

# Wind Power Generation Competition Rules

## 1. Description

Design and mount blade(s) to capture wind to generate electricity

## 2. Participants

- a. Competition Divisions
  - Elementary School: Grades 1-5
  - Middle School: Grades 6-8
  - High School: Grades 9-12
- b. Individual or in teams of up to 3 participants
- c. Only the individual/team may design the turbine blade(s)

## 3. Materials

- a. Blades: (1) Plastic cup per individual/team. No material substitutions allowed.
- b. Rotor: (1) 12-cm CD. No CD modifications allowed.
- c. Auxiliary: (1) Glue stick, scissor, ruler, protractor, sharpies and hot glue gun. No other materials allowed.

## 4. Event Supervisor (ES) will provide:

- a. Wind source: 20-inch multispeed box fan – using the High and Low speed settings
- b. Turbine: Fixed support stand for all Individuals/Teams or as set up and approved by the ES
- c. Nacelle: Motor mounted to turbine with adaptor to mount the CD with blades
- d. Measurement: Multimeter set to measure voltage output  
Measuring tape to measure Turbine distance from Wind source to ensure consistent distance for all competitors.  
Stop watch set to ensure time limits are not exceeded.

## 5. Competition

- a. Individual/team designs and builds the rotor/blade assembly with given materials
- b. Setup
  - ES sets fan on table to serve as wind source. Turbine and fan will be in fixed location throughout competition.
  - Individual/team must setup the rotor/blade on the turbine in no more than:
    - High School Division: 3 min | Middle School Division: 4 min | Elementary School Division: 5 min
  - ES will turn on or off the fan at the individual/team's request
  - Individual/team allowed to adjust, start, and stop the rotation of the rotor/blade assembly
  - No voltage measurements are allowed during Setup
- c. Test
  - Official voltage measurement is taken during 30 seconds when ES monitors voltage for each wind speed.
  - ES observes and records max voltage observed for each wind speed – High speed and Low speed
  - Test to begin after Setup, without delay
- d. Individual/team may aid rotation of the rotor/blade assembly only at the beginning of the Test period
- e. Only one Test period is allowed per individual/team

## 6. Scoring

- a. Winners
  - Each division will have one (1) First Place, one (1) Second Place, and one (1) Third Place winner
  - Ranking to be decided by addition of Low speed voltage + High speed voltage
- b. Tie breaker: Highest speed voltage gets higher ranking