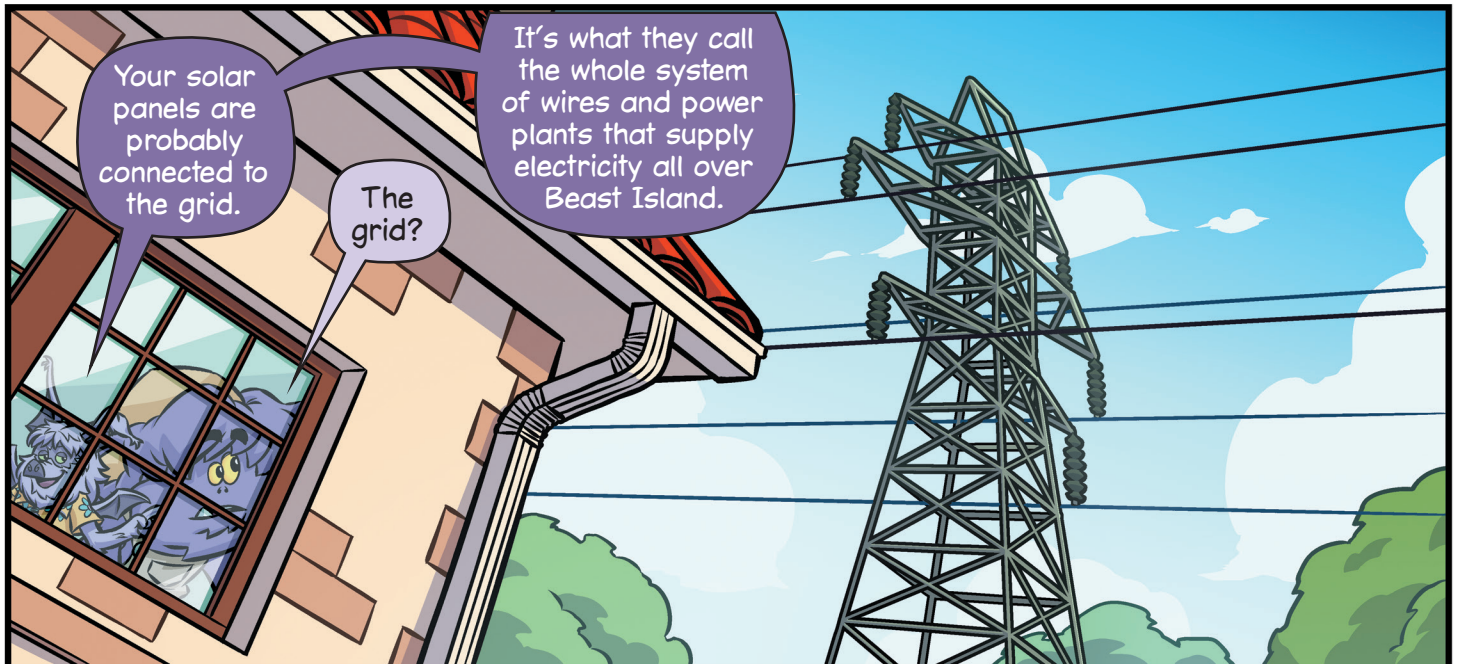
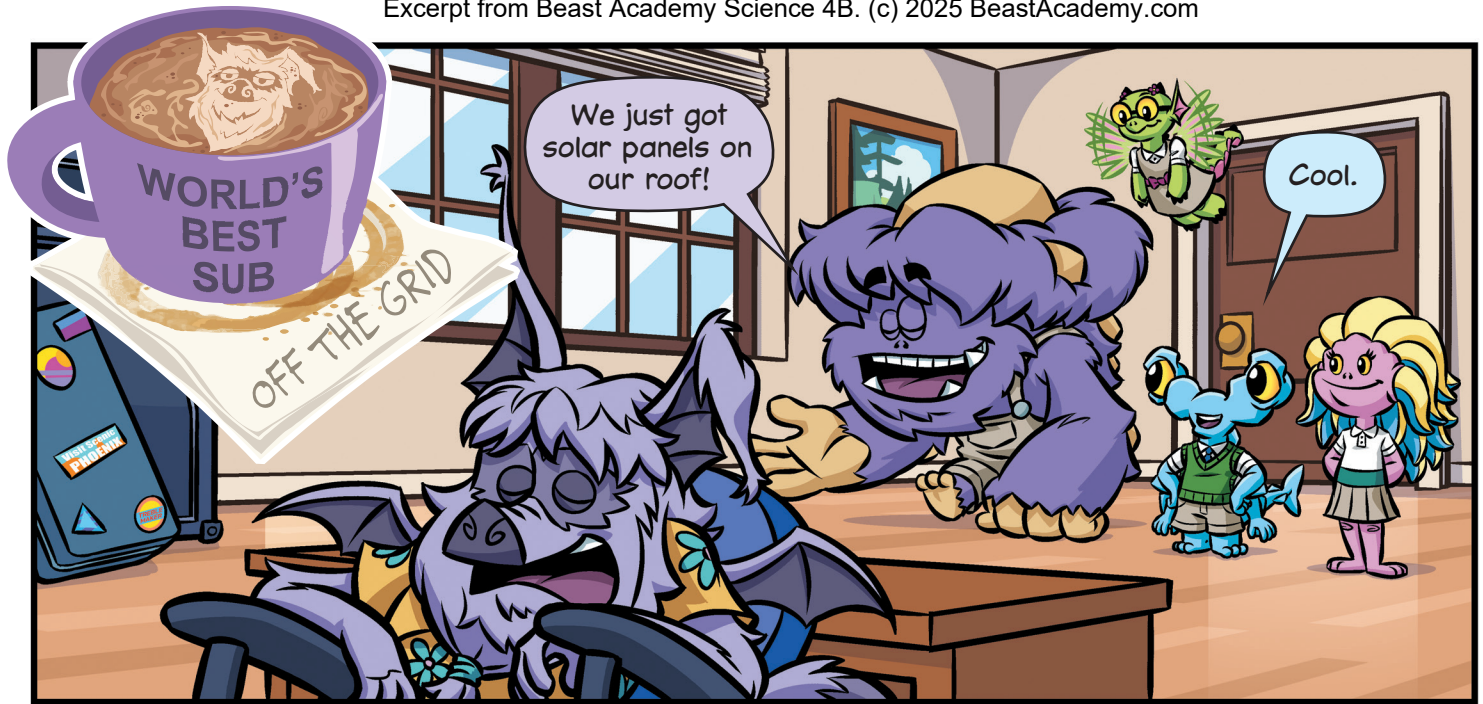
