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Canada

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Bring Energy Savings to your Home Entertainment System



Canada

Natural Resources Canada's Office of Energy Efficiency offers information to help Canadians become more energy-efficient at home, at work and on the road.

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Office of Energy Efficiency
Natural Resources Canada
c/o St. Joseph Communications
Order Processing Unit
1165 Kenaston Street
PO Box 9809 Stn T
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Tel.: 1-800-387-2000 (toll-free)

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Aussi disponible en français sous le titre : Pour faire des économies d'énergie avec votre système de divertissement au foyer



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1. WHAT IS A HOME ENTERTAINMENT SYSTEM?

Your home entertainment system includes all the electronic products that help you enjoy your leisure time: television, set-top box, game console, music player, audio system, video player, smart cell phone, cam recorder, camera, battery-operated small video player, computer, printer, router and modem.

Although some of this equipment is also used for work or study, this publication focuses on technologies as they are used for leisure. For information specific to technologies in a home office application, you can download or order a free copy of the publication *ENERGY STAR® for Office Equipment – Simple Steps to an Energy-Smart Office*.



2. FACTS AND FIGURES

2.1 More electronics equals more energy use

The proliferation of consumer electronics makes them the fastest growing contributor to Canadians' electricity use and cost. Although the electricity consumption of appliances has stabilized (due, in part, to government programs such as ENERGY STAR®, regulation of minimum energy performance standards, and utility incentives), the aggregated energy consumption of consumer electronics is sky-rocketing.

2.2 What contributes to this increased energy use?

Quantity

The average Canadian household owns two televisions, while one out of three Canadian households owns three or more. The main television is on for an average of five hours (hr) a day.

While computer use is now outstripping television-watching among younger people, older Canadians watch television more than ever. Statistics show that the likelihood of being a frequent television viewer rises steadily with age, from 20 percent for adults aged 20 to 24 to 52 percent for those 75 and older.



We are using more kinds of devices. Many consumers are using computers to download and view entertainment such as movies, YouTube videos and images. In fact, increasing numbers of televisions have the capability to be networked with home computers, meaning that the television is on even more. As well, use of wireless services for entertainment and information is eclipsing that of newspapers, books and magazines. Many homes have gaming boxes, which are high energy users, some drawing more power than the television.

Quality

We are buying bigger televisions. Although new models operate more efficiently than their older counterparts, the larger screens preferred by today's consumer use more electricity in absolute terms than the smaller televisions of 20 years ago. A 130-centimetre (cm) (52-inch [in.]) liquid crystal display (LCD) screen uses approximately twice as much power as an 80-cm (32-in.) LCD screen.

Canadians now enjoy a hugely expanded range of programming. The emergence of high definition (HD) and three-dimensional television makes the television-watching experience even more enjoyable. The availability of on-demand television shows and movies contributes to an easy, comfortable experience. However, improved performance costs energy because the technologies needed to deliver these choices each add a little more to an entertainment system's overall consumption.

Taken altogether,
television-related
activities are estimated
to account for
10 percent of Canada's
household power use.



2.3 Energy glutton on the rise: set-top boxes

The set-top box, so called because it has been traditionally located on top of your television, decodes signals from your cable or satellite service provider. Even when not in use, set-top boxes remain in ready mode so that they can download information and updates sent by the provider. When you power down the set-top box, only the light turns off, saving you a mere watt of energy.

The trend today is to have one set-top box per television. Advantages include being able to access the television programming in every room and having digital video recorder (DVR) capability in every television so that viewers can skip advertising or record programs to watch later. The drawback is that having one set-top box per television increases the associated total household energy consumption.

2.4 Standby power: an unsuspected energy vampire

Standby power refers to the uninterrupted supply of electricity that most consumer electronics use even when we think they are turned off. Our devices continue to consume electricity to power features such as clocks, timers, remote controls or set-top boxes that are always on or ready to receive information. Even products with an external power supply (such as laptop computers) draw on standby power as long as the power supply remains plugged into an outlet.



Although the standby power consumption of most devices is relatively small, the number of products that draw on standby power is growing. Standby power consumption can quickly increase your electricity use; on average, it can account for 5 to 10 percent of your electricity bill.

Not all products are created equal: some products consume more standby power than others. It is smart to look for ENERGY STAR qualified products when making your next purchase because they consume less energy in standby mode.

For more information, go to **energystar.nrcan.gc.ca** and search for standby power. You can also download or order a free copy of the pamphlet *Standby Power – When “Off” Means “On”*.



