



WORLD  
**KidWind**<sup>®</sup>  
CHALLENGE  
2026



**MADISON, WI**  
MAY 17 - 20, 2026

# Welcome to the 11th Annual World KidWind Challenge!



**Big thanks to Allison and the WEI team!**



**Thank you to the KidWind team!**



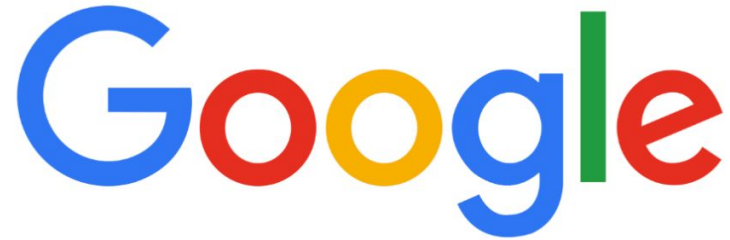


**Thanks to your coaches, parents & communities!**



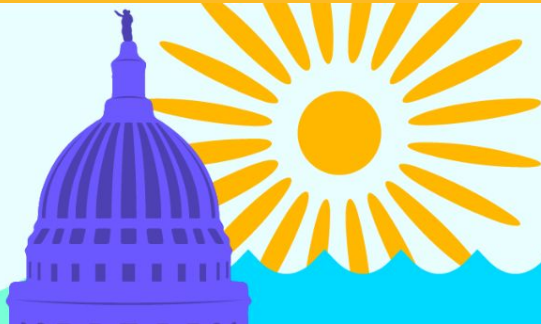
**Thanks to YOU!**

# Thanks to Our 2026 Worlds Sponsors!

The Google logo is displayed in its characteristic multi-colored font: blue 'G', red 'o', yellow 'o', blue 'g', green 'l', and red 'e'.The logo for BLATTNER, featuring the word in blue with a stylized sun icon to the right, and the text 'A QUANTA SERVICES COMPANY' below it.The logo for GENERAC, with the word in black and a thick orange underline.The logo for Invenergy, with 'Inv' in black and 'energy' in black, where the 'e' is green.The logo for RWE, consisting of the letters 'RWE' in a large, bold, blue sans-serif font.The logo for Vernier, featuring a green line-art illustration of a vernier caliper above the word 'Vernier' in green, with 'SCIENCE EDUCATION' in smaller green letters below.The logo for Vestas, with the word 'Vestas' in a bold, italicized blue sans-serif font.



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## **WELCOME!**

- ⚡ 125 teams
- ⚡ Over 500 Students
- ⚡ 24 States
- ⚡ 4 Countries (Taiwan, Thailand, Estonia, USA)



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## **KidWind International!**

- ⚡ KidWind Asia - Asia-Pacific Energy & Science Education Association (AESEA)- Professor Chou, Chien-heng
- ⚡ KidWind Mexico - David Andrade
- ⚡ KidWind Estonia - ENERHACK - TalTech

# Schedule by Day

## MONDAY, May 18th

**8:00am** Doors Open

**9:00am** Kick-Off

**10:00am-6:00pm** Competition Elements

## TUESDAY, May 20th

**8:00am** Doors Open

**9:00am-6:00pm** Competition Elements

Scan here for full schedule!

