blade on the battery and set the voltmeter to 200. Have one team member blow on the blade and see if the dial on the voltmeter moves.
4. Use a fan as a “wind” source to test the amount of electricity created by different speeds of wind. Each fan has speed adjustments: low, medium and high.
5. Hold your windmill the same distance from the fan for each test.
6. Test your windmill on all three speeds and write down the voltage for each. Do not change the blade until all three speeds are finished. If you have time, change the blade for a new set of tests.

Data:

Blade Type (draw)	Energy from Low-speed fan	Energy from Medium-speed fan	Energy from High-speed fan

Bar Graph of Data



Claim - Evidence - Reasoning

Summarize your experiments.

State your **claim** by telling what happens to the amount of energy produced when the wind speed is increased. Use the words: speed, energy

List your **evidence** of why this happened.

Explain your **reasoning**. Use cause and effect in your sentence.