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BY DEGREES

Plugged-In Age Feeds a Hunger for Electricity

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With two laptop-loving children and a Jack Russell terrier hemmed in by an electric fence, Peter Troast figured his household used a lot of power. Just how much did not really hit him until the night the family turned off the overhead lights at their home in Maine and began hunting gadgets that glowed in the dark.

“It was amazing to see all these lights blinking,” Mr. Troast said.

As goes the Troast household, so goes the planet.

Electricity use from power-hungry gadgets is rising fast all over the world. The fancy new flat-panel televisions everyone has been buying in recent years have turned out to be bigger power hogs than some refrigerators.

The proliferation of personal computers, iPods, cellphones, game consoles and all the rest amounts to the fastest-growing source of power demand in the world. Americans now have about 25 consumer electronic products in every household, compared with just three in 1980.

Worldwide, consumer electronics now represent 15 percent of household power demand, and that is expected to triple over the next two decades, according to the [International Energy Agency](#), making it more difficult to tackle the greenhouse gas emissions responsible for [global warming](#).

To satisfy the demand from gadgets will require building the equivalent of 560 [coal](#)-fired power plants, or 230 nuclear plants, according to the agency.

Most energy experts see only one solution: mandatory efficiency rules specifying how much power devices may use.

Appliances like refrigerators are covered by such rules in the United States. But efforts to cover consumer electronics like televisions and game consoles have been repeatedly derailed by manufacturers worried about the higher cost of meeting the standards. That has become a problem as the spread of such gadgets counters efficiency gains made in recent years in appliances.

In 1990, refrigerator efficiency standards went into effect in the United States. Today, new refrigerators are fancier than ever, but their power consumption has been slashed by about 45

percent since the standards took effect. Likewise, thanks in part to standards, the average power consumption of a new washer is nearly 70 percent lower than a new unit in 1990.

“Standards are one of the few ways to cheaply go after big chunks of energy savings,” said Chris Calwell, a founder and senior researcher at Ecos, a consulting firm that specializes in energy efficiency.

Part of the problem is that many modern gadgets cannot entirely be turned off; even when not in use, they draw electricity while they await a signal from a remote control or wait to record a television program.

“We have entered this new era where essentially everything is on all the time,” said Alan Meier, a senior scientist at the Lawrence Berkeley National Laboratory and a leading expert on energy efficiency.

People can, of course, reduce this waste — but to do so takes a single-minded person.

Mr. Troast, of South Freeport, Me., is just the kind of motivated homeowner willing to tackle such a project. His day job is selling energy efficiency equipment through an online business. He was not put off by the idea of hunting behind cabinets to locate every power supply and gadget, like those cable boxes, Web routers or computers that glowed in the dark.

The Troasts cut their monthly energy use by around 16 percent, partly by plugging their computers and entertainment devices into smart power strips. The strips turn off when the electronics are not in use, cutting power consumption to zero.

While Mr. Troast’s experience demonstrates that consumers can limit the power wasted by inactive devices, another problem is not as easily solved: many products now require large amounts of power to run.

The biggest offender is the flat-screen television. As liquid crystal displays and plasma technologies replace the old cathode ray tubes, and as screen sizes increase, the new televisions need more power than older models do. And with all those gorgeous new televisions in their living rooms, Americans are spending more time than ever watching TV, averaging five hours a day.

The result is a surge in electricity use by TVs, which can draw more power in a year than some refrigerators now on the market.

Energy experts say that manufacturers have paid too little attention to the power consumption of televisions, in part because of the absence of federal regulation.

Another power drain is the video game console, which is found in 40 percent of American households. Energy experts — and many frustrated parents — say that since saving games is difficult, children often keep the consoles switched on so they can pick up where they left off.

Noah Horowitz, at the [Natural Resources Defense Council](#), [calculated that the nation's gaming consoles](#), like the Xbox 360 from [Microsoft](#) and the [Sony PlayStation 3](#), now use about the same amount of electricity each year as San Diego, the ninth-largest city in country.

Mandatory efficiency standards for electronic devices would force manufacturers to redesign their products, or spend money adding components that better control power use.

Many manufacturers fight such mandates because they would increase costs, and they also claim the mandates would stifle innovation in a fast-changing industry.

The government has never aggressively tackled the television issue because of opposition from the consumer electronics lobby in Washington, experts say. In 1987, before televisions had swelled into such power hogs, Congress gave the Energy Department — which generally carries out the standards — the option of setting efficiency rules for TVs.

But industry opposition derailed an effort in the 1990s to use that authority, according to Steve Nadel of the American Council for an Energy-Efficient Economy. A more recent attempt to require home electronics to use no more than one watt of power in standby mode met the same fate. The federal government has moved forward on only two standards for electronics, covering battery chargers and external power supplies.

In the absence of federal action, a few states have moved on their own. The [California Energy Commission](#) just proposed new standards for televisions that would cut their power consumption in half by 2013. But that effort has set off a storm of protest from manufacturers and their trade group, the [Consumer Electronics Association](#). (It is still expected to pass, in November.)

A spokesman for the industry said that government regulations could not keep up with the pace of technological change.

“Mandates ignore the fundamental nature of the industry that innovates due to consumer demand and technological developments, not regulations,” said Douglas Johnson, the senior director of technology policy at the association.

Mr. Johnson said that California's limits on manufacturers, which he called arbitrary, might delay or even prohibit some features of new devices. Instead, he praised the government's voluntary Energy Star program, which he says encourages efficiency without sacrificing innovation.

“Mandatory limits, such as we see in California, threaten to raise prices for consumers and reduce consumer choice,” he said.

Estimates vary regarding how much a mandatory efficiency program for gadgets would cost consumers. For some changes, like making sure devices draw minimal power in standby mode, experts say the cost may be only a few extra cents. At the other extreme, the most energy-efficient of today’s televisions can cost \$100 more than the least energy-efficient. (That expense would be partly offset over time, of course, by lower power needs.)

Some types of home electronics are rated under [Energy Star](#), a program that classifies products in more than 60 categories according to their energy consumption. But that program, while a boon to conscientious consumers who buy only the most efficient products, does not prevent the sale of wasteful devices and has not succeeded in driving them off the market.

The lack of regulation of gadgets is a notable contrast to the situation with [appliances](#).

Congress adopted the nation’s first electrical efficiency standards in the 1980s, focusing initially on kitchen and other large appliances. That effort made some steep gains, particularly for refrigerators, which were once among the biggest power hogs in a typical home.

The federal effort lagged during the administration of [George W. Bush](#), and the Energy Department missed a string of deadlines set by Congress. But the Obama administration has vowed to make maximum use of existing law, [speeding up the adoption](#) of 26 standards on a host of products that include microwave ovens and clothes dryers. Tougher lighting standards, embraced by both the Bush and Obama administrations, are due to take effect in coming years.

But Congress has never granted any administration the authority to set standards for power-hogging electronic gadgets like game consoles and set-top boxes. Even now, when both the administration and Congress are focused on the nation’s energy problems, no legislation is moving forward to tackle the issue.

Experts like [Dan W. Reicher](#), who directs [Google’s](#) energy efforts, argue that the United States must do better, setting an example for the rest of the world.

“If we can’t improve the efficiency of simple appliances and get them into greater use,” Mr. Reicher said, “it’s hard to believe that we’ll succeed with difficult things like cleaning up coal-fired power plants.”