

Helpful hints on

HOME ELECTRICITY



FROM THE LEVITON INSTITUTE

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Fight Back on Your Electric Bill

As electricity becomes more scarce and expensive, you can help yourself, the environment and the economy by taking some simple steps to conserve power. As is evident in California, utilities can't do much in the short term to add capacity. The best bet is for consumers to reduce consumption, especially at peak times.

According to surveys of the Environmental Protection Agency (EPA), lighting accounts for 20 to 25 percent of all electricity sold in the United States. That's why the Leviton Institute recommends that you install energy-efficient lighting devices. They can have a big impact by significantly reducing electric consumption.

Here are four tips from the Leviton Institute that can take the effort out of saving dollars on

your electric bill.

1. Install dimmer switches. By dimming the lights in a room you use less electricity. For example, a light bulb at 50 per cent brightness uses approximately 40 per cent less electricity. A dimmer



Dimmers add ambiance to your home while saving energy.

switch also extends the life of your bulbs. A bulb at 50 per cent brightness will last approximately 20 times longer.

2. Install occupancy sensors. An occupancy sensor automatically turns lights on when someone enters a room, and then turns them off after the person leaves the area. They're ideal for closets, hallways, the laundry

room and garages—all the places where lights may needlessly be left on for hours, or even days. Wall-switch models are designed

to replace standard wall switches, so they're easy to install.

3. Install motion detectors outside. Many homeowners know that good outdoor lighting makes their home less appealing to a burglar. But keeping outdoor floodlights on all night can be expensive. Instead, install a motion detector to control your outdoor security lights. Motion detectors are programmed to react to body heat. When they detect the presence of a person, they automatically turn on the outside lights. They also turn the lights off when they no longer detect the presence of body heat.

4. Install digital timers. If anyone in your family has left a bathroom exhaust fan or a heat lamp on all day, you'll appreciate the convenience of timers—and the fact that they can reduce energy consumption. The latest

digital timers are installed right in the wall, wherever you would put a standard wall switch. Many versions come from the factory with preset time intervals, and others offer programmable time settings. To use a timer with a preset interval, simply push the button for the length of time you want the fan or lamp to be on. The timer will turn it off automatically. You can use digital timers with longer time intervals to control your outdoor landscape lighting.

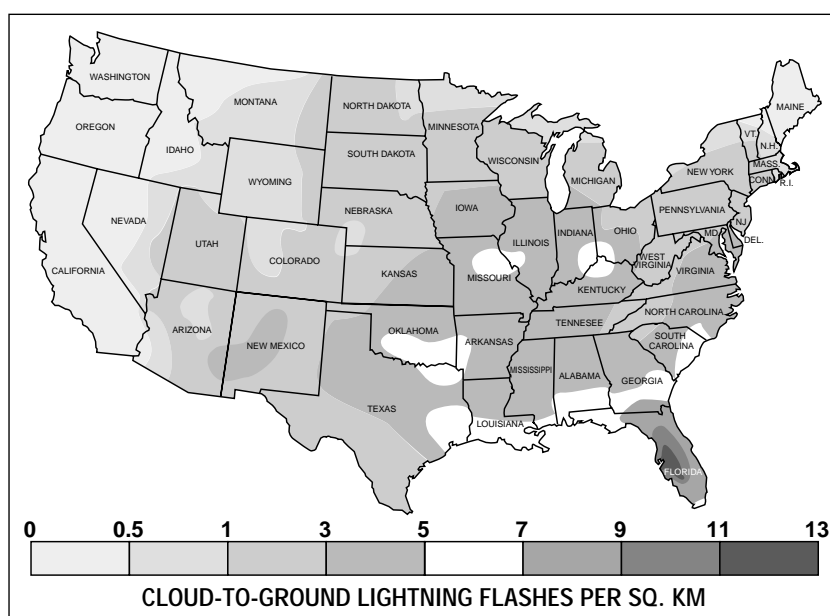
So, instead of telling your family to turn off the lights when they leave a room, which seldom produces the desired results, consider installing one or more of these new electrical devices. They take the effort out of saving electricity and they'll pay for themselves quickly with the amount of electricity they save. ♦

Lightning is No Friend of Home Electronics

If you live in an area of the country prone to lightning, you probably know how to protect yourself when thunderstorms are overhead. And you also know how important a lightning arrester is to protect your home from a direct lightning strike. But how much protection have you given to the expensive electronic equipment inside your home?