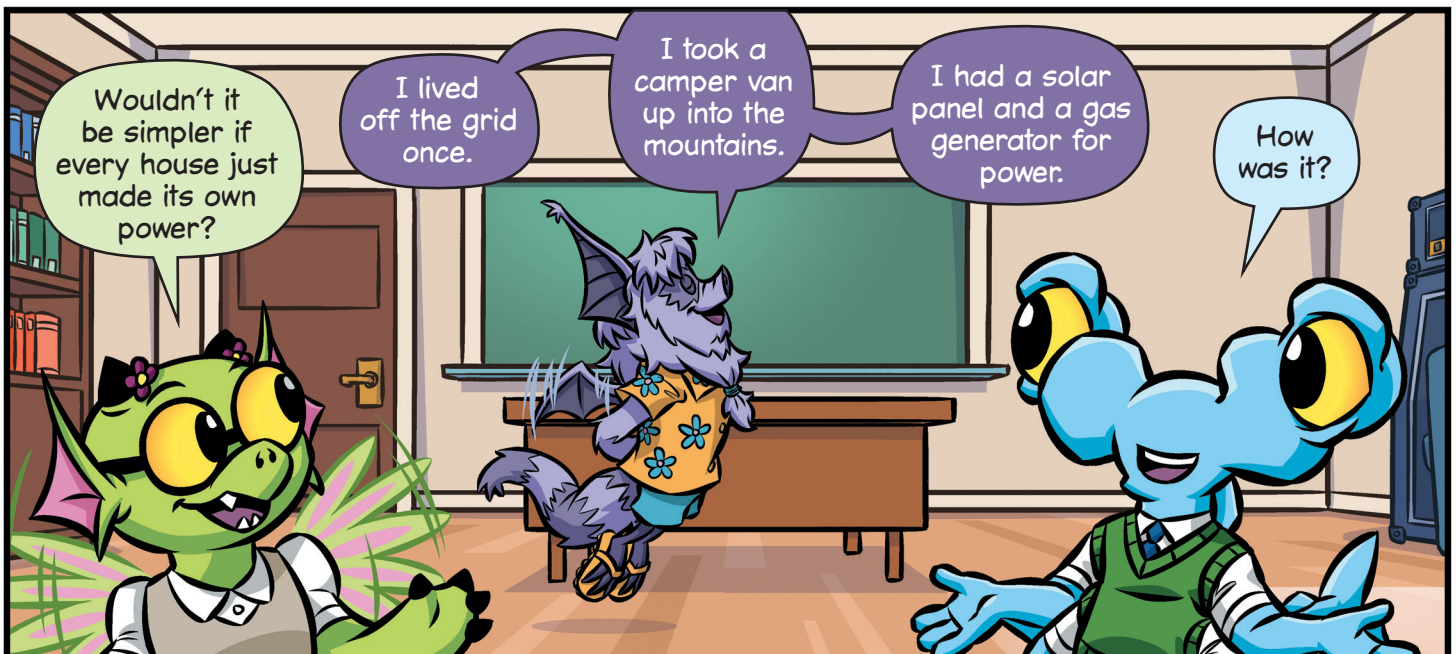