Check your team profile online  
for your detailed, team-specific  
schedule



## WEDNESDAY, May 21st

**OPTIONAL: 8:00am-12:00pm**

UW Madison Tours & Activities

**8:00am** Doors Open

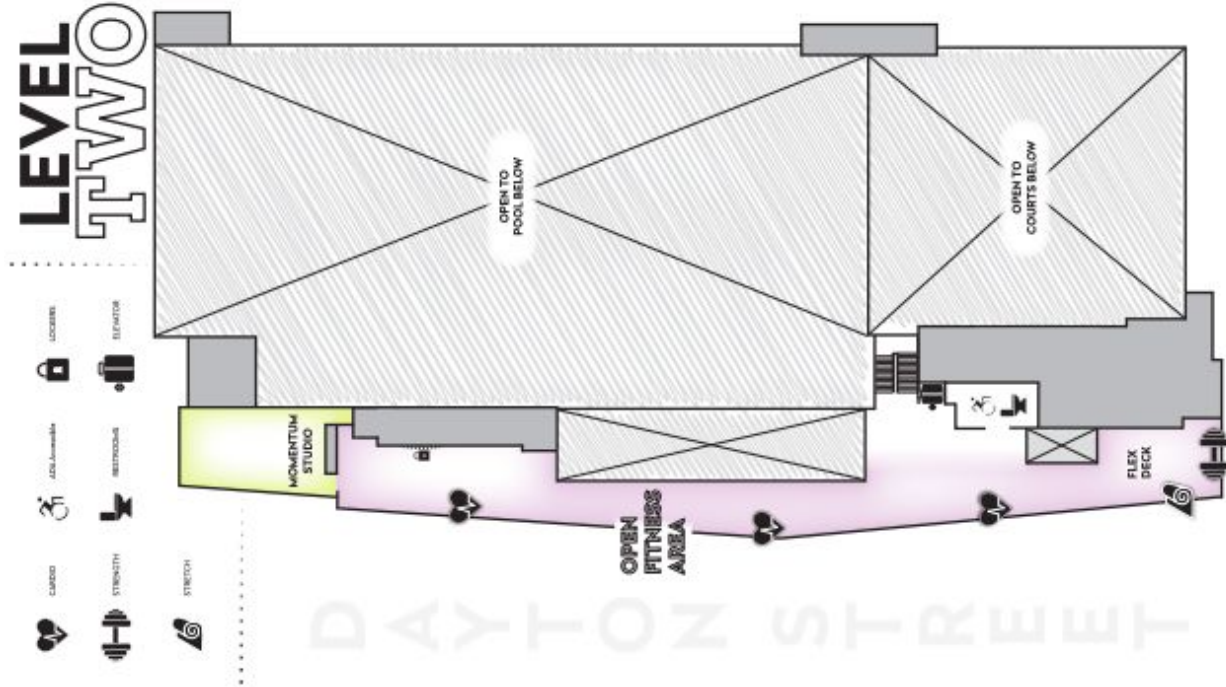
**9:00am** Open Testing

Judging Callbacks

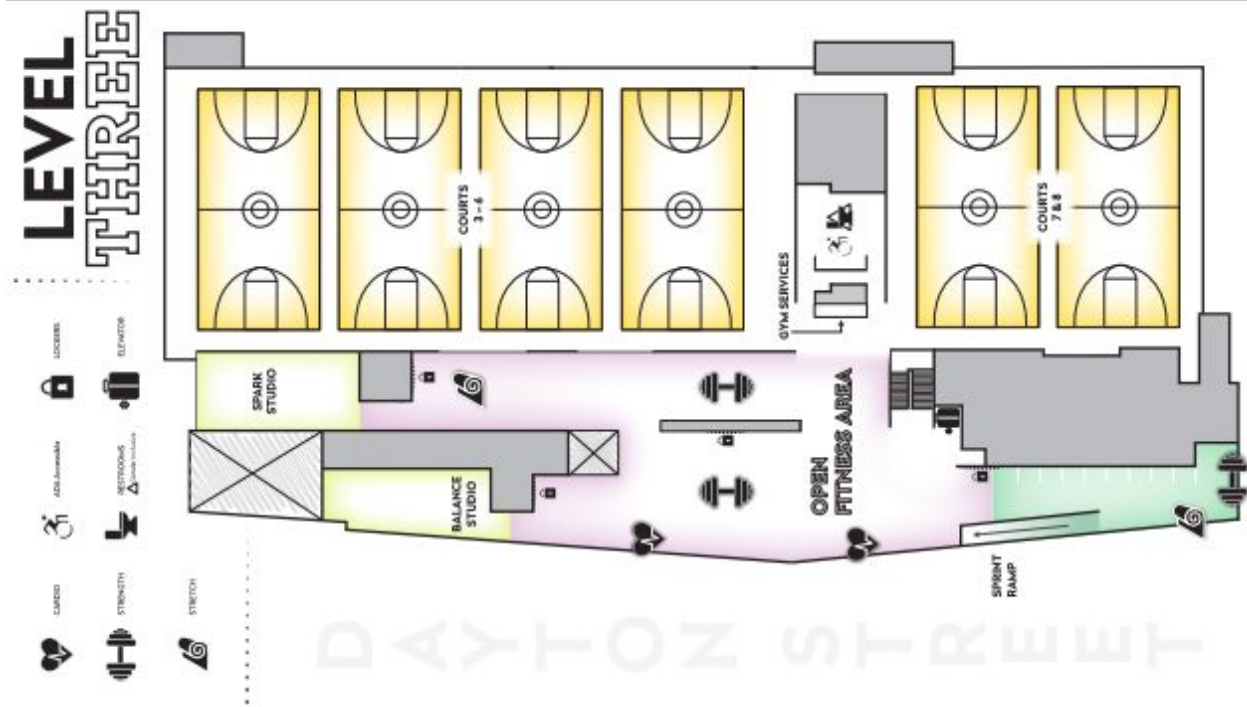
**1:30pm-2:30pm** Awards Celebration!