TVs, home theaters, computers and other types of equipment are vulnerable to electrical surges generated by lightning—even if the lightning is miles away. If you have a large investment in home electronics, the Leviton Institute recommends that you consider installing whole-house surge protective devices to safeguard your sensitive electronic equipment.

The typical power-strip surge



TVs, home theaters, computers and other home office equipment are vulnerable to the powerful electrical surges generated by lightning. If you live in an area of the country that has a high incidence of lightning, the Leviton Institute recommends that you install whole-house surge protective devices.

Source: National Oceanic and Atmospheric Administration

protectors that plug into a wall receptacle are primarily designed to protect equipment from low energy power surges generated

within your home. To protect equipment against lightning that enters your home through the electric lines, you need devices that can handle much larger power surges.

This protection is especially important if you live in an area of the country where lightning is prevalent. The reason: Repeated high energy surges caused by

lightning strikes will eventually destroy the surge-suppressor components in a power strip.

The Leviton Institute advises consumers to match their investment in home electronic equipment with the appropriate level of surge protective devices. To find out more about these devices, call your local electrical contractor. ♦

FAST FACTS ABOUT LIGHTNING

LIGHTNING:

- Discharges between 35,000 to 40,000 amperes of current
- Packs up to 100 million volts of electricity
- Has a force comparable to a small nuclear reactor
- Can generate temperatures as high as 50,000° C.
- Can, and does, strike the same place twice
- Travels as far as 40 miles

Source: The Lightning Protection Institute.

Home Offices are Fertile Ground for Electrical Hazards

You've just brought home a new piece of equipment for your home office. You're ready to set it up and turn it on, but you run into one small problem. There's no place to plug it in. What do you do?

If you're like millions of people who have converted a room or area of their home into an office, you'd probably use an extension



An overloaded outlet can overheat and potentially create an electrical fire.

cord to reach the nearest unused outlet. Or you might add another power strip to the same outlet being used for your other equipment.

Although that solves your immediate problem, it may also be creating another—an overloaded circuit. If too many pieces of equipment are plugged into the same outlet and they're all on at the same time, more current may be running through the outlet than it can handle. When that happens, the wiring or the outlet will overheat and this could potentially create an electrical fire. Overloading is even more of a problem with extension cords.

To prevent this and other electrical hazards in your home office, the Leviton Institute offers the following recommendations.

Potential Hazard: Overloaded circuits can cause an electrical fire.

What To Look For: Outlet or wall is warm to the touch; outlet is discolored; circuit breakers frequently trip or fuses frequently blow; a burnt smell of insulation is noticeable.

Remedy: Have an electrician run a dedicated circuit to your home office and install additional outlets in the room.

Potential Hazard: Overloaded extension cord can cause an electrical fire.

What To Look For: Extension cord is warm to the touch.

Remedy: (1) Use an extension cord with the same or larger wire size as the cord being extended. (2) Since extension cords are designed for temporary use, have an electrician install additional outlets in the room so you don't need to use extension cords at all.

Potential Hazard: Ungrounded outlets that will not protect you from an electrical shock in the event of a short circuit.

What To Look For: Equipment cord has a three-prong plug, but the nearest outlet has only two slots for the plug.

Remedy: (1) Inspect wiring at the outlet to see if there is a ground wire. If there is a ground wire, replace the existing outlet with one that accepts a three-prong plug, and connect the ground wire to the outlet. (2) In older homes, where there may not be a grounding wire, have an electrician run a new circuit with ground to your home office and install new outlets.

Potential Hazard: Improper placement of extension cords can cause a fire or cause someone to trip.

What To Look For: Extensions cords running through walls, under rugs or furniture, across doorways, or draped over heaters or equipment.

Remedy: Try rearranging office furniture; or better yet, add more outlets in the room.

Nearly one third of American households now have a home office. It may be located in a spare bedroom, a den, or part of another room. In most cases, these areas of the home were never wired for the amount of electronic equipment used in the typical home office. What's more, the same electrical circuit sending power to the outlets in your home office may also be powering outlets in other rooms. That's why the Leviton Institute recommends that you inspect your outlets, cords, and home wiring before adding more equipment to your home office. ♦

Add the Final Touches When Redecorating a Room

What's the one item people neglect when they're redecorating or remodeling a room in their house? Here's a hint. Sometimes it gets painted over. Sometimes wallpaper goes over it. Most often, it's removed from the wall and then put back, just as it is.