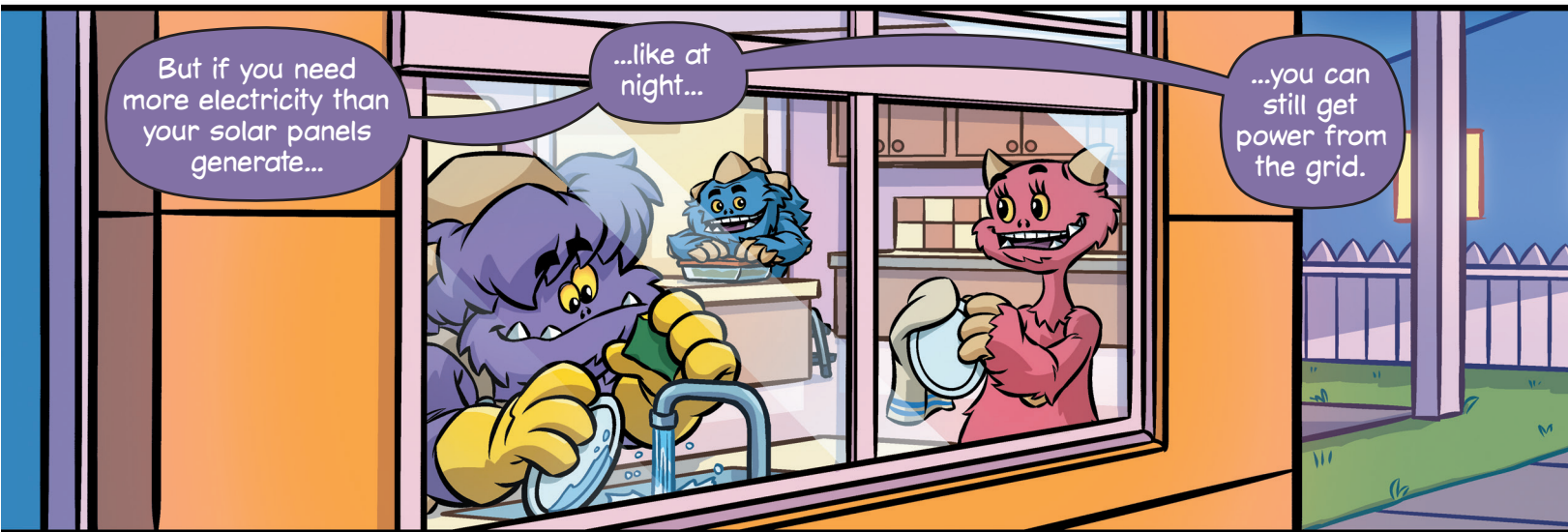
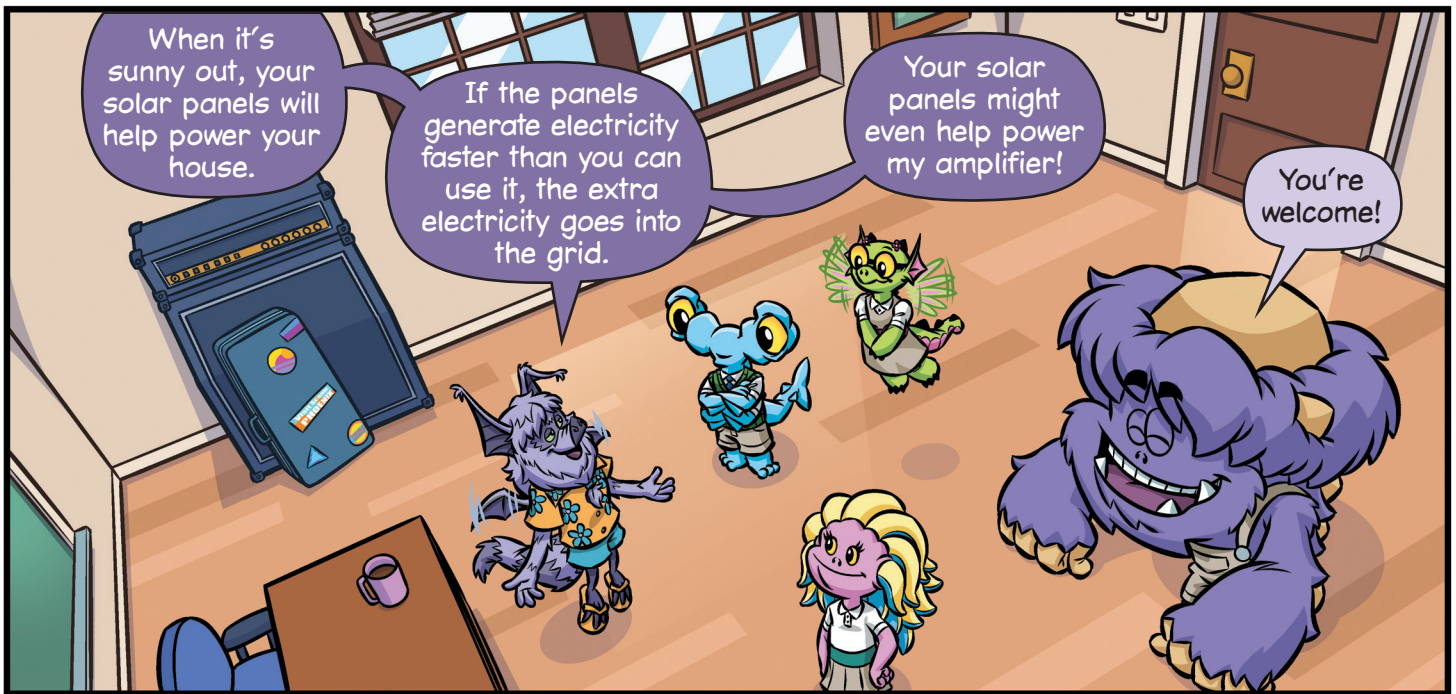
