

# Power *Pointers*

**W**ith the random and sudden weather changes we experience in Southwest Florida, power outages, 'brownouts' and surges are more common occurrences than in other regions of the U.S. These power fluctuations can damage and even disable home electronics, including computers and audio-video systems. I will discuss both energy conservation and power protection for your components.

Many computer users almost never shut down their computers. There are both pros and cons to this habit, depending on which platform, Mac or Windows, that you use. When a Mac goes to sleep, almost every component inside the computer is turned off; what is not turned off is set to a 'low-power mode'. RAM (memory) saves the documents and programs that you are working on, and the network ports will still get power if desired, but pretty much everything else is off. Windows computers are a little different - they 'hibernate,' like a really deep sleep. The hard drive is accessed for system functions during the hibernation period and wakeup times, causing more wear on the hard drive as well as more energy usage.

## ***Doesn't restarting the computer wear down the hard drive?***

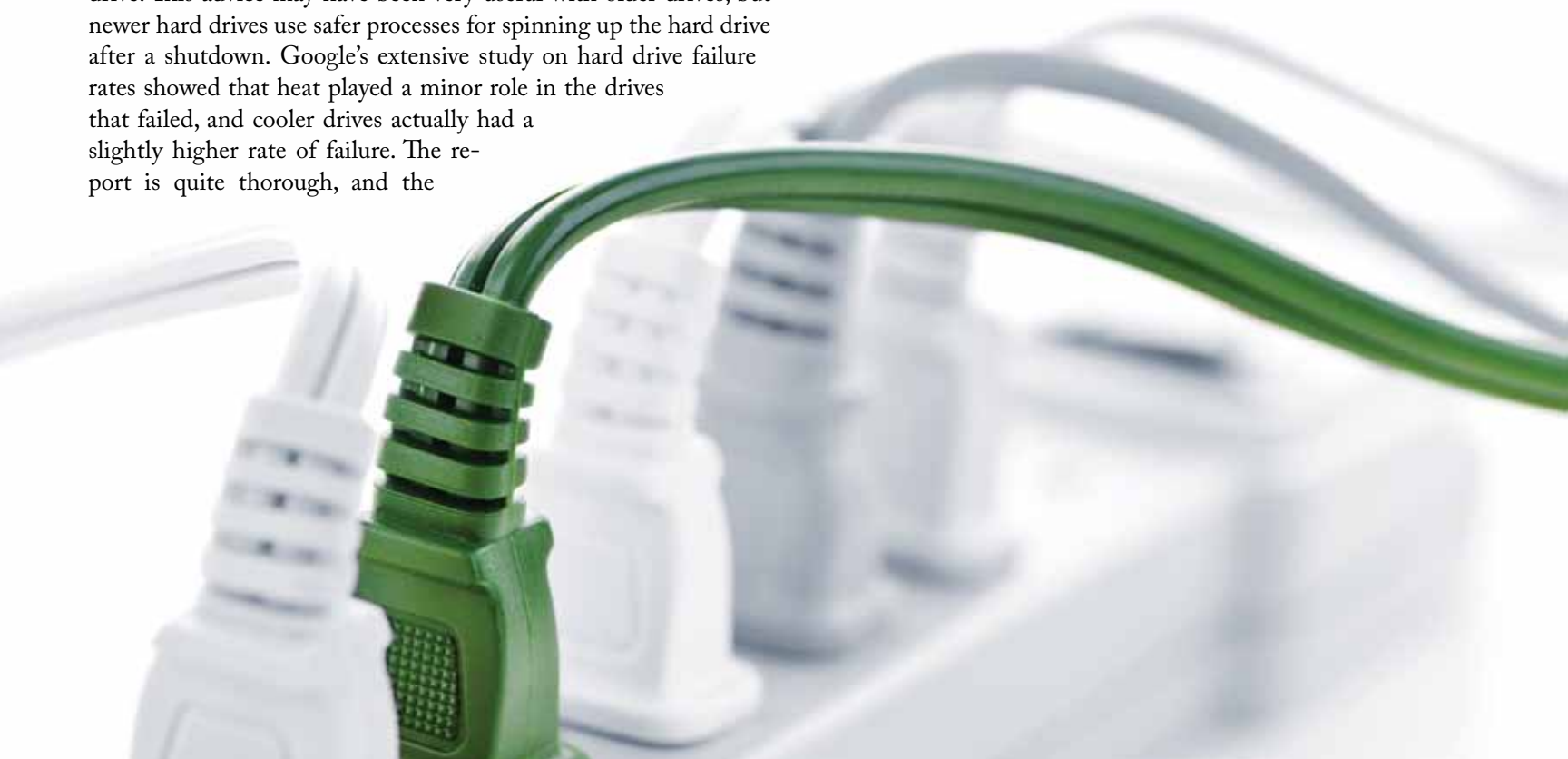
When people ask this question, they're generally weighing the benefits of saving money on electricity versus wear-and-tear on computer components. For years, many have claimed that continually shutting down and restarting your computer wears out the power switch, drive motors, and other components more quickly. According to some advocates of the leave-it-on theory, starting up a cold computer puts extra stress on the read/write heads inside the hard drive. This advice may have been very useful with older drives, but newer hard drives use safer processes for spinning up the hard drive after a shutdown. Google's extensive study on hard drive failure rates showed that heat played a minor role in the drives that failed, and cooler drives actually had a slightly higher rate of failure. The report is quite thorough, and the

