

# Gust: Lesson Plan

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Recommended grades: 4-5

## Lesson Preparation

### Materials:

- *Gust* book
- Picture of windmill and wind turbine

### Anchor Vocabulary:

- energy
- renewable energy
- wind turbine

### Correlated Science Standards: Earth & Human Activity

*4-ESS3-1:* Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.

*5-ESS3-1:* Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

## Lesson Launch

When does the word “energy” make you think of? What is energy? (*Defined as the “ability to do work” - it is what makes things move, makes something happen, or causes changes. It is another word for power.*) Anything happening around us is happening because of energy. Energy makes machines work. It makes living things grow, even moving your hand requires energy.

Energy exists in many different forms. Light, heat, electricity, sound, and motion/mechanical energy are all forms of energy. What does it mean for energy to be “renewable”? What is renewable energy? (*Renewable energy is energy produced from sources like the sun, water, and wind. These are naturally replaced by nature and will not run out.*)

Renewable energy is also called “clean energy” or “green energy” because it doesn't pollute the air or water; unlike most energy that is created by fossil fuels like coal, natural gas, and oil right now. One example of a renewable energy source is wind energy. What do you know about wind energy? What do you think of when you think of wind energy?

Both windmills and wind turbines use wind energy. They are similar but also different:

- Windmill: Makes mechanical energy (e.g. to pump/move water, mill grains into flour, drive machines) and has to be used directly onsite or nearby.
- Wind turbine: Converts/changes wind energy into electricity/electrical energy and can be stored and used elsewhere.

Today we are going to read a book about a wind turbine called *Gust*. *Gust* is the true story of how a Milwaukee city building became fully energy independent, told from the perspective of the actual wind turbine at Port Milwaukee. Do you think this is a fiction or a nonfiction text? (*Fictional telling of a true story. It is fiction because it was an imagined story line. The story is told from the perspective of a personified wind turbine - Gust was given characteristics of a person but wind turbines cannot talk. It does have a nonfiction text feature that we'll read at the end though.*)

Let's read to see. While we read, I want you to think about: What did I learn/infer can be true about wind turbines [from this book]? (Read *Gust*.)

## Lesson Closing

After reading, consider discussing, prompting students to reflect in writing, and/or creating a KWL chart.

- How is the wind turbine at Port Milwaukee, Gust, from this story similar or different from other wind turbines you've seen or know about? (*Gust is half the size, in a city instead of a rural area, by himself instead of in a wind farm*)
- What did you learn/infer can be true about wind turbines [from this book]? (*Examples of learning: wind turbines can be different sizes, can be in/near a city, can stand by themselves (not always in a wind farm), use wind to create power/electricity for buildings & homes, wind energy/power is a renewable energy*)
- What questions/wonderings do you still have? (*Examples of wonderings: why did they put this wind turbine by a lake? why is this wind turbine by itself? how does size impact electricity/power output? how does a wind turbine create electricity? what are other types of renewable energy?*)
- How might wind turbines be positively/negatively impactful? Why are they important? (*Answers vary*)

## Lesson Extension Options

### Reading:

- Read connected texts to do further research into a wondering or explore a line of inquiry (e.g. a different renewable energy source like solar energy)

### Writing:

- Write a book review: Why do you recommend this book? And for who?
- Opinion writing: Are wind turbines good or bad? List the advantages/disadvantages and take a stance

### Science:

- How it works: Analyze a wind turbine graphic/animation (example [here](#)) and create a diagram of how it works
- Experience it: Take a 360° tour of the inside of a wind turbine (examples [here](#) or [here](#))
- Experiment with wind power: [Make a pinwheel wind turbine](#)