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Section: Why Not?

Easy Savings

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An auto-off feature for your home's lights, in the fashion of a French hotel, could save you \$150 a year.

As powerpoint presentations go, An Inconvenient Truth is quite impressive. Alas, the movie has just one slide on solutions. Here are our two suggestions for energy conservation. Readers who have been to European hotels are familiar with the card key slot just inside the room. To turn on the electricity, you slide your room key into the slot. When you pull the card out on leaving, the lights and the air conditioner go off (while the clock stays on).

The great aspect of this device is that it is passive. You don't have to think to turn off the lights. Why not put something like this in your home? When you leave your house or go to bed, you'd just pull out the key and all the lights would go off.

How much might this save? Let's start with hotels. A Berkeley Lawrence National Lab study by Erik Page and Michael Siminovitch monitored electricity usage by guests. Most of the time bathroom lights were turned on for four minutes or less, but 30% of guests left bathroom lights on when they left. On average, bathroom lights were on for eight hours a day. Bedside lamps add another five hours. We feel safe in assuming that most of the bathroom illumination is wasted, as is half of the bedside table lamp usage. With four 60-watt bulbs in the bathroom and a 100-watter next to the bed, that's a wasted 2 kWh per day.

A room air conditioner draws around 800 watts. Turn the air conditioner down to standby mode for five hours a day (which cuts out half the juice) and you save another 2 kWh.

If electricity in Las Vegas costs 10 cents per kilowatt-hour and if the hotel enjoys 90% occupancy, each room saves \$130 annually. The system would pay for itself quickly on new construction, since it would add only \$100 to the room's cost.

Across the U.S., hotels have 4.5 million rooms, with a 61% occupancy rate. If they were all being built anew, the industry could trim \$400 million a year off its electric bills.

Putting this technology into homes offers an ever bigger win. If the 80 million households in the U.S. were to save five 75-watt lights for eight hours a day, that would translate to 90 billion kWh annually. Annual air-conditioning usage per household is 2,200 kWh. If electricity keys could save 20% of that total, we could add another 35 billion kWh. The total savings would be around 125 billion kWh, the equivalent of 60 power plants.

Of course, we are not going to retrofit existing houses. But new construction should have this feature. It could save the homeowner \$150 a year.

A typical car engine uses 1,000 times as much energy as a lightbulb, so conservation here is even more important. Our second proposal is to shift the way we measure fuel efficiency: Instead of miles per gallon, we should report gallons per 1,000 miles (what we'll call kilomiles).

You might think that it makes little difference. The problem is that miles per gallon doesn't readily translate into the dollar cost of driving. We don't say, "I plan to buy 1,000 gallons of gas. I wonder how far it will get me." Instead, we say, "I plan to drive 10,000 miles this year. I wonder how much it will cost me."

Imagine that Sybil owns a Toyota Prius and a Cadillac Escalade and that she drives each 10,000 miles a year. Suppose she could somehow increase the energy efficiency of her Prius from 50 to 60mpg or increase the fuel efficiency of her Escalade from 15 to 16.5mpg. Which should she choose? The Prius, right? The miles-per-gallon increase is 20% for the Prius versus 10% for the Escalade; the raw increase (10mpg versus 1.5mpg) is also greater for the Prius.

Wrong. Increasing the Prius' fuel efficiency from 50mpg to 60mpg saves only 33 gallons of gas a year. Increasing the Escalade's efficiency from 15 to 16.5mpg saves almost twice as much: 61 gallons a year.

Looking at gallons per 1,000 miles makes the comparison easy. The Escalade's fuel usage went from 66.6 to 60.6 gallons per kilomile, while the Prius' consumption fell from 20 to 16.6 gallons per kilomile. Saving 6 gallons beats saving 3.3.

We need to focus on fuel efficiency at the bottom of the range, not the top. The miles-per-gallon statistic focuses our attention on the wrong end of the distribution. Instead of looking for 100mpg wonders, we need to spend more time coaxing slightly better fuel efficiencies out of gas-guzzlers, especially high-mileage ones, such as taxis.

And by the way, the Europeans get that one right, too; they measure fuel economy in liters/100km.

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