

# Wind Blade Design Science Inquiry Project

## Educator Instructions

### Overview

The intent of this project is to follow a [Teacher-Guided Inquiry](#) methodology that is adapted from [Youth Canada Science's Smarter Science Framework](#). Learners will design their own wind turbine blade design using class Wind Kits provided by Centre of Excellence for Energy and NB Power.

### NB Curricular Connections

#### Science 9/10

*Strand:* - Scientific Literacy – *Big Idea:* Investigation - *Skill Descriptors:* Plan investigations to answer questions about relationships between and among variables observed, Collect and represent accurate data using tools and methods appropriate for investigations.

*Strand:* Scientific Literacy – *Big Idea:* Sensemaking – *Skill Descriptor:* Analyze and interpret qualitative and quantitative data to construct explanations and conclusions.

*Strand:* Scientific Literacy – *Big Idea:* Communication - *Skill Descriptor:* Communicate procedure, result, and conclusion using a variety of media and working collaboratively

*Strand:* Learning and Living Sustainably– *Big Idea:* Responsible and Sustainable Application - *Skill Descriptors:* Apply scientific and technological knowledge and an understanding of sustainable practices responsibly, Identify community-based challenges connected to at least two of Sustainable Development Goals 3, 13, 14, and 15, and apply iterative processes to design solutions.

### What You'll Need

- Download "Wind Blade Design Science Inquiry Project" and print one per group
- Assuming a student group size of two:
  - Wind Kit
    - 1 x Class Wind Stand
    - 1 x DC generator
    - 1 x multimeter
    - 10 x Wind Turbine Hubs
    - 1 x Wind Blade Protractor
    - Wooden Dowels
    - Lead wires with alligator clips
  - Blade Materials
    - Wood
    - Heavy Card Stock
    - Cardboard
    - Other applicable materials



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- Classroom Stationary Items
  - Glue
  - Tape
  - Scissors

\* If your school does not have access to a Wind Kit please e-mail the Lead for the Centre of Excellence for Energy (warren.coombs@gnb.ca) and one will be sent.

### Instructions:

- 1) Before starting this activity, learners should be able to make graphs and organize data tables.
- 2) Introduce the activity by presenting the Wind Kit and materials. Inform learners that they will have to measure the rate the amount of energy they can produce using a multimeter.
- 3) Hand out the "Wind Blade Design Science Inquiry Project" learner document (attached).
- 4) Go over the handout and inform students that they tasked with building their own wind blade design and testing it given the presented materials.
- 5) Have students research their topic and form their own inquiry question.

### Assessment Ideas:

- Consider using a rubric or checklist as learners work through the design process
- Consider have the learners write a lab report based on their experimental

### Acknowledgments:

This activity was created using the Smarter Science Framework by Youth Science Canada (<https://youthscience.ca/for-educators/#resources>)

This activity was adapted from the Wind Energy Challenge by Kidwind ([KidWind — Teaching the World about Renewables](#))

