Check This Out!

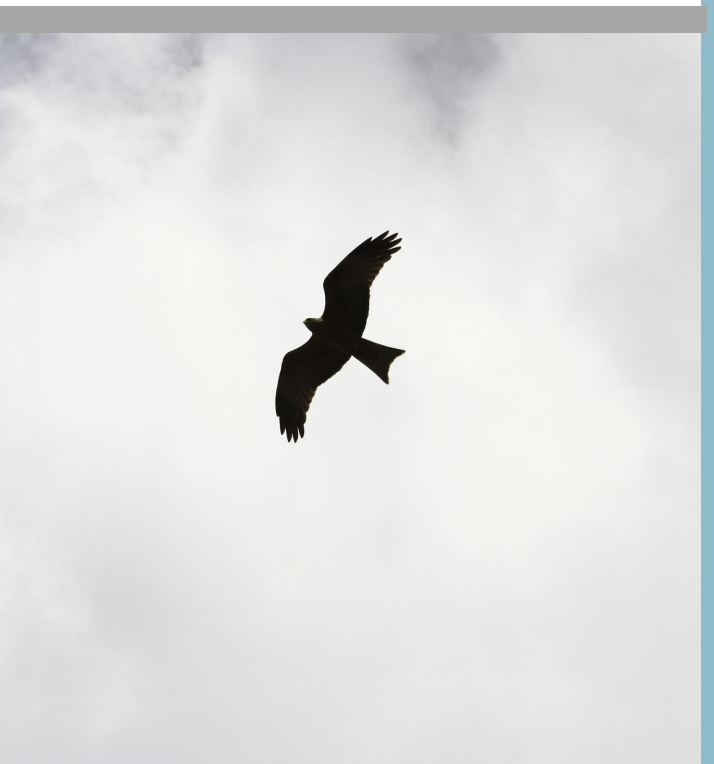
Resources Available with your BFL Card

Books

- *The Boy Who Harnessed the Wind* by William Kamkwamba
- *Energy Island: How One Community Harnessed the Wind and Changed the World* by Allan Drummond
- *Catch the Wind, Harness the Sun* by Michael J. Caduto

Video

- Wind Power- A Renewable Energy Source (Kanopy)
- Green Careers: Clean Energy - Wind Power (Kanopy)
- Wind Power and Electricity (Kanopy)



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BFLBuildingChallenge
#BFLCreativeKits

Exploring

Wind Energy

"So many things around you are reusable. Where others see garbage, I see opportunity."

-WILLIAM KAMKWAMBA

THE BOY WHO HARNESSED THE WIND

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WHERE DOES WIND COME FROM?

Wind is the movement of air caused by the uneven heating of the earth caused by the sun and the Earth's rotation.

WHAT IS WIND ENERGY?

Wind energy is a renewable energy technology that uses the wind's kinetic energy to generate electricity. Once the electricity is created, it can be used right away, through an electrical grid, or stored for future use.

THE HISTORY OF WIND ENERGY

Humans have harnessed the power of wind energy for thousands of years.
Over 5,000 years ago, wind-powered boats carried cargo and people along the Nile River. Ancient engineers used a series of windows and thin slats, natural ventilation, to provide cool breezes inside buildings. Heron of Alexandria, the ancient Greek engineer, is credited with designing the world's first wind mill (c. 10-85AD)

ADVANTAGES AND CHALLENGES

✓ Wind cannot be used up; it occurs naturally	✗ Wind turbines can kill bats and birds
✓ Wind is a clean source of fuel	✗ The initial cost to build wind farms is expensive
✓ Wind is generated all over the planet and wind energy can be generated anywhere (economically)	✗ Onshore wind farms require many acres of land
	✗ Offshore wind farms may harm marine ecosystems

BUILDING CHALLENGE #1

Build a Wind Turbine

Brainstorm

What are some issues you may run in to? What may happen if a strong gust of wind hits your turbine? How will you make your turbine blades function? What blade design do you think will work best for your turbine and why?

Test

What were some challenges you faced while testing your turbine? How can I improve my design?

Build

Share your final build with us! #BFLBuildingChallenge

BUILDING CHALLENGE #2

Build a Wind Powered Vehicle

Brainstorm

What will you use to capture the wind? What are some issues you may run in to?

Test

What were some challenges you faced while testing wind powered vehicle? How can I improve my design?

Build

Share your final build with us! #BFLBuildingChallenge

Further Questions to Explore...
What is the definition of renewable energy?
What are other examples of renewable energy?
What is the definition of kinetic energy?

Further Questions to Explore...
What are other advantages/challenges of wind energy?
What would YOU use wind energy for?
How would you design a wind turbine?

Further Questions to Explore...
What are some ways we can minimize the environmental impact of wind farms?
How do animals (birds) and nature (seeds) use wind?

HOW DO WIND TURBINES WORK?

Wind turbines are tall towers with blades on the top that rotate. When the wind turns the blades, the blades turn a generator. The generator then creates electricity. To produce more electricity, multiple wind turbines are set up in large groups called wind farms.

To view a video from National Geographic of how wind turbines generate clean energy, visit https://www.nationalgeographic.org/video/edu-wind-turbines/?utm_source=BibblioRCM_Row

DID YOU KNOW?

There are wind farms located in New Hampshire! There are currently wind farms located in Antrim, Lempster, Millsfield, Dixville and Groton, New Hampshire. The electricity generated by these wind farms is sold to outside utility companies.

FOR PARENTS/EDUCATORS

Continue the conversation...
Talk about the advantages and challenges of wind energy in our local communities as well as globally. Where do you stand on the topic of using wind for energy? It may be different than your child's stance. That's ok! Learn together and open the conversation up to explore all of the viewpoints of this topic.

For more information and current events regarding wind energy, visit

https://www.nhpr.org/term/wind-farms#stream/0

https://www.nrel.gov/wind/news.html

https://www.energy.gov/science-innovation/energy-sources/renewable-energy/wind

Information in this pamphlet provided by
https://www.nationalgeographic.org/encyclopedia/wind-energy/