Even though it's seldom on the redecorating to-do list, this one item occupies a prominent place in every room of your house. It's the wallplate that goes over a light switch or an electrical outlet.

Instead of neglecting that old wallplate, why not replace it with a new one that matches or coordinates with the new color scheme in your room? Decorator wallplates come in a variety of colors and finishes, are readily available at hardware stores and home centers, and are relatively inexpensive.

Here's another idea from the Leviton Institute: When redecorating, consider upgrading your switches and outlets with modern, stylish electrical devices. The latest devices will let you add a decorator's touch to every room in your house. And they won't break the bank.

There are many new electrical devices that can spice up your house. Here are just a few examples.

Dimmer Switches: Dimmer switches can make a big difference throughout the house. In the kitchen, turn the lights on high when cooking or cleaning up. For other times of the day or night, turn the lights lower. This saves electricity and creates a warm and cozy atmosphere.

Dimming the lights in the family room will create a more relaxing environment for watching TV or listening to music. For entertaining, dimmer switches let you quickly change the light level to match

the occasion. Dimmers are also perfect for controlling the lights in bedrooms and bathrooms.

Occupancy Sensors: Wall-switch occupancy sensors can take the place of light switches. For the very young, and the very old, these new devices are ideal. As soon as you walk into a room or hallway, the occupancy sensor detects your presence and automatically turns the lights on. Once you leave that area, the device turns the lights off. Occupancy sensors can also be used in closets, basements, attics and laundry rooms.

Digital Timers: To avoid forgetting to turn off a bathroom exhaust fan or heat

minute intervals is a good choice. To control your outside lights, you can use a digital timer that has longer time intervals.

GFCI Outlets: An electrical device you should have in your kitchen is a special outlet called a Ground Fault Circuit Interrupter, commonly called a GFCI. The National Electrical Code requires that all homes built since the mid-1970s have GFCIs installed wherever an electrical outlet is within six feet of a water source.

If you live in an older home, you may not have GFCI outlets in your kitchen. Since these devices are designed to protect you from potentially



Install a digital timer in the bathroom and you'll never have to worry about leaving a heat lamp or the exhaust fan on longer than necessary.

lamp, consider installing a digital timer. These new devices replace conventional switches and come with factory pre-set time intervals. In a bathroom, a timer with 5, 10, 15 and 20

fatal electrical shocks, the Leviton Institute urges you to have GFCIs installed in your kitchen and bathrooms, and to replace regular outdoor receptacles with GFCIs. ♦

Six Commonly Asked Questions About Older Home Electrical Wiring

Unlike fine wine, house wiring and outlets and switches don't get better with age. In fact, the older the wiring, the more chances there are for potentially serious electrical hazards. Wires with broken or brittle insulation and outlets worn out from years of use are frequently cited as the cause of house fires.

If your home was built more than 60 years ago, the Leviton Institute recommends that you call a licensed electrical contractor to inspect your home's wiring and wiring devices. This inspection is particularly important if you've added appliances that use a lot of electricity, such as a clothes dryer, air conditioner, space heater or dishwasher.

Here are the most frequently

asked questions homeowners have about older house wiring:

1. What are the signs of potential electrical hazards in the home?

Some things to look for: Room lights dim when the refrigerator or air conditioner kicks on; the television screen shrinks; circuit breakers frequently trip or fuses frequently blow; outlets or dimmer switches seem hot to the touch. These conditions indicate that the electrical wiring in your house is overloaded.

2. Is an old-fashioned fuse box a hazard?

The short answer is no, because fuses provide the same protection against overloaded

wiring as circuit breakers. However, when fuse boxes were in widespread use, most homes had only 30 or 60-ampere service.

Today's homes need at least 150 to 200 ampere service to safely supply power for major appliances. If you have a fuse box and you've added any large appliances over the years, the Leviton Institute recommends that you have an electrical contractor inspect your home wiring to make sure it's still safe.

3. How can I tell when an electrical outlet isn't safe?

There are three indicators of an unsafe outlet. If an outlet can no longer hold a plug snugly; if any parts of the outlet are broken; or if the outlet feels hot to

the touch. If any of these conditions exist, the outlet should be replaced.

4. Can I add more outlets in the kitchen?

Most likely, yes. And don't forget to install GFCI outlets in the kitchen. You should also check your homeowners insurance policy and local laws, since you may be required to have a licensed electrician do this type of work rather than a handyman.

