

# Energy Use and Conservation



We use energy to light our homes.

## What is Energy Conservation?

To understand energy conservation, we must first understand why energy needs to be conserved. Energy is everywhere. It is used to power lights, alarm clocks, cell phones and other personal devices, and much more.

Energy is used to heat our homes in the winter and cool them in the summer. The problem is that energy is costly to produce and use, both economically and environmentally.

Most of the world's energy is made from the burning of **fossil fuels** like coal, oil and gas. In 2014, fossil fuels made up 81% of total energy consumption. **Nuclear power** made up about 11% of total



Fossil fuel and nuclear energy are nonrenewable energy sources.



Solar and wind energy are renewable resources.

electricity production in 2014 and is expected to grow 1.5% per year over the next two decades. Fossil fuels and nuclear energy are **nonrenewable resources**, which means they will run out eventually. **Renewable resources**, such as **solar** and **wind** energy, are a more environmentally-friendly way to produce energy. Unlike nonrenewable resources, they do not run out and produce little to no pollution. Unfortunately, renewable resources don't produce enough energy for our global needs. There are over 7 billion people on Earth, most of whom use many forms of energy in a typical day. Our supply of nonrenewable resources is dwindling. In addition, many nonrenewable energy sources release pollution, in the form of carbon dioxide, smog, and nuclear waste. These byproducts pose a threat not only to the natural world (in the form of global warming, ocean acidification, and environmental contamination), but to our own health. The vast majority of scientists agree that excess carbon dioxide and other greenhouse gases in the

atmosphere are primarily responsible for **global warming**, which is leading to rising sea levels, changing weather patterns, intensifying storms, and disease outbreaks. Smog leads to respiratory problems and can compromise human immune systems. Furthermore, the more energy we use, the more expensive it becomes.

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While feng shui may not be scientifically sound, appliance placement can affect your energy consumption. If your television, lamp, or other heat-producing electronic appliance is too close to your thermostat, your air conditioner may run longer than necessary. The thermostat senses the heat from the appliance and runs as though the entire house were warmer. Similarly, changing your heating and air conditioning settings by a few degrees can make a big difference to how much energy they draw. Something as simple as using a ceiling fan can allow you to keep your air conditioning set to a higher temperature. Ceiling fans use less energy than home air conditioning systems. Planting trees around your house can provide shade, allowing you to set your thermostat higher in the summer. Home insulation, double-pane windows, and insulated curtains can help shut out heat in the summer and hold heat in during the winter. Thermostats that you can program to change at certain times or run less when you're not home save energy, too. Even people with the

best intentions forget to change their thermostat, but a computer program won't. Make sure your heating and cooling ducts are properly sealed and that gaps under doors and windows are filled in to reduce loss of cooled and/or heated air. Heating water uses a lot of energy as well. Instead of washing your clothes in warm water, opt for the cold-water cycle. Your clothes will still get clean and you'll save some money.



Using human power in place of electricity saves energy.

Use human power instead of electric or gas power when you can. Instead of using a leaf blower, use a rake. Rather than cleaning your driveway with a water hose, try an outdoor broom. Chop your vegetables by hand rather than throwing them in the food processor.

Instead of running the heat-dry setting on your dishwasher, let your dishes air dry or dry them by hand.

You can even help reduce corporate energy consumption by reusing and recycling items instead of throwing them away. It costs more energy to make a product from scratch than to recycle or repurpose an existing item.



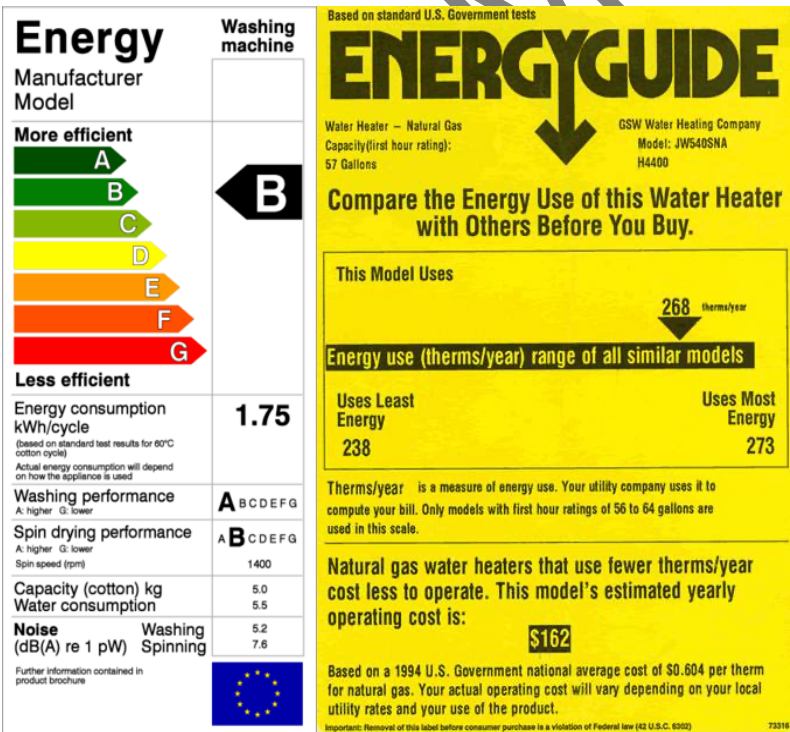
Recycling saves energy.

Driving less and walking, biking, or taking public transportation more will reduce the amount of gasoline consumed.

When you're in the market for new appliances, choose energy efficient ones. All appliances come with labels that will help you make an energy-conscious decision.

### Energy Labels

Those labels on the inside of, for instance, your fridge or microwave



Energy labels indicate energy usage.

tell you how much energy your appliance uses per year in kilowatt hours (kWh). A kilowatt hour is a unit of measure that indicates energy usage. It is equivalent to the amount of energy a 1,000-watt (1 kW) appliance would use if run for one hour. A 100-watt light bulb uses 1 kWh of energy over 10 hours. Your electrical company charges you a certain amount of money per kWh (typically somewhere between 10 to 20 cents per kWh) so you can find out how much your appliance will cost you per year. For example, if your fridge uses 700 kWh per year and your electric company charges 20 cents per kWh (\$0.20 per kWh), your fridge will cost you  $700\text{kWh} \times \$0.20/\text{kWh} = \$140$  per year to run.

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## Smart Meters

Some locations use **smart meters** that charge consumers different rates per kWh depending on the time of the day. This is meant to encourage you to use less electricity during **peak times** (time of day with the greatest energy demand) to hopefully conserve more energy across the country.

### **Reading Comprehension Questions:**

1. Name three everyday things people use energy for.
2. What
3. How much of global energy use was made up by fossil fuels in 2014? What about nuclear power?
4. Why
5. What are three effects of global warming mentioned in the reading?
6. Why
7. What are the benefits of energy conservation?
8. Name three ways to save energy in your home and two ways to save energy on a broader scale.
9. If your
10. What is Energy Star?
11. Why do

### **Extension Questions:**

12. Make a list of ways you contribute every day to energy consumption (anything you use electricity for). Then brainstorm ideas to reduce your impact.
13. Which
14. Create an
15. Find an energy label in your own home. Take a picture or draw the label. Ask a parent or guardian how much you are charged per kWh and determine the cost of the appliance per year. If they don't know how much they are charged, use \$0.20 as your cost per kWh.

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