

Blade Experiment Sheet

Group Name _____

What variable will you test for your experiment?

Describe how you will perform this experiment. BE SPECIFIC! How many times will you test, how will you change your variable, how will you record output?

What things do you have to keep the same (constant) as you perform this experiment?

Make a prediction! What do you think will happen as you change your variable?

Data Tally Sheet

Trial #	Variable (Length, Number, etc)	Voltage (mV)		Amperage (mA)		(V x A) =Power (mW)		Average Power (mW)

Make a quick graph of your data on the white boards.

How did the voltage/amperage/wattage change as a result of manipulating your variable?

Do you think that your variable has a large or small effect on power production?

What was the optimal setting for the variable that you tested?

If you were a lead design engineer what would you recommend your company do to their turbine blades? Why?

What problems did you encounter as you performed your experiments? What other variable was it hard to hold constant?

Design Team _____

Wind Turbine Blade Competition

Details: The **WindNRG Corporation** needs a team of wind engineers to design and build a set of blades for their new wind generator. These blades must be durable, quiet and effective at converting the energy of the wind into electrical energy.

Time: Unfortunately the **WindNRG Corporation** needs these blades fast. You have 45 minutes to build and test an optimal set of blades.

Design Constraints:

- Blades cannot be more than 20" long
- Use combinations of 2, 3, 4, or 6 blades
- Must test blades at least once before presentation time

Competition

Each blade set will be tested at high and low wind speeds for 30 seconds. Power output will be calculated and averaged. The team with the highest average output will be the winner.

Design Questions

How many blades do you plan to place on your hub? _____

How long are you going to make these blades? _____

After your first test what modifications did you make to the blades? Why did you make these modifications?

Final design

How many blades? _____

Length of Blades _____ (cm)

Width of Blades _____ (cm)