5. How long does electrical wiring last?

That's a hard question to answer, since it depends on the type of use and abuse the system has experienced over the years. If you have any doubts about

your wiring, or notice some frayed or broken insulation, have a complete inspection of your home's electrical wiring.

6. How long do outlets and switches last?

It depends on use. Electricians will tell you they see outlets more than 50 years old that still work fine, and others that are worn out after only a few years.

The Leviton Institute is the educational arm of the Leviton Manufacturing Company. Its mission is to educate consumers, specifiers and others about the benefits of today's electrical wiring devices and systems, and to promote the safe use of electrical devices in the home. ♦

Improper Extension Cord Can Damage Your Power Tools

Every year, motors in thousands of power tools burn out for one simple reason: the tool was plugged into an extension cord not suited for the job. To help you keep your power tools running properly, here's some information from the Leviton Institute about choosing extension cords.

Whether you're using a very long outdoor extension cord to run an electric lawn mower, or a short one to power up a tool for a backyard project, the wrong extension cord can damage, and eventually ruin, the motor in your tools. The reason is simple: If the extension cord isn't delivering enough power to the motor, the motor will begin to overheat. In the worst case, the motor will completely burn out from the excessive heat.

Think of that extension cord as though it were a garden hose

carrying water. A large diameter hose can carry more water than a smaller diameter hose. The same is true with extension cords. Larger diameter wires can carry more power than wires with smaller diameters. And the bigger the motor in your power tool, the more power it needs.

How do you determine the size of the wire in an extension cord? The easiest way is to check the markings on the outer jacket of the extension cord. You'll be looking for a number followed by the letters AWG printed right on the cord. The typical outdoor extension cords you'll find in a hardware store or home center are 16 AWG, 14 AWG, or 12 AWG.

But there's a twist to wire numbers: The smaller the number, the bigger the wire size. The 12 AWG wire can carry much more power than a 16 AWG

wire. That's why you would use a 12 AWG extension cord to run the big motor on a table saw, for example.

A second factor in your choice of an extension cord is its length, because this too affects the amount of power getting to the tool. Here's why. As electricity travels down the extension cord and farther from the outlet, its energy diminishes. So if you need to use a long extension cord for garden chores, choose one that has larger-diameter wires, such as 14 AWG. It's also a good idea to uncoil a long extension cord before you use it to prevent heat from building up in the cord itself.

Manufacturers of power tools and electric garden tools also specify the proper type of extension cord to use with their equipment. This information is

HOW TO MATCH EXTENSION CORDS TO ELECTRIC TOOLS

Step 1. Find out the amperage rating of the tool which you'll find on the tool, and in the owner's manual. Here are the most common motor ratings for some typical outdoor electric tools:

Lawn Mower 6-12 Amps	Leaf Blower 6-12 Amps	Hedge Trimmer 2-3 Amps
Weed Trimmer 2-4 Amps	Circular saw 12-15 Amps	Drill 3-7 Amps

Step 2. Use the table below to match the tool to the proper gauge and length cord having 2 current carrying conductors and using a standard plug rated 15 Amps (two flat blades plus ground pin).*

W		UP TO 13 AMPS	50 FT.	
I	16	UP TO 10 AMPS	75 FT.	
R		UP TO 10 AMPS	100 FT.	
E		UP TO 15 AMPS	50 FT.	
G	14	UP TO 13 AMPS	75 FT.	
A		UP TO 13 AMPS	100 FT.	
U		UP TO 15 AMPS	50 FT.	
G	12	UP TO 15 AMPS	75 FT.	
E		UP TO 15 AMPS	100 FT.	

*Using the same extension cord to power two tools at the same time is not recommended.

typically included in the equipment's owner's manual.

While choosing the right size extension cord will protect your tools, the Leviton Institute also recommends using an extension cord with a built-in GFCI receptacle to protect yourself from potential electric shock. These inexpensive GFCI-protected

extension cords have been on the market for about 10 years and are available at home centers and hardware stores. They have very short cord lengths and are meant to be plugged into an electrical outlet. Then the longer extension cord is plugged into the GFCI-protected cord. ♦

Dear Editor: All of the articles and photography/illustrations in this supplement are available electronically for your use. Simply go the Leviton Manufacturing Website at www.leviton.com and click on the button for the Leviton Institute.

How to Keep Hackers Out of Your Home Computer

Homeowners beware: If you have broadband high-speed Internet access, you could be the target of a computer hacker.

