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Energy saving revisited

New standards for electric consumption by computers and TVs are in the works

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Melvin Constantino's condo is a gadget-lover's fantasy.

A 27-inch LCD flat-panel television functions as the centrepiece of a living space dotted with two Sony PlayStation machines (versions 2 and 3), two Apple iPods, two cellphones, two laptop computers, a high-definition projector with a 100-inch motorized drop-down screen, a full stereo unit and a surround-sound system with 250-watt subwoofers.

Throw in two more TVs – a 27-inch cathode-ray dinosaur and a smaller 13-inch set – and the 31-year-old interior designer puts the "entertainment" in home entertainment.

"My friends make fun of me," says Constantino, who despite his fascination with electronics may be more representative of North American households than he thinks.

Lower-cost electronics that tap advancements in computer processing, Internet and wireless technologies are turning more homes into digital command centres. Such progress is largely a good thing, if you ignore the dramatic impact it's having on our electricity system.

The Natural Resources Defense Council, a U.S.-based environmental group, says residential electricity use by consumer electronics has doubled since the late 1990s and is now responsible for up to 15 per cent of household power consumption.

A report released last September by the Ontario Power Authority concluded that growth in electronics and small appliances in Ontario households over the next 20 years will require the equivalent of two nuclear reactors to keep them powered.

This electronics surge is why new "Energy Star" standards will go into effect this year aimed at pressuring manufacturers to improve the efficiency of their products – beginning this July with personal computers, and followed later with a new specification for TVs.

It's about time, some experts say. In the case of personal computers, there has not been a major revision of Energy Star specifications since 1992 – about the time the World Wide Web made its debut. The result is that more than 90 per cent of PCs on the market qualify for an Energy Star label, making the current standard somewhat pointless.

"We've needed to right-size this for quite a while," says Jason Boehlke of Portland-based Ecos Consulting, which helps organizations become more energy efficient.

"What's happened since 1992 is horsepower has gone up so much that PCs are using a tonne more energy than they used to. The power supplies are getting bigger and bigger to keep up with the amount of energy required by the processor, but also other ancillary components," such as graphics cards.

Power supplies that come with electronics are either built-in or external, and they're needed to convert AC electricity from a standard wall socket into DC electricity. The problem is that they're notoriously inefficient at energy conversion.

A typical power supply today will lose about 30 per cent of the energy it draws from the wall, much of it in the form of heat loss. The test is simple: the more your power supply heats up, the less efficient it is at energy conversion. In organizations with hundreds of computers, this added heat means air conditioning systems must work harder. Come July 20, however, computer power supplies must be at least 80 per cent efficient under Energy Star version 4.0. In other words, they can't lose more than 20 per cent of energy during power conversion. Manufacturers aren't required to comply, but those that don't won't be permitted to label their product with Energy Star stickers.

The goal of the Energy Star program is to reduce the number of computers that qualify to about 25 per cent from the current level of more than 90 per cent. Considering a vast majority of computers sold today carry the Energy Star sticker, the good news is consumers have grown accustomed to seeing it and will come to expect it from PC suppliers.

Phil Smith, product manager of commercial desktop products at HP Canada, says concern over climate change – the effects of which were recently highlighted in a United Nations-backed report – has people paying more attention to how energy is consumed.

"I think we all can agree that energy efficiency has been thrust into the spotlight over the past few weeks, and this will increase awareness of the requirement for Energy Star compliance on products," he said.

Hewlett-Packard was the first major PC manufacturer to offer businesses the option to purchase 80 per cent efficient power supplies with their computers. "In the Canadian market, the most enthusiastic customers we've been seeing so far for Energy Star 4.0 have been from government," Smith added.

But power supply is only part of the efficiency equation. The new standard is also tackling standby power, a feature in most electronics that makes it possible for computers, TVs and other devices to stay in quick-start mode so users don't have to go through a lengthy boot-up.

Standby power turns every product into a "phantom load" that appears to be off, but still saps electricity when plugged in. It offers a convenience most of us take for granted.

"We're much more reliant on electronic products that use standby power," says Anne Wilkins, who manages Energy Star in Canada through Natural Resources Canada. "That's the growing energy use in the household that we need to address if we're going to achieve greenhouse gas emissions targets."

Computers sold after July with Energy Star labels – including all desktops, notebooks, tablets, gaming consoles and workstations – will now be required to sharply decrease their watt consumption in standby and sleep modes. Also, computer displays will need to be pre-set so that they go into sleep mode within 15 minutes of user inactivity. The whole computer must go into sleep mode within 30 minutes of inactivity.

U.S. Environmental Protection Agency, which created the Energy Star program, says the new specifications will result in compliant computers being roughly 65 per cent more efficient than conventional models.

Wilkins says the next target is televisions. Like computers, far too many TVs qualify for an Energy Star sticker – about 60 per cent. The need to get tougher on TVs is also driven by the fact that the "boob tube" is getting larger and consuming an increasing amount of power.

Market research firm iSuppli Corp. estimates that by 2009 more than 70 per cent of the TVs sold in North America with be flat-screen TVs with screen sizes of 30 inches or larger. In many cases, these TVs will consume twice the power used by the older models.

Higher energy consumption also relates to how the TVs are used. "Their use has really changed in the last five to seven years," Wilkins says. "Now they're being used for more than just watching TV. They're on longer than they ever were, with video games and other technologies being used with them."

This is why previous efficiency rules have focused on standby mode, which is simpler to measure. Assessing TVs in "active" mode is a much more complicated task.

For example, if brighter images frequently occupy a screen, the TV will consume more electricity. So if you watch a lot of football and baseball, you're likely using more power than if you primarily watch dark soap operas or scary movies. The trick is to come up with an acceptable average across a broad range of sets and screen types.

The International Electrotechnical Commission, a standards-setting body based in Geneva, is in the process of trying to develop a procedure for testing the energy efficiency of TVs in active mode. If all goes well, the final version of a new Energy Star specification for TVs will be released in November and will go into effect July 1, 2008.

Constantino, the gadget-lover, supports the idea of tightening up energy-efficiency standards for electronics.

"I just watched *An Inconvenient Truth*, so I'm more aware of the need to be more energy efficient," says the 30-something condo owner, referring to the popular Al Gore documentary on global warming. "I try to conserve as much as I can."