**2:30pm-3:00pm** Pack up and break down

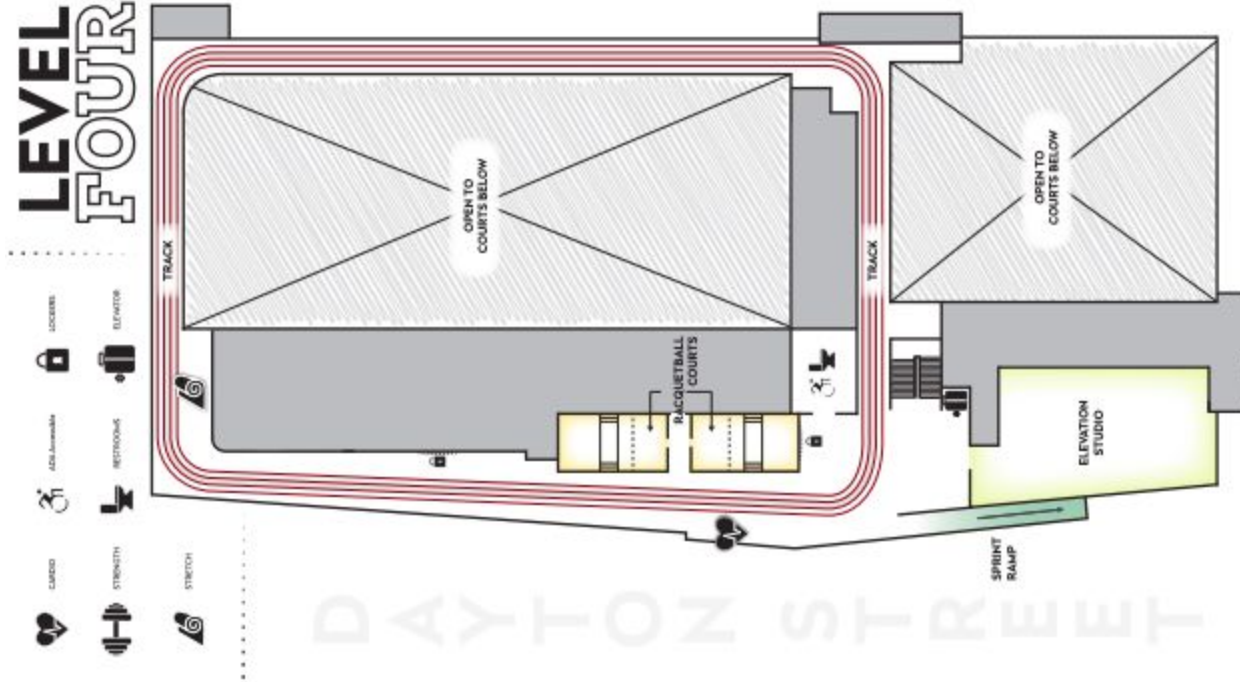
# Challenge Locations



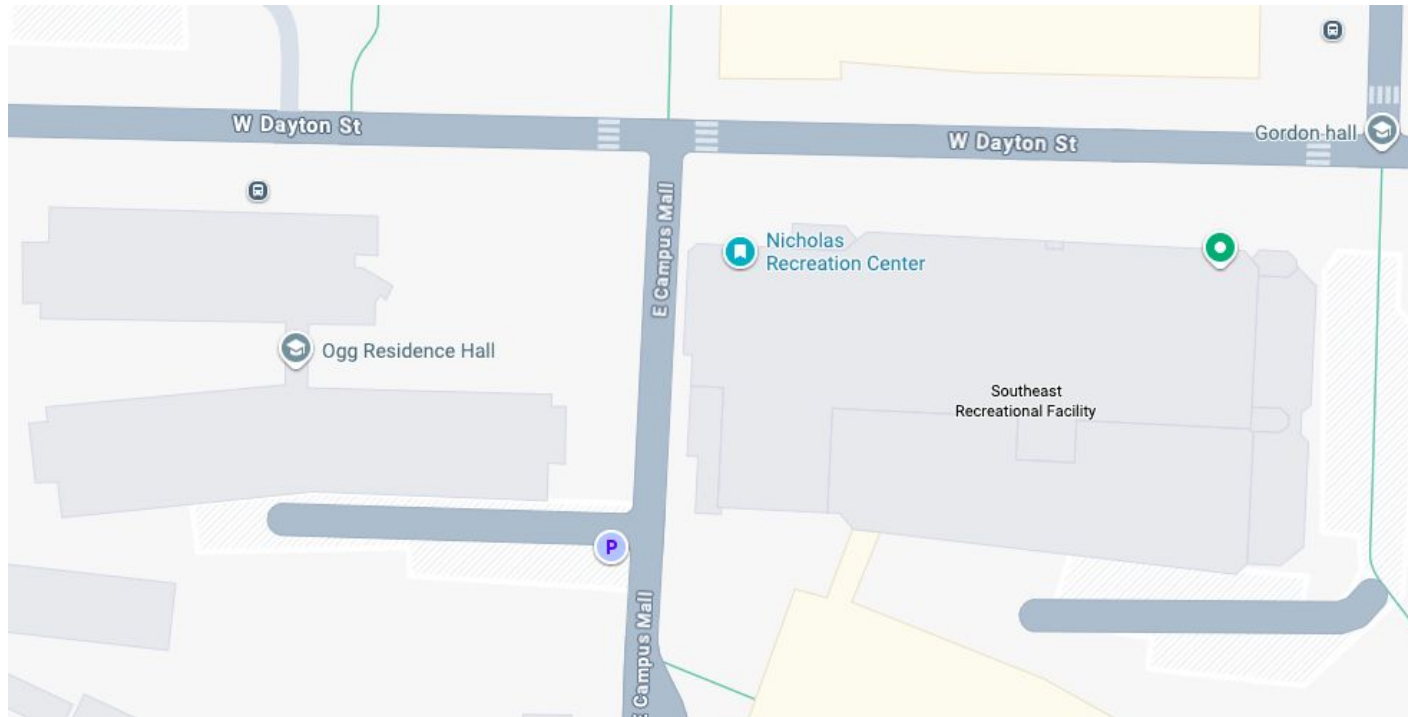
# Challenge Locations



# Challenge Locations



# Challenge Locations



# Advice & Rules



**It's KIDwind - not ADULTwind-DADwind-MomWind!**

- Adults must be BEHIND the line in the tunnel area



Lanyards are your ticket in - ALWAYS wear them



The Spirit of KidWind



Disqualification Rule



Do ALL the things! They ALL matter!



Things change—that's life! Adapt and improve.



We will treat all teams fairly.



Confused or unhappy? Find Mike or KW team member.

