

Pennsylvania KidWind Challenge

Think you or your class/team has what it takes to build the most efficient, functional, and innovative wind turbine?

When: April 7, 2020

Where: Penn State University Park,
HUB-Robeson Center

Register: <https://csats.psu.edu>

Registration Closes: Friday, March 6, 2020

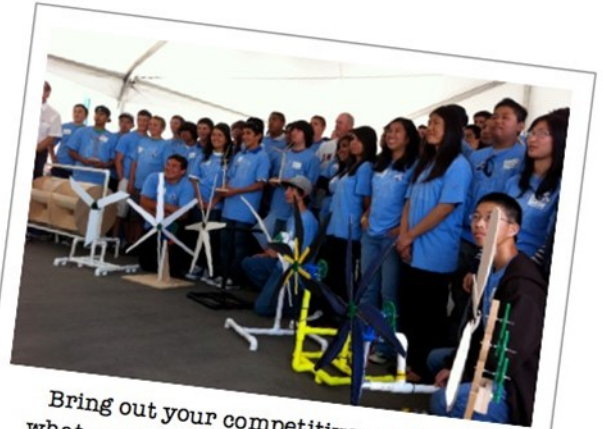
READY TO COMPETE? YOU NEED...

- To be a student in 4th-12th grade
- A team consisting of 1-10 students
- An adult coach (teacher, parent, etc.)
- A generator, some parts, and a whole lot of creativity

REGISTER: Bring up to 3 teams per school, per division by registering at <https://csats.psu.edu> found under: Our Programs, Student Opportunities. **If you have more than 3 teams, an internal down-select needs to occur by March 24, 2020.**

CONTACT: Amber Cesare at ams5306@psu.edu or 814-867-1323 with questions.

LEARN MORE about the KidWind Challenge and find rules, learning resources, parts, and building tips online: <https://www.kidwindchallenge.org>



Bring out your competitive spirit: use what you know about wind power to win.



Wind industry experts will be the judges. Blow them away with your knowledge!



Test your turbine in a wind tunnel and see just how efficient it is.

Pennsylvania Standards

Grade 4	Grade 6	Grade 8	Grade 9
Math Standards			
CC.2.4.4.A.1 Solve problems involving measurement and conversions from a larger unit to a smaller unit.	CC.2.1.6.D.1 Understand ratio concepts and use ratio reasoning to solve problems.		CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.
English Language Arts Standards			
CC.1.5.4-8.A Engage effectively in a range of collaborative discussions on grade-level topics and texts, building on others' ideas and expressing their own clearly.		CC.1.5.9-12.A Initiate and participate effectively in a range of discussions on grade-level topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.	
Science Technology and Engineering Standards			
3.2.4.B2. Identify types of energy and their ability to be stored and changed from one form to another	3.2.6B2. Describe how energy can be changed from one form to another (transformed) as it moves through a system or transferred from one system to another system.	3.2.8.B2. Identify situations where kinetic energy is transformed into potential energy, and vice versa.	3.2.10.B2. Explain how overall energy flowing through a system remains constant. 3.2.P.B2. Explain how gravitational, electrical, and magnetic forces and torques give rise to rotational motion.

Pennsylvania Standards

Grade 4	Grade 6	Grade 8	Grade 9
Science Technology and Engineering Standards			
<p>3.2.4.B4. Apply knowledge of basic electrical circuits to the design and construction of simple direct current circuits</p> <p>Compare and contrast series and parallel circuits.</p> <p>Demonstrate that magnets have poles that repel and attract each other.</p>	<p>3.4.6.B4. Describe how electric current produces magnetic forces and how moving magnets produce electric current.</p> <p>Derive Ohm's Law through investigation of voltage, current, and resistance.</p>		<p>3.2.10.B4. Describe quantitatively the relationships between voltage, current, and resistance to electrical energy and power.</p> <p>Describe the relationship between electricity and magnetism as two aspects of a single electromagnetic force.</p>
<p>3.2.4.B6. Give examples of how energy can be transformed from one form to another.</p>		<p>3.2.8.B6. Explain how physics principles underlie everyday phenomena and important technologies.</p>	<p>3.2.P.B4. Explain how stationary and moving particles results in electricity and magnetism.</p> <p>Develop qualitative and quantitative understanding of current, voltage, resistance, and the connections among them.</p> <p>Explain how electrical induction is applied in technology.</p>

NGSS Science and Engineering Practices

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Defining Problems

Planning and carrying out investigations

Analyzing and interpreting data

Designing solutions

Obtaining, evaluating, and communicating information