WIND RUBRIC

teachers try science

Content	5	4	3	2	1
Identify parts of a wind driven electric generation system	Student can identify traditional energy sources and make comparisions between wind energy and fossil fuels	Student can identify traditional energy sources and make some comparisions between wind energy and fossil fuels	Student can identify traditional energy sources but cannot make comparisons between wind energy and fossil fuels	Student can identify few traditional energy sources and cannot make comparisions between wind energy and fossil fuels	Student cannot identify traditional energy sources
Identify how each of the parts affects the ability for the system to generate electricity	Student describes how every part affects the system's ability to generate electricity	Student describes how most parts affect the system's ability to generate electricity	Student describes how half of the parts affect the system's ability to generate electricity	Student describes how less than half of the parts affect the system's ability to generate electricity	Student cannot describe how any of the parts affect the system's ability to generate electricity
Design wind driven generator such that voltage output is maximized	Design maximizes voltage output	Design does not maximize voltage output, but is relatively efficient	Design does not maximize voltage and requires large improvements	Design creates very low voltage output	Design produces no voltage output
Describe why wind is a clean alternative energy source and how it differs from traditional energy sources	Student can identify traditional energy sources and make comparisions between wind energy and fossil fuels	Student can identify traditional energy sources and make some comparisions between wind energy and fossil fuels	Student can identify traditional energy sources but cannot make comparisons between wind energy and fossil fuels	Student can identify few traditional energy sources and cannot make comparisions between wind energy and fossil fuels	Student cannot identify traditional energy sources
Participates in class discussion about fossil fuels, alternative energies, and the basics of how a wind generator works	Student participates fully in discussion	Student attends to discussion, but does not participate fully	Student attends to discussion but does not participate	Student rarely attends to discussion and does not participate	Student does not attend to discussion and does not participate

Follows proper lab safety procedures	Student follows proper lab safety procedures				Student does not follow proper lab safety procedures
Uses appropriate equations (density, mass, volume, temp, etc.) to solve problems	Student can write equations, articulate what the equation means, and utilize equations to get a correct answer	Student can write equations, and can explain and utilize equation with few errors	Student can write equations, and can explain and utilize equations with some errors	Student can write equations, but cannot explain or utilize the equations	Student cannot write, explain, or use equations
Define and uses appropriate vocabulary (density, mass, volume, temp) to describe how pressure and temperate affect gases	Student can define vocabulary and also use vocabulary words properly in context	Student can define and use most vocabulary words properly in context	Student can define vocabulary but has trouble using the vocabulary in context	Student can define some vocabulary words but cannot use the words properly in context	Student cannot define or use vocabulary words
Describe how we see these relationships in weather	Student can describe the connection between the experimental design, the properties of gases, and weather	Student can describe the connection between the experimental design, the properties of gases, and weather but description needs more detail	Student can describe the connection between the experimental design, the properties of gases, and weather, but description is incomplete	Student can describe the connection between the experimental design and the properties of gases OR connections to weather	Student cannot make a connection between the experimental design, properties of gases, and weather
Describe how kinetic energy produced by wind can be transferred into mechanical and electrical energy, including the mathematical basis for the turbine	Student correctly describes how turbines generate electricity and student correctly uses and describes the equations Kinetic energy= 1/2 (mass) * (Velocity ^2) and Power = 1/2 (vAp)v^2	Student can explain how the turbine generates electricity and student correctly uses equations and can describe them to some extent	Student can use equation and provide some description of how a turbine generates electricity, but cannot describe equation adequately	Student can use equation but cannot describe equation adequately and cannot describe how a turbine generates electricity	Student cannot use or describe equation or concepts

Inquiry	5	4	3	2	1
Create a hypothesis	Hypothesis is complete, testable, and includes a statement of why the student expects this outcome based on prior knowledge and experience	Hypothesis is testable and includes some thought as to why the student expects the outcome.	Hypothesis is either not testable or does not include an explanation of why the student expects the outcome.	Hypothesis is not testable and does not include an explanation of why the student expects the outcome.	Hypothesis totally lacking in thought, untestable, and incomplete
Design and construct a turbine that will the test hypothesis	The design is directly linked to the hypothesis	The design is linked to the hypothesis, but the connection is not adequately articulated	The design is somewhat linked to the hypothesis and the connection is not adequately articulated	The design shows little connection to the hypothesis	The design is not related to the hypothesis
Describes rationale behind design	Rationale is complete and based on scientific thinking and past experience	Rationale is complete and based on past experience and scientific explanation but logic is somewhat unclear	Rationale is lacking scientific thinking or a basis in prior experience but shows effort	Rationale is lacking scientific thinking and basis in past experience	Rationale is incomplete
Reflects on their design and proposes changes that could improve the turbine	Reflection is based on student's test, is complete and provides suggestions for improvement	Reflection shows thought and provides suggestions for improvement, but the link to the student's test could be taken further	Link to student's test is not articulated clearly and suggestions for improvement are provided	No logical link to test or no suggestions for improvement	No logical link to test and no suggestions for improvement
Identify and discuss variables involved in the turbine design and experimental design (i.e. hair dryer)	Student identifies all variables involved in the turbine design as well as variables in the experimental design	Student identifies most variables involved in the turbine design as well as variables in the experimental design	Student identifies variables involved in turbine design or experimental design but not both	Student identifies few variables invovled in either turbine or experimental design	Student identifies no variables

Create another hypothesis, turbine, and experimental design that reflects air and wind movement	Student's original hypothesis turbine and design have been altered in a logical way to reflect air and wind movement	Student's orignial hypothesis, turbine, and experimental design have been altered somewhat to reflect air and wind movement	Few changes have been made to the hypothesis, turbine, AND experimental design	Few changes have been made to the hypothesis, turbine, OR experimental design	No changes have been made to original hypothesis, turbine, or experimental design
Reflect on second test	Reflection is based on student's test, is complete and provides suggestions for improvement	Reflection shows thought and provides suggestions for improvement, but the link to the student's test could be taken further	Link to student's test is stated but unclear and suggestions for improvement are provided	No logical link to test OR no suggestions for improvement	No logical link to test AND no suggestions for improvement
Articulate connections between these activities and science concepts and personal experience	Student can describe in detail connections between these activites and weather, other forms of electrical generation	Student can describe connections between these activites and weather, other forms of electrical	Student can describe i connections between these activites and weather, other forms of electrical	Student can describe few connections between these activities and practical applications	Student can describe no connections between these activities and practical applications