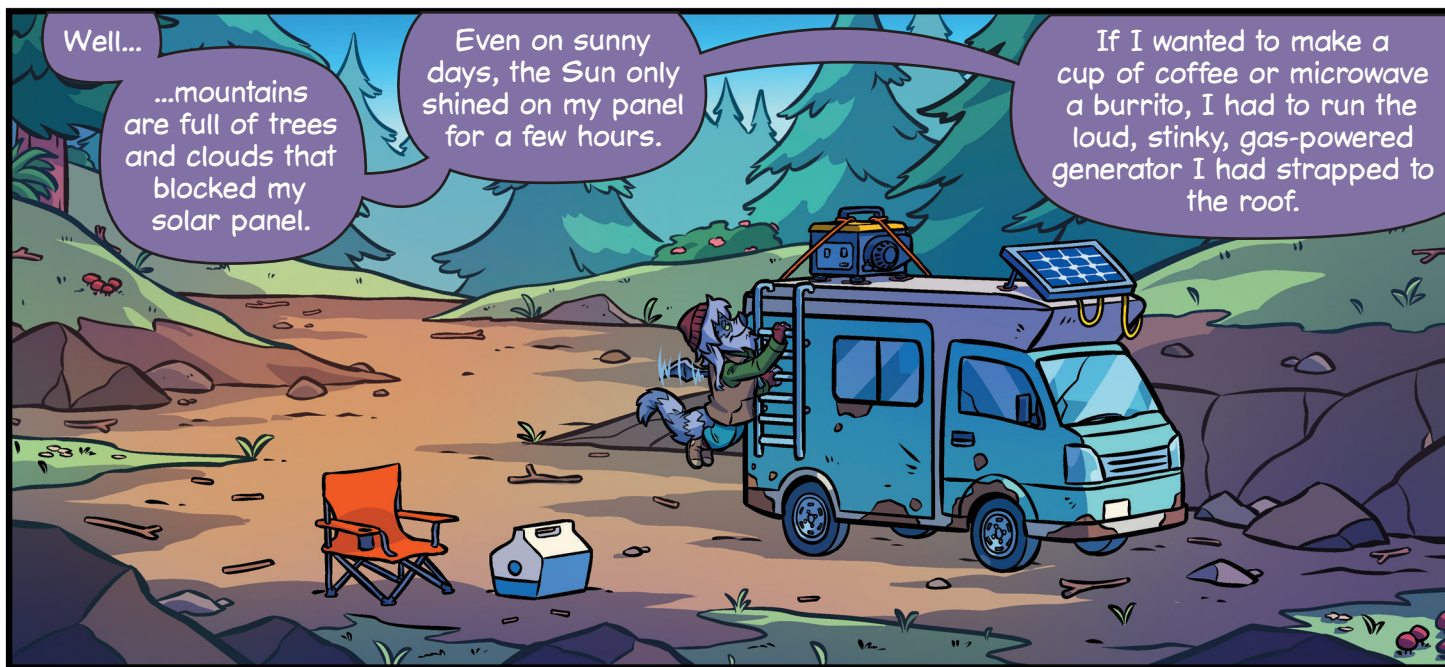






