

**Environmental Science Matter and Energy in Organisms and Ecosystems**

Environmental Science Matter and Energy in Organisms and Ecosystems	Links
<b>Standard:</b>	
<p><b>HSLS2-</b> Construct and revise an explanation based on evidence for the cycling  <b>3.</b> of matter and flow of energy in ecosystems</p>	<p><a href="#">HS-LS2-3</a></p>
<p><b>HS-</b> Use mathematical representations to support claims for the cycling of  <b>LS2-4.</b> matter and flow of energy among organisms in an ecosystem.</p>	<p><a href="#">HS-LS2-3</a></p>
<p><b>HS-</b> Develop a model to illustrate the role of photosynthesis and cellular  <b>LS2-</b> respiration in the cycling of carbon among the biosphere, atmosphere,  <b>5.</b> hydrosphere, and geosphere.</p>	<p><a href="#">HS-LS2-5</a></p>
<p><b>21<sup>st</sup> Century Learning Expectations:</b></p> <ul style="list-style-type: none"> <li>Hinsdale students will communicate through various means</li> <li>Hinsdale students will be able to solve problems</li> </ul>	<p><a href="#">Link for 21st Century Learning Expectations</a></p>
<p><b>Enduring Understandings (cross cutting concepts):</b></p> <ul style="list-style-type: none"> <li>Energy flows through ecosystems. The main source of energy for most ecosystems is the Sun.</li> <li>During Photosynthesis, light energy is converted and stored as chemical energy by combining Carbon dioxide and water into Carbohydrates, releasing Oxygen as a byproduct.</li> <li>The process of Cellular respiration utilizes the products of photosynthesis (Carbohydrates and Oxygen) to produce ATP, a usable form of energy for cellular processes.</li> </ul>	

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<ul style="list-style-type: none"> <li>These 2 processes keep Carbon and Oxygen constantly cycling in the biosphere</li> </ul>	
Learning Competencies (engineering practices)	Essential Questions (core ideas)
<p><i>Students will be able to: (NGSS Science and Engineering practices)</i></p> <ul style="list-style-type: none"> <li>Develop models to illustrate the flow of energy in ecosystems.</li> <li>Use a model to explain the chemical changes and rearrangement of atoms during photosynthesis and cellular respiration.</li> <li>Illustrate the flow of energy and explain the energy losses that occurs in an ecosystem.</li> </ul>	<ul style="list-style-type: none"> <li>How do organisms obtain and use energy from the environment?</li> <li>How do Carbon and Oxygen Cycle through Earth?</li> <li>What is the relationship between the processes of Photosynthesis and Respiration?</li> <li>What form of energy do living things use?</li> </ul>
<p>Performance Task Sample:</p> <p><a href="#"><u>Biogeochemical cycles</u></a></p> <p><a href="#"><u>Energy Pyramids lab</u></a></p>	