3. WHAT CAN BE DONE?

3.1 Existing equipment

3.1.1 Concrete solutions

There are many simple things that you can do to reduce your entertainment system's energy use without compromising your enjoyment. Some new televisions have an automatic brightness control mode. You can reduce brightness to a level that is still comfortable to watch but which uses less power and so can help save you money.

For computers, use the energy savings options rather than the so-called "screen saver" function, which uses as much energy as a normal display.

MANAGING BY MEASURING

Are you curious about how much energy your equipment uses? A watt meter can provide you with an approximate measure of the energy used by each piece of equipment. The meters are available for sale at many hardware stores or, in some areas, can be borrowed from your library. To operate the meter, you plug it into an electric socket, plug your equipment into the meter and then operate the equipment as you would normally. The resulting reading can give you an idea of how many watts your equipment draws at any one time or can provide a measure in kilowatt hours over a period of operation. Understanding how your equipment is using energy can help you to identify opportunities for reducing your consumption.

If you have many items plugged into your television, such as a surround-sound system, a computer, a digital video disk (DVD) or Blu-ray player and/or a game console, it makes sense to buy a power bar for your system. When you are not using it, one handy switch on the power bar will turn off all the connected devices, reducing energy waste from unnecessary stand-by functions.

What about the set-top box? Will turning it off cause problems?

3.2 Demystifying the use of power bars with set-top boxes

Will I lose my programming on my set-top box?

No. Programming comes from the service provider's servers and is not stored locally on your set-top box. This allows the service provider to update the programming regularly. You will not lose your channel programming if you use a power bar.

Will it take a long time to reboot the set-top box?

Rebooting generally takes two to five minutes. Take that into account by turning the power bar on a few minutes before you plan to watch television, or use a timer on your system's power bar so that the system can reboot before you want to watch. Some power bars come equipped with motion sensors so, depending on the system's location (and an absence of large pets in the home!), it could switch on and start the reboot the moment you walk through the door.





I have a DVR and have recorded several programs. Will I lose all my recordings when I cut power to the set-top box?

No. Recorded movies are stored on the hard drive of the set-top box. However, if you want to program the system to record something while you are absent, the set-top box will need to stay on even if the television is off.

If this is something you do regularly, you may want to plug the set-top box into its own power bar so that you can manage it separately from the rest of the entertainment system.

Will I have to reprogram the clock on my set-top box every time I turn on the power bar?

No. Unlike other stand-alone electronics, a set-top box is directly linked to the service provider's network. Just like the program guide, the time comes directly from the service provider. There's no need to program the clock every time, and it is accurate and even switches between standard and daylight savings time on its own!

3.3 New equipment

Think carefully before you purchase components for your home entertainment system. What size of television screen do you need for your viewing space? One calculation suggests that the best viewing distance is $1\frac{1}{2}$ times the diagonal measurement of your television screen. That means that if you are sitting a metre and a half from your television, a 100-cm (40-in.) screen is ideal for you. The smaller the screen, the lower the price, which means you will save on up-front costs as well as on energy.

Think about the type of television you are buying. Although plasma televisions are improving in energy efficiency, they still use significantly more power than LCD televisions do because of the way they are lit. Additionally, some LCD models save even more power by modulating the light according to the brightness of the image on the screen, using less energy during dark scenes. Finally, when you bring home your new television, make sure the brightness setting is on "home mode" because retailers use a brighter setting for display purposes, which uses as much as 25 percent more energy.

Ensure you buy only the peripheral devices you need. How many speakers do you need? Some systems call for six or eight speakers, but four might give you good surround-sound. Gaming, DVD or Blu-ray devices, audio/video (A/V) receivers and cable or satellite receivers all cost energy, both when in use and when in standby power mode. Include only the ones you will really use.

Do you want to know how much energy you can save with an ENERGY STAR qualified computer?

Register to download the ENERGY STAR savings calculator at oee.nrcan.gc.ca/residential/business/energystar/procurement/calculator.cfm.

3.4 Buy ENERGY STAR®

With so many considerations and so many model choices, picking the best system can be confusing. To simplify your decision, look for the ENERGY STAR symbol, which you can find on most entertainment devices. This symbol tells you that the product you are considering is among the most efficient in the market compared with products of the same type and category. ENERGY STAR is a program administered by Natural Resources Canada. It sets the technical specifications that a product must meet to be ENERGY STAR qualified and be allowed to display the ENERGY STAR symbol. As the standard of energy performance for devices on the market goes up, these specifications are reviewed and made more stringent to ensure that only the best performers qualify.



