

<b>Unit Title: Energy</b>	<b>Topic: Conservation of Energy</b>
<b>Designer: Carol Miller and Mickey Daniell</b>	<b>Grade Level: 9-12</b>
<b>Subject/Course: Physical Science</b>	<b>Pacing: 6 days</b>
<b>Standards and Elements Addressed:</b>	
<p><b>SPS7. Students will relate transformations and flow of energy within a system.</b></p> <ol style="list-style-type: none"> <li>Identify energy transformations within a system (e.g. lighting of a match).</li> <li>Investigate molecular motion as it related to thermal energy changes in terms of conduction, convection, and radiation.</li> <li>Determine the heat capacity of a substance using mass, specific heat, and temperature.</li> <li>Explain the flow of energy in phase changes through the use of a phase diagram.</li> </ol>	
<b>Brief Summary of Unit:</b>	
<p>The unit will define energy and address its five basic forms. The Law of Conservation of energy will be discussed and demonstrated in practical lab applications, as well as, in class and web based activities. Also, the relationship of temperature and heat will be addressed while introducing students to the Principle of Thermodynamics.</p>	

**Unpacked Standards**

<b>Big Ideas:</b>
<ol style="list-style-type: none"> <li>Law of Conservation of Energy</li> <li>Energy is transformed from one form to another within a system.</li> <li>How does energy flow and transform?</li> </ol>
<b>Enduring Understandings:</b>
<ol style="list-style-type: none"> <li>SWU that energy comes in two forms.</li> <li>SWU that when energy transforms or flows, it is conserved.</li> <li>SWU that within systems energy can be stored or will flow from an area of greater energy concentration to lesser energy concentration.</li> </ol>
<b>Unit Essential Questions:</b>
<ol style="list-style-type: none"> <li>What is energy?</li> <li>What is the difference between heat and temperature and what is their relationship to thermal energy?</li> <li>How does the kinetic energy within a substance determine the arrangement of molecules in different phases of the substance?</li> <li>How does energy flow affect weather patterns?</li> <li>Is matter a necessary requirement for the transfer of energy? Does all matter transfer energy equally?</li> <li>If the Law of Conservation of Energy is true, how can we have an energy crisis?</li> <li>How will mixing two materials at different temperatures demonstrate the flow of energy between greater and lesser concentrations?</li> </ol>
<b>Reasoning:</b>
<ul style="list-style-type: none"> <li>compare and contrast conduction, convection and radiation</li> <li>understand that energy is transformed not destroyed</li> <li>compare/contrast heat and temperature</li> <li>evaluate energy transformation in daily examples</li> </ul>