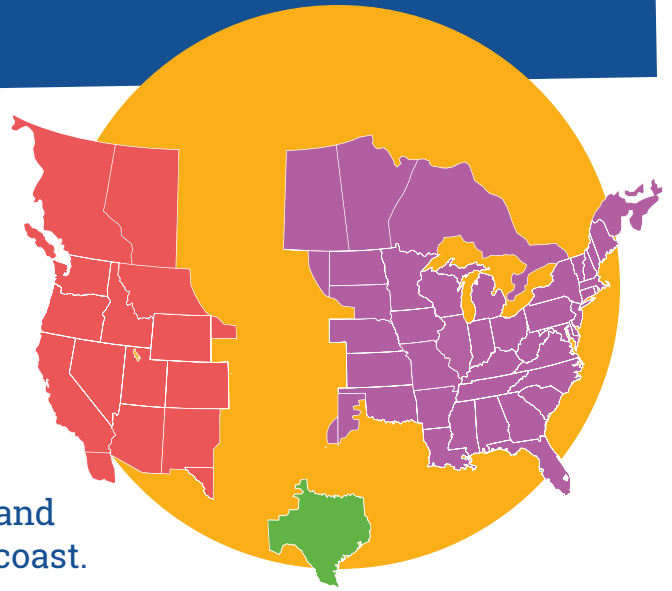




THE POWER GRID

The power grid is the network of power plants and power lines that delivers electricity wherever it is needed. You can flip a switch anywhere that is connected to the grid and gain instant access to the electricity it provides.

In 2020, there were three huge but mostly separate power grids covering the U.S.: one in Texas, one east of the Rocky Mountains, and one from the Rocky Mountains to the west coast.



- 17 Homes built “off-grid” are not connected to shared electricity and other services. Instead, these homes use solar panels, gas generators, wood stoves, and other sources of energy. What are some advantages of off-grid homes? Check one or more.

- ☐ Off-grid homes can be built in places not accessed by the power grid.
- ☐ Residents don’t need to pay for electricity from outside sources.
- ☐ Off-grid homes still have electricity when the power grid fails.

- 18 What are some advantages of being connected to the power grid? Check one or more.

- ☐ The grid offers an almost unlimited supply of electricity.
- ☐ Grid electricity is more reliable than off-grid sources like solar panels.
- ☐ Once a home is connected to the grid, electricity is free.

DISCUSSION:

- 19 Some facilities are connected to the power grid but have backup systems that allow them to operate off-grid temporarily if the power goes out. At which of the facilities below are backup systems most important? Least important? Explain.

Restaurants

Movie Theaters

Airports

Libraries

Hospitals

Car Dealerships

Consider where the fruits you eat come from. If you could only get apples from a tree in your yard, you would only have apples for a couple of months each year.

The larger the region you can get apples from, the more variety and availability there is.

Similarly, large power grids help balance the supply and demand of electricity across wide areas, helping keep the lights on even when one source of power falls short.



- 20 In the U.S., oranges are grown in California and Florida, but almost all of the oranges used for juice come from Florida. Over half of U.S. apples are grown in Washington, but apples are also grown in New York, Michigan, Pennsylvania, Virginia, California, and Oregon. Juice can be made from apples in any of these states. Do you think it's harder for weather to disrupt the supply of apple juice or orange juice in the U.S.? Explain.

- 21 When part of a power grid fails, electricity can be re-routed to connect areas where electricity is generated to where it is needed. Which of the three interconnected power grids shown on the map on page 82 looks like it has the most limited backup options when power fails in part of the grid? Check one.



Western US (red)

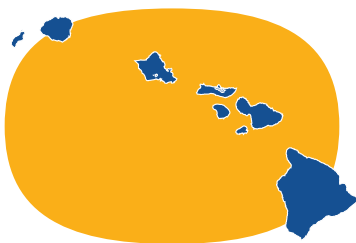


Texas (green)



Eastern US (purple)

22



Many resources, including electricity, are more expensive in Hawaii than in most other states. Why do you think that is?
