



Figure 6.20

The average amount of daily solar energy received by a fixed photovoltaic panel oriented due south. *Note:* These energy levels would be higher if the panels tracked the path of the Sun, rather than being stationary.

National Renewable Energy Laboratory (NREL) for the U.S. Department of Energy, 2012.

Your Turn 6.21 **Scientific Practices** **Where Does the Sun Shine?**

Thanks to a website provided by the U.S. National Renewable Energy Laboratory (NREL), you can view solar maps for different parts of the United States.

- a. Select a state of your choice and view the data for each month of the year. What do you notice about how solar radiation varies throughout the year?
- b. It should come as no surprise that California, Arizona, New Mexico, and Texas lead the United States in average annual solar radiation. Why do some parts of these states have higher values than others?

Your Turn 6.22 **Skill Building** **Could Solar Energy Power a House in Your Neighborhood?**

How feasible is solar energy for meeting your everyday energy demands?

- a. Use **Figure 6.20**, or another resource from the Internet, to estimate how many kilowatt-hours (kWh) of solar energy fall on one square meter of land per day in your area.
- b. A section of a homeowner's monthly electric bill is shown below. In your area, would this homeowner be able to power their household using only solar energy?

Your energy use

Meter # IN24775778

Schedule 07 (residential rate)

Service Period	Meter Reading
06/23/16	15335
05/21/16	15079
33 days of service	256 kWh

- c. Assuming that this homeowner's monthly energy use is typical, how many households could be supported by a nuclear power plant support with a capacity of 750 MW?
Hint: Start by calculating how many megawatt-hours (MWh) of energy the plant would generate in one day and how many kWh of energy the household uses in one day.
- d. Does the answer you calculated in part **c** make sense? If so, explain. If not, describe the assumptions made that might lead to a larger or smaller number than expected.