# The Competition Elements



# Knowledge Test

**MONDAY: ES & MS in Courts 7 & 8**

**TUESDAY: HS in Ogg Hall Lounge**

**The knowledge test will take place on PAPER!**



**All ES Students**  
Monday  
11:00AM-11:45AM

**All MS Students**  
Monday  
1:30PM-2:15PM

**All HS Students**  
Tuesday  
2:00PM-3:00PM

# Instant Challenges

**Check your schedule on your team profile for your instant challenge time slot!**

*Note: All materials are provided in the rooms!*

## **ELEMENTARY DIVISION**

**Energy Efficiency  
Challenge  
&  
Energy Geography  
Challenge**

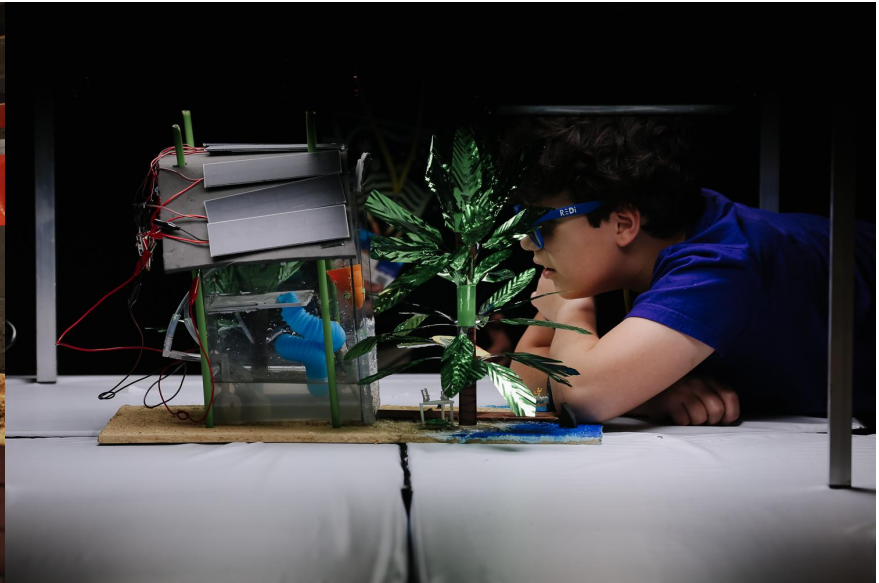
## **MIDDLE SCHOOL DIVISION**

**Energy Efficiency  
Challenge  
&  
Lock-Out Challenge**

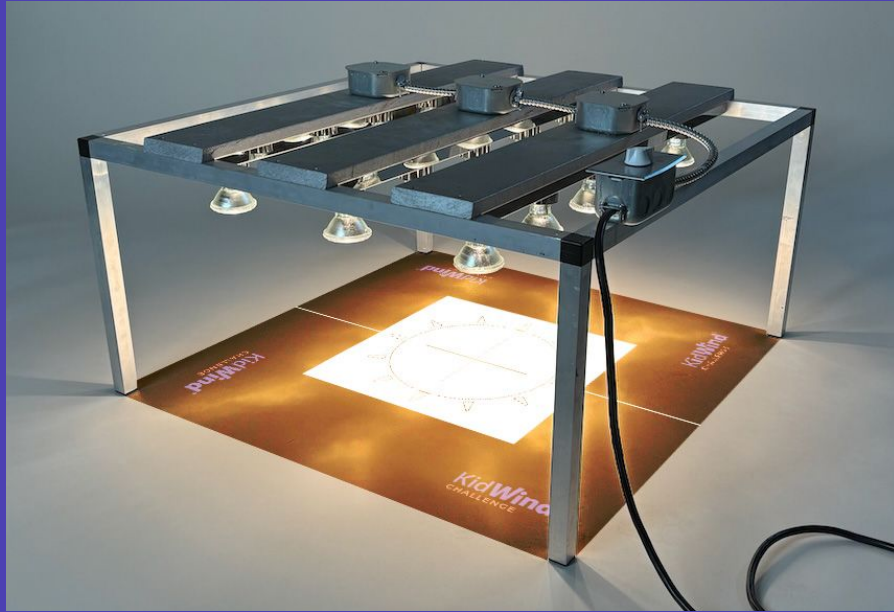
## **HIGH SCHOOL DIVISION**

**Energy Economics  
Challenge  
&  
KW Biathlon  
Challenge**

# Solar Home Testing & Judging



# Solar Testing Array - 2 Versions

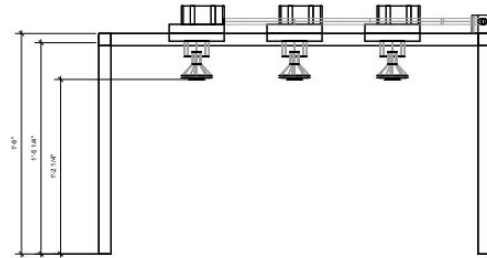
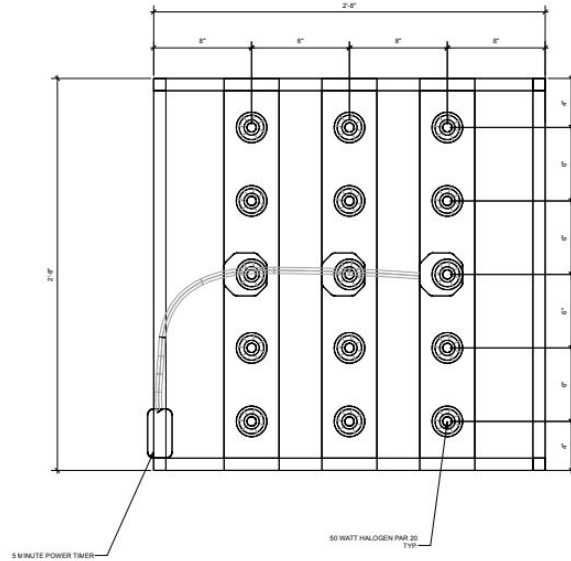


We will have two solar arrays in the testing and judging rooms. One is the original version Solar Test Environment. One is a new prototype. You can use either test array as you work with the judges. They have very similar power output.

