Level/Grade: Elementary/Grades K - 5

Teams: 2-4 students per team (individuals allowed only if pre-approved by MESA).

Overview: Students will build a Windmill that meets the criteria outlined in the rules and is designed to generate as much electricity as possible.

Materials:
- Hazardous materials may not be used in the construction or operation of the device, including but not limited to lead.
- All other materials to build the device are legal and optional.

Rules:
1. Teams must design, build and operate their own windmill device. This device will include all parts necessary to capture the wind energy and transfer it to the defined task. It may include multiple fan/turbine assemblies.
2. The device must be solely powered by the wind energy available from the approved fan, Lasko 20” box fan.
3. All designs that conform to the energy rules will be allowed to participate. All teams should carefully review design configuration to ensure that no additional energy is applied to the tasks.
4. Once performance competition begins, student teams may not have contact with non-competitors. Student teams are solely responsible for interaction with judges and addressing problems with their devices.
5. Fan, Device and Working Area: (Fig. 1)
   a. A six foot table will be used. Approximate dimensions of 30”x72”x29”.
   b. All parts of the windmill device must remain behind a line 75 centimeters from the end of the table.
   c. The Device Area shown is intended as a platform for the devices.
   d. The device may extend over the table edges to the sides and into the Working Area to complete the tasks.
   e. Devices may be taped to the table or floor surfaces.
   f. Teams may not touch their device once a task trial has begun.
   g. Teams will be allowed 2 minutes to configure their device before each trial.
6. Electrical Power
   1. Judges will weigh the device before the trial.
   2. Teams will use the generator and light bulb supplied by MESA.
   3. Fan Speed will be set to high, but the power strip will be turned off.
   4. The Judge will use the power strip to start the fan at the desired power level.
   5. The Judge will record the peak voltage and current produced by the generator.
   6. Repeat procedure for 2nd trial.
Task Details:
- The generator must be visible for identification and inspection.
- The Electrical Power will be determined by multiplying the voltage measured across the lamp by the current flowing through the lamp.
- Two attempts will be recorded; the best performance will be used in scoring.

Scoring
1. In event of a tie, the device with the lowest mass will be the winner.

Awards:
1st, 2nd and 3rd place awards will be given to students.