3.4.1 Which products have the ENERGY STAR symbol?

Currently, you can find the ENERGY STAR symbol on the following home entertainment products.

Televisions

ENERGY STAR qualified televisions use 40 to 50 percent less energy than standard units. You can find the ENERGY STAR symbol on standard or HD televisions and even on the largest flat-screen plasma or LCD televisions.

Set-top boxes

Energy use by set-top boxes varies greatly, depending on the type of box (cable, satellite, Internet Protocol (IP), etc.) and the additional functions (HD, DVR, etc.). On average, high-end conventional set-top boxes use 327 kilowatt hours per year (kWh/yr). By contrast, the maximum consumption allowed by ENERGY STAR ranges from approximately 45 to 250 kWh/yr for the most common configurations. This means that ENERGY STAR qualified set-top boxes are on average 40 percent more efficient than conventional models. Ask your service provider about ENERGY STAR.

A/V products

ENERGY STAR qualified DVD products, which now include Blu-ray disc players, use as little as 25 percent of the standby energy used by standard models and come with all the latest features, including progressive scan.

Computers

Computer systems, whether for entertainment or the office, consist of many components and constantly evolve. The ENERGY STAR program applies stringent energy use requirements to many of these components and provides updates when required.

Currently, desktop computers, integrated computers and tablets or notebook computers must all meet stringent specifications to qualify for ENERGY STAR. These requirements ensure energy savings when computers are being used



and performing a range of tasks, as well as when they are turned off or in a low power mode. ENERGY STAR qualified computers must also have efficient internal or external power supplies.

Displays

ENERGY STAR qualified displays, such as computer monitors or digital picture frames, must meet stringent requirements in all modes so that, on average, they are 20 percent more energy-efficient than conventional models.

In general, larger, high-resolution displays use more energy than smaller, low-resolution displays even when they are ENERGY STAR qualified, so ensure that you purchase only as large and clear a display as necessary

Imaging equipment

Do you like to print photos or other images? ENERGY STAR qualified imaging equipment includes copiers and fax machines, digital duplicators, printers, scanners and all-in-one devices. Models that meet the ENERGY STAR



imaging equipment criteria are 40 percent more energy-efficient than regular devices and feature efficient designs that help equipment run cooler and last longer.

3.4.2 How ENERGY STAR saves you energy and money

Following are some typical examples of how Canadian families can reduce energy use and costs by buying products bearing the ENERGY STAR symbol.

Example 1: 105-cm (42-in.) LCD television

The Buckmore family have purchased a 105-cm (42-in.) LCD television. What they do not know yet is that it will cost them **\$46/yr** in electricity to operate.¹

The Smart family plans to buy a 105-cm (42-in.) LCD television also. They know about ENERGY STAR and plan to buy a television that carries the ENERGY STAR symbol. It will cost them no more than **\$21/yr** to operate.²

^{1 & 2} Using a national average of 10¢/kWh and assuming an average of 5 hr of viewing per day. Check your utility bill to know exactly how much you pay for electricity.



Example 2: An HD cable set-top box with DVR

The Buckmore family has two HD cable set-top boxes with DVR. This equipment costs them **\$72/yr** to operate.³

The Smart family has the latest set-top boxes with all the same features. However, when they were shopping for service providers, they found one that offers ENERGY STAR qualified boxes. In fact, their service provider provided them with HD personal video recorder cable set-top boxes that are less energy-hungry and available right now in Canada. The Smarts pay only **\$29/yr** in electricity for their two boxes!

³The assumption is that the set-top box is on 24 hours. In fact, when the user presses the standby button, all it does is turn off the display light. The set-top box itself is always on. Also, we use a national average of 10¢/kWh. Check your utility bill to know exactly how much you pay for electricity.



4. A FINAL WORD

You may have already cut your energy use. You use compact fluorescent lamps or light-emitting diode lights and you have replaced your old, inefficient refrigerator, stove and washer with new ones that use less energy. Yet you may find you are still experiencing electricity use spikes.

If you and your family love high-tech equipment, the devices you use to improve your leisure enjoyment could explain the continuing rise of energy use in your home. Check your home entertainment system and pledge to use conservation measures from now on! Simple actions can go a long way to putting some money back in your pocket and saving the environment, too.

*The **ENERGY STAR**® symbol can
be displayed in various ways:*



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