**2 array in the judging room + 2 array on the floor for practice**

# Solar Home Size Requirements

⚡ Everything must fit in a 2' width, 2' length, 1' height space



**SOLAR BLAST!**

**SUN = 1000 W/m<sup>2</sup>**

**TEST RIG = 300-400 W/m<sup>2</sup>**

# Solar Technical Check In

On Monday morning (TODAY), a KidWind team member will conduct a technical check-in to verify project functionality and safety.

## Technical Requirements Checklist

- **Solar Array:** Are your panels and entire array within specifications?
- **Materials:** Do you have any disallowed materials?
- **Circuits:** Do you have switches on all circuits?
- **Storage:** What kind of batteries/storage? How are they charged? Is there protection against backfeeding/shorts?
- **Microcontrollers:** How are they powered and what are they controlling? Do you have the code?
- **Documentation:** Do you have a full wiring diagram?

# Solar Performance Procedure

**SOLAR PERFORMANCE WILL BE TESTED DURING JUDGING SESSION.**

## STEP 1 - SET UP

Position solar device/structure under the solar testing array. Judges will help you make sure you are getting enough light to make your device function!

## STEP 2 - PROVIDE DOCUMENTATION

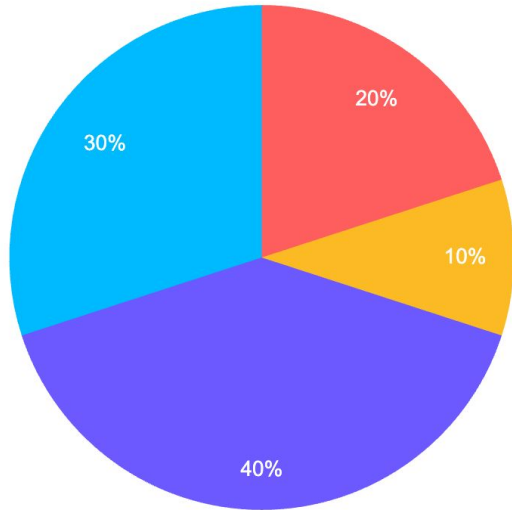
- Solar Panel Schematics
- Circuit Wiring Diagram
- Report
- Material List
- Programming Code (if Smart Home Division)

## STEP 3 - PRESENT TO THE JUDGES (3-6 judges possible)

## STEP 4 - SOLAR PERFORMANCE TESTING

## Q&A

# SOLAR SCORING BREAKDOWN



## 103 Possible Points

- ⚡ Judging: 40 Points
- ⚡ Performance: 30 Points
- ⚡ Instant Challenge #1: 10 points
- ⚡ Instant Challenge #2: 10 points
- ⚡ Knowledge Test: 10 points

**Bonus Points:** (Received if you completed everything by **May 2nd!**)

- ⚡ 2 Points: Attendee Registration Form for all coming!
- ⚡ 1 Point: Team Profile with working video

# Wind Turbine Testing & Judging



# Turbine Judging

- ⚡ 20 minute meeting with a panel of judges
- ⚡ Check your schedule on your Team Profile to see when your judging time is!

## PROCEDURE

### STEP 1 - ARRIVE TO THE ROOM

Arrive 5 minutes before your scheduled time! When you get into the room, pull up your presentation + hand in hard copy of Executive Summary.

### STEP 2 - PRESENTATION

Present your design and process to the judges (About 10 minutes). You'll need 2 devices!!

### STEP 3 - Q&A

After your presentation, the judges will ask you questions about your turbine and your development process.

### STEP 4 - CALLBACKS

Callbacks on Wednesday morning ONLY for top MS and HS teams.



# Turbines: Generator Divisions



## KidWind Division

- Single [standard KidWind Generator](#)



## Open Division

- Any other non-KidWind, commercially produced AC or DC generator, [high torque KidWind generator](#) or multiple KW generators. This also includes the longer, high torque motor found in some KW kits.



## Homebuilt

- ALL of the major components of the generator are constructed by the students. This would mean the coils are wound by the students, the stators, and other components have been constructed, 3D printed, or otherwise built by the team. This **DOES NOT** extend to the magnets or driveshafts and similar components in this device.

**All wind teams MUST undergo a generator check with a KidWind volunteer before starting official tunnel testing!**

# Tunnel Breakdown by Division

**ES Division**

**MS Division**

**HS Division**

**Slow Tunnel**

**Yaw**

**Efficiency**

**High Speed Tunnel**

**Shark Super Tunnel**

# Turbine Tunnel Testing

## STEP 1 - TOKEN

Hand the judges a tunnel token and score sheet (be sure it is the correct token and score sheet for that tunnel).

