

# *Just How Much Power Do Your Electronics Use When They Are ‘Off’?*

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Once upon a time, there was a difference between on and off. Now, it's more complicated: Roughly 50 devices and appliances in the typical American household are always drawing power, even when they appear to be off, estimates Alan Meier, a senior scientist at the Department of Energy's Berkeley Lab.

It adds up. About a quarter of all residential energy consumption is used on devices in idle power mode, according to a study of Northern California by the Natural Resources Defense Council. That means that devices that are “off” or in standby or sleep mode can use up to the equivalent of 50 large power plants' worth of electricity and cost more than \$19 billion in electricity bills every year. And there's an environmental cost: Overall electricity production represents about 37 percent of all carbon dioxide emissions in the United States, one of the main contributors to climate change.

In the name of scientific inquiry, I tested about 30 appliances from friends' houses as well as my own by plugging the devices into a Kill-a-Watt power meter, which can track how much power (in watts) is being drawn at any given moment.

## **Many Appliances Use Just as Much Power When Off**

My cable box drew 28 watts when it was on and recording a show, and 26W when it was off and not recording anything. Even if I never watched TV, I would still consume about 227 kilowatt-hours annually. To put it in context, that's more than the average person uses in an entire year in some developing countries, including Kenya and Cambodia, according to World Bank estimates.

Always leaving a laptop computer plugged in, even when it's fully charged, can use a similar quantity — 4.5 kilowatt-hours of electricity in a week, or about 235 kilowatt-hours a year. (Your mileage may vary, depending on model and battery. My computer is a few years old and a few readers have written to say their MacBooks use far less power.)

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## **Many Appliances Are Always On**

In 2014, 73 percent of American households had a high-speed Internet connection, which usually entails at least one modem and router.

While neither one draws a lot of power, in most homes, they're never switched off. The same is true of many TVs.

To turn a TV on with a remote, it has to be on to receive that signal. If it's a “smart” TV, it has to be on to stay online. And if your TV is in quick-start mode – to avoid the pain of waiting 15 seconds for it to boot up – it's drawing even more power.

Lots of traditional household appliances – things your grandmother owns – are also moving online, just like your grandmother. Light bulbs, ovens, refrigerators, coffee makers – even mattresses — can now connect to the Internet, so they also draw power all the time.

Workhorse appliances like dishwashers or laundry machines have gotten much more efficient over time, but many models now have digital displays, which mean they always draw a little bit of power, too.

## **There Are Lots of Small Energy Hogs**

Even as ap get more efficient, we have more average American used about 5,590 kilowatt-hours every year, according to the World Bank. As of 2013, that number had shot up to about 12,985 kilowatt-hours annually.

Some of this increase comes from electronics: Almost two-thirds of the population has a laptop; half have a tablet or an e-reader; 64 percent have smartphones; 36 percent have all three.

But some traditional kitchen appliances, around long before the Internet, draw a lot of power when they're on, even if they're not on that often. My test revealed that my coffee maker, mid-percolation, draws more than 900 W, although it's only on for a few minutes at a time. If a coffee maker takes 10 minutes to brew a pot, and it brews one every day, it comes out to about to about 50 kilowatt-hours every year, or a little more than what someone in Niger uses every year.

## The Simplest Way to Reduce the Hidden Power Drain

Many utility companies will provide hourly data for electrical energy consumption, and utilities in some parts of the country are installing smart meters, which allow you (and the utility) to track how much energy your home is consuming on an hourly basis.

Perhaps the simplest way to curtail energy use is to use a power strip to group appliances — TV, gaming console, powered speakers, DVD player, streaming devices — so you can turn them all off at the same time. However, Dr. Meier warned that since some of these products have clocks or Internet connections, that connection, the time, or other information could be lost if you turn off the power strip.

And if you use your gaming console to stream movies, well, don't. They can use 45 times more power than streaming consoles, according to the Natural Resources Defense Council, mostly because they aren't good at using only as much power as the task at hand requires.

**Correction:** May 9, 2016

*Because of an editing error, an earlier version of a chart with this article misstated the state in which the reporter's MacBook uses 27 W of power. It is while it is plugged in, open, and fully charged, not closed and fully charged.)*

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