



## Minor Challenge Set #3

**STEM Field:** Environmental Science

**Level:** Junior

**Challenge Name:** The Power of the Wind

**Project Cost:** 0 USD

### Materials Required:

- A computer with access to the internet

### Duration:

- This challenge takes approximately an hour to finish, however, the time guideline is an estimation only, and students and mentors can complete the tasks around their schedules

## Introduction:

What do you use electricity for? If you use a lamp to read your book at night, you're using electricity! If you use your computer to watch fun videos of cats, you're using electricity!

But how do we make electricity?

We can make electricity in many different ways. One way is by burning coal.

But did you know we can create electricity using **wind**? We can build **wind turbines** that spin in the wind to generate electricity.

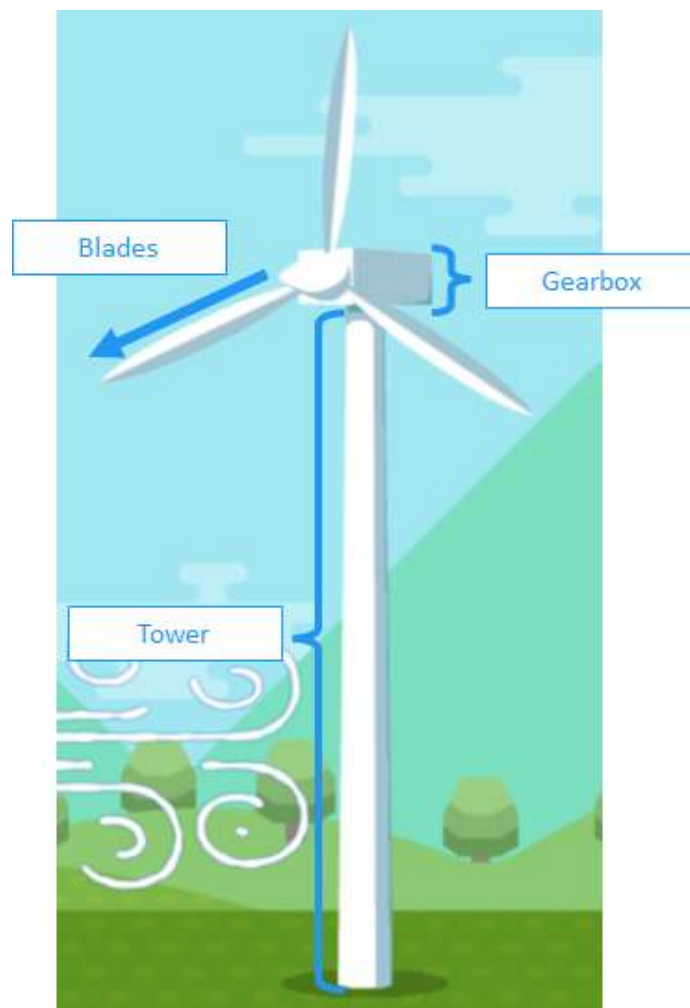
A wind turbine has 3 parts:

- The tower
- Blades
- And a gearbox.

The **tower** holds the turbine up.

The **blades** spin round and round in the wind.

The **gearbox** uses the spinning blades to create electricity.



In this activity, you will play the game “Fidgit Power”. You will need to put on your best safety helmet to build wind turbines to generate electricity for all of Fidgitville!

# Instructions:

- 1) Head to this website and click the play button to begin:  
[https://pbskids.org/designsquad/games/fidgit\\_power/](https://pbskids.org/designsquad/games/fidgit_power/)

**Note:** This is a free-to-use website and does not require registration.



For each level you will need to build a wind turbine to create enough electricity to power a building in Fidgitville.

