Learning Goals for: Energy Resources on Earth, Work, and Power

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| **Big Picture**: Students should understand why alternative energies are important to develop, as well as the benefits and concerns associated with various alternative energies, and how power is produced. |
| **Content Goals** | **Skills Goals** |
| Students will know how to:* Define energy, work, and power
* Identify the transformation of energy in a variety of renewable energy sources
* Explain that energy is transformed to do work
* Describe fossil fuels and how they are produced
* Describe the basic production of alternative energy resources such as: nuclear energy, wind energy, solar energy, tidal energy, hydroelectric energy, energy from biomass, biofuels, hydrogen fuel cells, geothermal, ocean waves
* Evaluate the positive and negative impacts of various alternative energies and fossil fuels on humans as well as the planet
* Calculate the work done by a machine such as a wind turbine
* Calculate the power generated by a machine such as a wind turbine
 | Students will be able to:* Choose and use reliable sources to explain a process
* Build and modify a wind turbine that can lift a weight
* Design a procedure for modifying a wind turbine to increase the work and power capabilities
* Present qualitative and quantitative data in well-organized tables
* Make and present calculations based on quantitative data
* Process and present data in a graph
* Summarize results in a conclusion
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| **Assessment**: How will mastery of content and skills be assessed?Laboratory behavior and student lab reports will show if students can:* Work safely in the laboratory
* Design a procedure to investigate a process or property
* Prepare well-organized data tables
* Process data and present it in graphical form

Quizzes and tests will show if students have mastered the content goals. |
| **Key Vocabulary:**EnergyFossil FuelTurbinePotential Energy | Renewable energy sourceNonrenewable resourceWorkPowerKinetic Energy |   |