## STEP 2 - TURBINE INSTALLATION

Place your turbine in the tunnel and connect the wires to the data logging hardware.

## STEP 3 - FANS STARTING

The judges will turn on the fans and let the tunnel and turbine get up to speed.  
**Must start test within 30 seconds of fans starting.**

## STEP 4 - GO / NO GO CALL

The judges will ask if you want to run a trial. You can say YES or NO.

## STEP 5 - DATA COLLECTION

- NO: Remove the turbine, collect back your token, make any adjustments and go to the back of the line.
- YES: The 30 second trial begins. The only way that a test can be redone is if judges determine that there has been a turbine failure and your turbine no longer functions.



# Wind Tunnel Specifications

## Wind Tunnel Restrictions

- ⚡ The vinyl shroud of the wind tunnel pulls in when activated
  - Air is **pulled through** vs blown through wind tunnel
  - 48" x 48" x 48" is the starting interior space **before shrinkage**
- ⚡ Account for at least a **4" buffer of safe space** between blades and tunnel sides to account for shrinkage
- ⚡ Hitting/damaging the tunnel's vinyl shroud, may result in "0"



This space of the yaw tunnel will be occupied by motor and electric belt that will be activated to rotate the table 90 degrees



## Yawing Restrictions

- ⚡ Turbines should be able to **turn freely** within the wind tunnel
- ⚡ Bases should fit on a **41" diameter plate** (may hang off slightly)
- ⚡ Yaw table's maximum turbine weight is **70 pounds**
  - This weight includes your turbines + any weights (if needed)

*Tunnel is raised to accommodate height of Yaw table*

*There is no reduction to the interior dimensions of the wind tunnel.*

# YAW Clarification



If your blades do hit the vinyl shroud of the tunnel, you may receive a penalty and a reduced performance score in the tunnel and you will not receive a re-test.



If your turbine FAILS to yaw your performance will probably be reduced and we will dock your team 2 points as this is the point of this test. Proper yaw alignment results in the rotor facing directly into the source of wind. Turbines that FAIL are more than 30 degrees off proper alignment.

# Shark Boil Challenge - HS TEAMS ONLY

HS teams will have at least **2 tests** in the shark tunnel to attempt to boil 5 ml of water using the power of the wind!

- ⚡ 1/2 watt resistor you select will be placed in 5 ml of water.
- ⚡ Heat being generated in the resistor will be transferred to the water, raising the water temp.
- ⚡ If the team powers the resistor faster than the water can take that heat away the resistor will burn out, **ending your test! BE CAREFUL!**
- ⚡ Test will run for 1 minute, and the final temp. will be recorded.

**NO SHROUDS!**



# Shark Tunnel Testing Priority

Teams will sort themselves into 3 lines based on their # of completed tests

**LINE #1**

**FIRST PRIORITY**

**First time testing**

**LINE #2**

**SECOND PRIORITY**

**Second time testing**

**LINE #3**

**THIRD PRIORITY**

**Third time testing**

**It is up to your team to monitor the lines & ensure you get at least 2 tests!**

\*HS teams do not need to sign up for Shark Tunnel testing times

# OTHER TURBINE TESTING RULES

## NO SHROUDS - NO SHROUDS - NO SHROUDS

### CATASTROPHIC FAILURE

An event that causes a turbine in the wind tunnel to produce ZERO power while collecting test data is defined as a Catastrophic Failure Event. This could be due to either a mechanical or electrical failure.

If this happens, you will be offered the following options:

- Receive two minutes to set up your wind turbine again
- Remove the turbine to make repairs. In this case, you will be moved to the back of the line for retesting.

Failures that lead to **REDUCED** performance are **NOT** considered catastrophic, and a retest is not be allowed.

# Turbine Configuration Clarification

The spirit of this event is to construct **ONE** wind turbine that can handle many different wind conditions.

With this in mind, **teams can:**

- Change the pitch of blades they use in each of the wind tunnels.
- Replace broken blades.
- Change gearing between tunnels.

We **STRONGLY** discourage teams from changing the number of blades or using entirely different blade designs between tunnels.



