

Energy Stores and Transfers

Identifying Stores and Transfer Pathways

Aim:

You are investigating how to identify the energy store a situation starts in, how the energy is transferred, and the energy store it ends up in, for a range of everyday situations.

Score: _____ / _____ (write your final score from the simulation here)

The screenshot shows the simulation interface with several annotated parts:

- Your scenario:** "The Sun warms the Earth's surface." with a "Skip" button and a "Scenario for this question" label.
- Energy Stores:** A reservoir containing tiles for Chemical, Gravitational Potential, Elastic Potential, Thermal, Nuclear, Magnetic, and Electrostatic. An annotation "Drag a store tile from here" points to this reservoir.
- Build the transfer pathway:** A central area with a "Start" box (containing Kinetic), a "Transfer method" selection (Mechanical, Electrical, Heating, Radiation), and an "End" box. Annotations include "Drop the starting store here" pointing to the Start box, "Choose the transfer method" pointing to the method buttons, and "Drop the ending store here" pointing to the End box.
- Energy levels:** A bar chart showing "Input Energy" at 100 and "Output Energy" at 0. An annotation "Input energy vs output energy" points to this section.

Prediction:

Before you build a pathway for the scenario shown in the sim, write down what you think the Start store, Transfer method and End store should be.

Start: Transfer: End:

Now build it in the simulation and see if you were right.

Method:

1. Read the scenario shown in "Your scenario". If you get stuck, click Hint for a clue.
2. Drag the energy store you think the situation starts in from the reservoir into the Start box.
3. Drag the energy store you think the situation ends in into the End box.
4. Select a transfer method — Mechanical, Electrical, Heating or Radiation.
5. Check the message and the Input/Output energy bars. If correct, write the scenario and your answer in your results table before the sim moves on. If not, try a different combination.
6. Repeat for at least eight scenarios, choosing a mix that use different transfer methods.

Results:

Example: a log burns on a fire → Start store: chemical store of the log → Transfer: Heating → End store: thermal store of the air. Notice each store is named with the object that stores the energy (“the log”, “the air”), not just the store type on its own.

Scenario (brief description)	Start store	Transfer method	End store	Correct first try?

Analysis:

List the eight energy stores available in the reservoir, and the four transfer methods available as buttons.

.....

.....

Look back at your table. Which scenario, or which type of combination, did you find hardest to identify correctly? What made it tricky?

.....

.....

Group the scenarios in your table by their transfer method. What do the scenarios sharing a transfer method have in common?

.....

.....

Explaining why:

Every time you build a correct pathway, the Input Energy bar starts at 100 and the Output Energy bar ends at 100.

What does this tell you about the total amount of energy before and after a transfer between stores?

The energy stores and transfer methods you have used are: Chemical, Kinetic, Gravitational Potential, Elastic Potential, Thermal, Nuclear, Magnetic, Electrostatic; and Mechanical, Electrical, Heating, Radiation. Pick one scenario from your table and describe, in a full sentence using these words, how the energy is stored and transferred. Remember to name the object that stores the energy each time.