link will open the PDF version of the full report. (<http://tinyurl.com/2bfcgfp>)

As far as electricity usage is concerned, modern computers don't consume much power. Because electrical charges and computer usage vary, an average annual cost for a desktop computer and monitor is said to be around \$150, or less than \$0.50 per day. The components in your system do require a small surge of electricity when you first start up the machine, but that burst of energy consumption won't offset the cost savings you'll see by shutting down on a regular basis.

There are other advantages to turning off your computer a few times per month. Keep in mind that every time you restart your computer, your operating system flushes out older files that it's not currently using. Not only does this reduce file clutter on your hard drive and in RAM, it may even provide noticeable performance boosts. Most modern computers perform a series of power-up checks, much like the lights you see on your car dashboard when starting up that are hidden most of the time.

Some who argue against leaving a computer running constantly often note that if you use an always-on broadband connection, turning off your computer means no one can attempt to hack into your data. Although there's some truth to this argument, those who lean on this idea too heavily would be better protected by taking proper precautions to protect their computers with the use of firewalls and antivirus software.



### What is the best protection?

Anytime a computer or electronic equipment is plugged directly into the wall, the risk is higher. A surge-protector, rather than a power strip, is a necessity. A power strip is basically an extended extension cord, allowing you to plug in multiple components (computer, monitor, printer, cable modem, etc.) A surge protector (or surge suppressor) is a power strip that has a fuse that will protect against surges and outages. This fuse often will burn out after one good surge, this is why it's good to get a protector with an indicator light that tells you whether or not it's functioning properly. Here are the basic types of protectors that are available:

**Basic power strip** These are basic extension cord units with five or six outlets. Generally, these models provide only basic protection.

**Surge Protector** For \$15 to \$25 you can get a power strip surge protector with better ratings and extra features. Often you will see a connected equipment guarantee with a dollar amount, so make sure to fill out any registration forms when you set it up.

**Uninterruptible Power Supply (UPS)** Some units combine surge protection with a continuous UPS. The basic design of a continuous UPS is to convert AC power to DC power and store it on a battery. The UPS then converts the battery's DC power back to AC power and runs it to the AC outlets for your electronics. If the power goes out, your computer will continue to run, feeding off the stored battery power. This will give you a few minutes to save your work and shut down your computer. These units tend to cost \$50 or more.

**"Whole-House" Surge Arrestor** You generally install these units near your electric meter or in the fuse panel, or where the power lines run to your building. This protects all the circuits in your house or office from a certain range of voltage surges. Units designed for whole-house protection are generally built for outdoor installation. Better surge arrestors can handle surges up to 20,000 volts, while standard outlet surge protectors can't handle more than 6,000 volts.

Shutting down, of course, may conflict with one of the other primary reasons that people leave their computers on, complete with running programs —convenience. Nothing beats sitting down to a computer that's ready to go at the moment you need it. If a complete shutdown doesn't appeal to you, you can also use your system's Hibernate or Standby modes, which consume less electricity, yet let you restore your computer to a ready state much more quickly than a cold startup.

Most importantly, if you will be away from your computer for an extended amount of time, unplug it from the wall after turning it off. This will prevent any surprises when you return!

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