# Turbine Component Clarification

## Blade Construction Rules

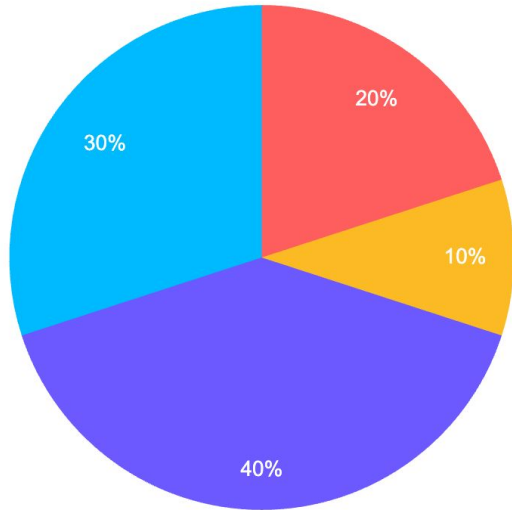
Teams **must construct/make all of their wind turbine blades themselves**. A team can use blades constructed in a previous year if the majority of the team consists of the students who constructed the blades.

## Other Components

Other components (towers, gearboxes, generators, etc.) not constructed by the team can be used as long as the **team discloses these components during their Judging Session**. This includes parts that have been made by previous students or purchased.



# WIND SCORING BREAKDOWN



## 103 Possible Points

- ⚡ Judging: 30 Points
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- ⚡ Instant Challenge #1: 10 points
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- ⚡ Knowledge Test: 10 points

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- ⚡ 2 Points: Attendee Registration Form for all coming!
- ⚡ 1 Point: Team Profile with working video

Spark Room

117	224	240	230	207/ 209	203	241	217	116	106	111	110	206
324	338	320	305/ 307	239	218	208	205	112	107	201	242	211
118	194	229	306	335	328/ 330	104/ 109	213	214	202	236	231	
180	192	113	310/ 312	345	102/ 108	103/ 101	313	204	212	220	221	
280	293	105/ 115	333	304	303	334/ 347	238	336	222	223	233	228
193	190	296/ 291	210	292	295	227/ 219	226	225	232	341	337	323
191	195	390	294	290	316/ 317	215/ 235	234	329	308	327	322	325
391	392	237	216				332	311	342	314	309	331
	114	302					315	340	346	339	321	301
							344	343	326	318	319	

Wind Tunnels

Solar  
Testing

Merch Table

Stage

# Rules for the Venue

**Thank you to the folks at UW-Madison and the Nick for hosting us! To respect our hosts and ensure a smooth event, please:**

**Don't touch  
gym  
equipment or  
go up to the  
track**

**DON'T  
UNPLUG  
ANYTHING**

**You CANNOT  
plug in in this  
room!**

**You CAN  
CHARGE in  
Courts 7 & 8  
NO BIG  
POWER  
DRAWS**

**No chairs or  
furniture on  
Courts 7 & 8**

**Outside food IS allowed in the main room only!**

**We have a peanut allergy on-site - please don't bring foods containing peanuts.**

# Safety and First Aid

## First Aid Station

Check-in counter near entry doors.

## Need Help?

Find someone in a purple lanyard – this is your event team.

## Lightning Protocol

We will stop the shark tunnel and bring everyone indoors.

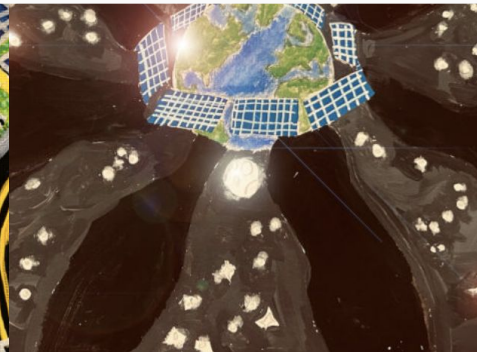
## Weather Emergency

Nick's tornado shelter is in the basement. Follow overhead emergency alerts.



Check out the winners of our

# 2026 KidWind Energy Art Challenge



# Got Questions?

- ⚡ Find a KidWind team member (see our purple STAFF t-shirts)
- ⚡ Find our HELP table (where coaches checked in)
- ⚡ Call Meghan at 508-981-2023

A large crowd of people is gathered in an indoor event space. In the background, a sign reads "PRACTICE MAKES PERFECT". The scene is filled with people of various ages, some standing and talking, others sitting at tables. The atmosphere appears to be a busy, organized event. A white rounded rectangle is overlaid on the center of the image, containing blue text.

**Thanks for your attention!**  
**We are SO excited to get started!**