We usually think of hackers as high-tech thieves who break into the computer networks of big companies and government agencies. But any family using an "always on" Internet connection is just as vulnerable to attack. This type of broadband Internet access is provided to anyone who uses a cable modem, a DSL (Digital Subscriber Line), a T1 or ISDN line to connect to the Internet.

And, as the Leviton Institute notes, the threats are even greater for anyone who works from home—or from a small office—over such connections.

The advantage of broadband high-speed Internet access is both quick response when surfing the net and the convenience of never having to dial up to get on the Internet. This feature, however, makes your Internet address more attractive and more visible to a hacker from the moment you turn your computer on.

The same threats exist for anyone who works at home and accesses their company's network over a VPN (Virtual Private Network). Although your company may have ways to protect its network from hackers, that protection does not extend into your own home. In fact, hackers are known to break into home computers so they can infiltrate a company's network.

To make matters worse, hackers can now get their hands on free, powerful software programs that make it easier to prowl the Internet looking for vulnerable computers. A hacker who finds your Internet address can potentially reach inside your computer and read your files, change them, infect them, and share your personal informa-

tion with others.

There are several ways you can lock hackers out of your computer. One method is to install a software program called a personal firewall. A number of programs are now available, and some can be downloaded right from the Internet. They work by checking all the incoming and outgoing data from your



computer, only letting approved data enter your computer.

Unfortunately, hackers are finding novel ways to penetrate through personal software-based firewalls. If you have sensitive data in your home computer, or you're connecting into your company's network through the Internet, the Leviton Institute recommends you look into an external device called an Internet router that offers ICSA Labs certified firewall protection.

The Internet router firewall sets up your first line of defense by hiding your Internet address from the probes of hackers. It also does a better job of blocking unauthorized access to your computer than software-based products, because it blocks hackers before they access your computer's operating system and files

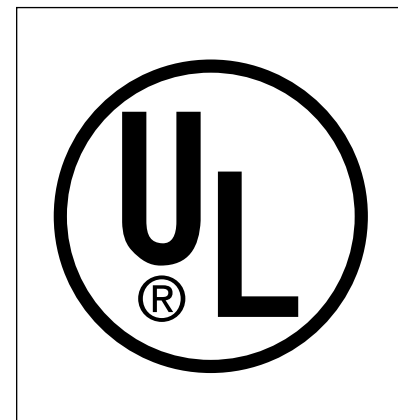
If you want to find out what you are revealing to the world through your computer, visit one of the Internet sites that performs free security checks of your computer. For a basic scan of your computer's vulnerabilities, check out Gibson Research's ShieldsUp at <http://grc.com/>. For a more detailed free scan, go to the Leviton Institute website at www.leviton.com/institute. Performing a periodic external scan of your computer is always a good idea. ❖

Don't Take Chances: Look for the UL Label

With so many electrical wiring devices to choose from, how can you be assured that the items you buy will provide years of safe, problem-free performance?

When shopping for items such as light switches, dimmers or surge protectors, the Leviton Institute advises consumers to always look for the UL (Underwriters Laboratory) mark. The UL mark indicates that an electrical product satisfies the safety requirements of one of the nation's oldest and most trusted product testing organizations.

The UL label is also your assurance that the manufacturer's products are tested and re-tested often to ensure that safety standards don't slip. UL inspectors are frequent visitors at most facilities that manufacture electrical components. Typically, inspectors walk into a plant unannounced to conduct random checks of products coming off the assembly line.



As important as the UL listing may be, many of the larger electrical product manufacturers subject their devices to rig-

orous safety and durability checks that far exceed the requirements of UL, or other electrical code organizations. For these companies the safety of their products is serious business, so they typically design and manufacture products that exceed industry standards.

The Leviton Test Laboratory in Little Neck, New York, for example, continually tests new products to ensure that they meet the highest safety standards. In a typical test of a light switch, for example, the switch will be turned on and off 30,000 times in succession. It would take nearly a lifetime to duplicate this frequency in a typical home.

In another test, an electrical plug is inserted and withdrawn from a receptacle 200 times in rapid succession. The resulting electrical arc places more stress on the receptacle than it would experience in a typical home environment.

Electrical devices fall into one of five specification categories that reflect the environment in which they will be used. Typically, electrical components are designated as residential, commercial, industrial, Federal and hospital grade. Homeowners and new home buyers need not look beyond residential grade to find a safe, high-quality product, advises the Leviton Institute.

As long as a product carries the UL listing, consumers can be assured that it has undergone a rigorous regimen of testing. ❖