

## Activity

# ENERGY FUNDAMENTALS

land art generator initiative powered by art!



## TOOLS

- Writing materials
- Calculators
- Art+Energy Flash Cards (can be B+W prints of cards)
- Energy Output Worksheet

### DESCRIPTION

Students learn about how energy is harnessed to create electricity and how it is consumed.

Students study renewable energy technologies in the context of land art generator artworks and learn to estimate the annual output of each installation.

### GOALS

1. Recognize where energy comes from, how it is harnessed, and how it is consumed
2. Interpret how renewable technologies function
3. Predict the energy output for different types of technologies
4. Demonstrate understanding of energy conversion efficiency and capacity factor

### TIME TO COMPLETE ACTIVITY

30–45 minutes

### STEP-BY-STEP INSTRUCTIONS

#### Step 1

Intro questions:

What are some forms of energy? (electrical, heat, chemical, kinetic, gravitational, etc.)

How do humans harness energy from renewable sources and generate electricity?

#### Step 2

Students are introduced to several slides of renewable energy technology examples and an explanation of how they work. The concept of “conservation of energy” is explained, emphasizing that energy changes forms, but cannot be created or destroyed. This point is explained through the example of solar panel that converts electromagnetic radiation energy from the sun into electricity and heat. Only 25% of the energy is converted into electricity. This is the conversion efficiency of the solar power technology.

### Step 3

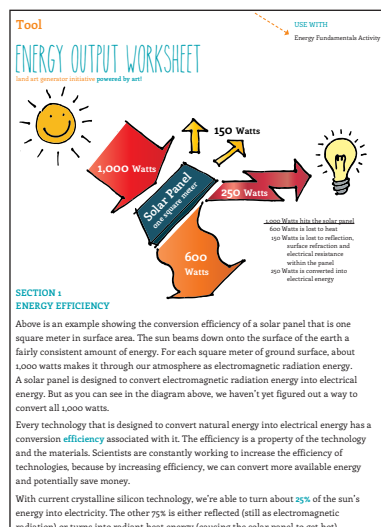
The **Energy Output Worksheet** is distributed to each student. The instructor leads the class through the first pages that explain conversion efficiency. Instructor explains the idea of capacity factor by asking the students to think about the same 25% efficient solar panel as it operates over an entire year and explains that every energy technology has a capacity factor.

### Step 4

The class goes through the first two questions at the end of the **Worksheet** together. Students are given five minutes to work on questions three and four.

### Step 5

Students form groups, pick up three LAGI Art+Energy Flash Cards, and complete the last section of the **Worksheet** together by answering the math question on each card in the space provided on the worksheet.



Energy Output Worksheet