

# Using Our Resources Wisely

## Unit Overview



### DESIGN CHALLENGE:

*How can we design a wind turbine that will lift a bucket of pennies?*

### ANCHORING PHENOMENON:

*An island in Denmark uses no fossil fuels.*

### STORYLINE

In this unit, students will learn about Earth’s systems and natural resources, ways that humans use natural resources, human impacts on Earth systems, and how humans can change behaviors to reduce impacts on the environment. This unit prominently features the Crosscutting Concepts of System and System Models and Scale, Proportion, and Quantity.

First, students will discover ways that humans get energy from both renewable and non-renewable sources. They will learn about an island in Denmark that changed from using non-renewable to renewable energies and then engage in a design challenge to design, build, test, and refine a wind turbine to perform a specific task.

Next, students will explore the four Earth systems (hydrosphere, biosphere, atmosphere, and geosphere) and learn how these systems interact. Part of this exploration will include examining how the water cycle involves all four Earth systems. Then students will focus on the impacts that human activities have on Earth’s systems, including both positive and negative impacts.

Finally, students will examine the hydrosphere in detail, including the distribution of water on Earth and how their own consumption of water compares to the consumption of their classmates as well as people around the world.

### OVERVIEW

<b>Section 1</b> <i>What are natural resources and how are they used to produce energy?</i>	<b>Section 2</b> <i>What are the Earth’s systems?</i>	<b>Section 3</b> <i>How do humans impact the Earth’s systems?</i>	<b>Section 4</b> <i>How much of the water on the planet is drinkable?</i>
<i>Total Time: 7 days</i> LESSON 1 What are natural resources? LESSON 2 How does an island in Denmark use wind, water, sun and biofuels to produce energy for the entire island? LESSON 3 How do wind turbines turn wind into energy?	<i>Total Time: 5 days</i> LESSON 4 What are the components of each Earth system and how do they interact? LESSON 5 How does the water cycle involve all of Earth’s systems?	<i>Total Time: 4-5 days</i> LESSON 6 How do human actions affect Earth’s systems? LESSON 7 How did the people of Samsø change their impact on Earth’s systems?	<i>Total Time: 6 days</i> LESSON 8 How is the water on Earth distributed? LESSON 9 How does your water use compare to the rest of the world?

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