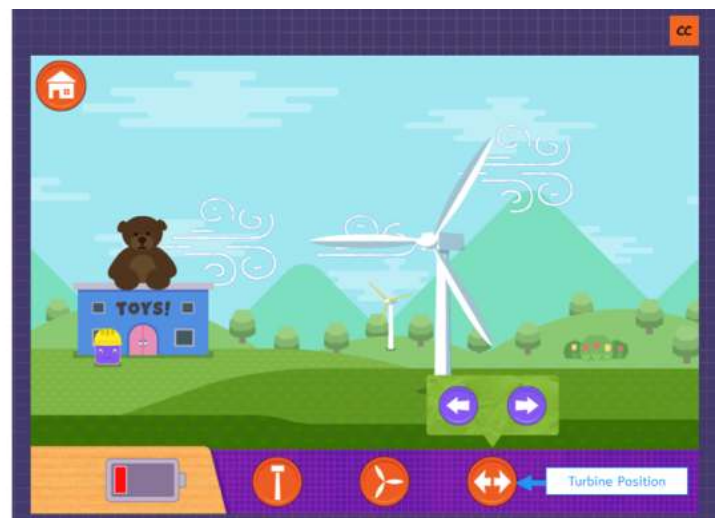
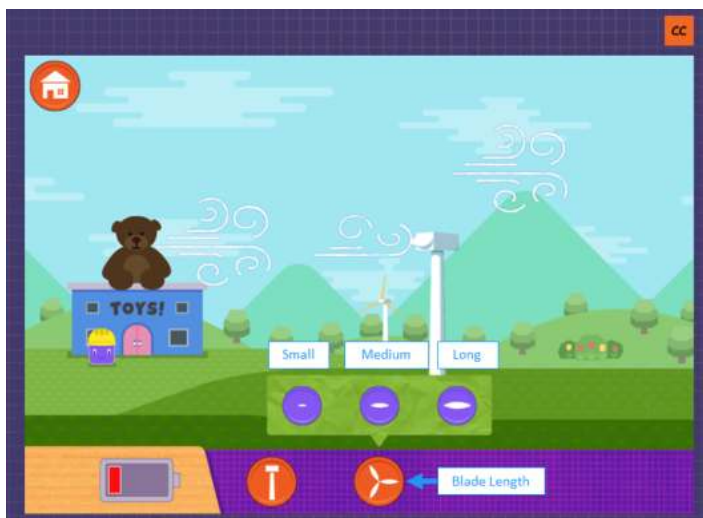
## **Tips:**

- Click the “cc” button to view subtitles.
- Click on the “home” button to view all of Fidgitville.
- The “battery” symbol shows you how much power your turbine is generating.

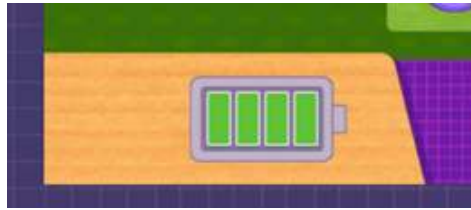


To build your turbine you must choose:

- 2) The turbine height: small, medium or tall.
- 3) The length of the turbine blades: small, medium or long
- 4) And where your turbine stands.



- 5) Your goal is to get your turbine to generate enough electricity to power the building and make the battery symbol shine green.



- 6) To finish the game, build 2 wind turbines for each building in Fidgetville!



### Extension - Build Your Own Wind Turbine!

After playing this game, you can try to build your very own wind turbine with these instructions in this link:

<https://www.metoffice.gov.uk/weather/learn-about/met-office-for-schools/other-content/other-resources/experiments/windmill>

## Reflection Questions:

- Are there any improvements you would make to this challenge?
- What are the key science and engineering concepts that relate to this challenge?
- Why is using wind to generate electricity a good idea?
- Do you know any other ways we generate electricity?

- Look around your room, what are some items that use electricity?

In the game:

- Was it better to have a strong or weak wind?
- How did you know how tall to make your wind turbine?
- Was it better to have a short blade or long blade for your turbine?
- What stopped you from using the long blade for all of your wind turbines?

## Submission Guidelines:

- Submit a picture of your screen with all the turbines you built for Fidgetville. If you attempted the Extension task, include pictures of your wind turbine. Include a short summary that addresses the reflection questions.

Note: Remember, if you want to upload pictures of your Minor Challenge that also include you, please check if it is OK with your parent or guardian first.

- The submission form is on the Minor Challenges page:  
<https://sciencechallenge.org.au/index.php/minor-challenges/>  
Fill out the details and make sure you upload your submission.

## Learn More! Resources:

- Wind is an example of a **renewable energy** source. Learn how we use wind to create electricity in this short video:  
[Renewable Energy 101: How Does Wind Energy Work?](#)
- Wind isn't the only renewable energy source out there. Learn more about other renewable energy sources on National Geographic's website:  
[Renewable Energy | National Geographic Society](#)

- Coal is an example of a **nonrenewable** energy source. Learn more about renewable and non renewable energy:  
[What is renewable and non-renewable energy? - BBC Bitesize](#)

## Bibliography:

- PBS Kids, *Fidget Power Game*. [online] Kidscreativechaos.com. Available at: [https://pbskids.org/designsquad/games/fidget\\_power/](https://pbskids.org/designsquad/games/fidget_power/) [Accessed 18 Mar. 2022].