BY NATE ADAMS

Why 'Energy-Saving' Tips Suck

"Save energy." What exactly does that mean? Save what energy? Save *some* energy? Save *a little* energy? Save *a lot?* The brutal truth is that most energy-saving tips out there are worthless. In my experience, energy-efficiency "tips" usually cost homeowners time and money without saving a noticeable amount of energy or money. The juice just ain't worth the squeeze.

Here's what got me thinking about this: I'm working on a deep energy retrofit at Hiram College called the TREE (Teaching, Research, and Environmental Engagement) House. When completed, the building will house offices and classrooms for the college's environmental studies program. The faculty member in charge of this project, Debbie Kasper, is passionate about energy efficiency and the environment. And she has gotten me involved in a side project to help students develop a consumer education program that shows people simple ways to save energy. The problem is that there are very few simple ways to achieve noticeable savings or improvement in comfort. And that's what people want: tangible evidence that their efforts are having an impact.

What could be worse than unfulfilled promises from companies trying to sell you something? How about ineffective advice from credible, well-intentioned sources who aren't profiting from your decisions?

I believe that espousing the same "old wives' tale" energy-saving tips that require considerable investment or effort—but net disappointing or no results—is harmful to the public's perception of energy efficiency. The same "tips" frequently show up in various lists, but none make a difference large enough to see or taste or feel—and, equally important, none get you talking about sustainability and wanting more.

Don't Believe the Hype

Myth
New windows will reduce your energy bill.

Reality
The payback is in the 100- to 300-year range.

Myth
A programmable thermostat will save significant energy.

Reality
Usually overstated savings; worth about $25 per year in a cold climate.

Myth
Caulking and weatherstripping windows is cost-effective.

Reality
Window air leaks are insignificant compared with attic and basement air leaks.

LOSING WEIGHT

I'll get to the tips (or myths) in a minute, but first, an analogy: If you want to lose weight, do you just diet on the weekends and not change anything else? No exercise, no change in food choices all week long? You're probably thinking: "Not if you want to see results." Yes, you have to do more. You need to map a critical path to success and be disciplined enough to follow it. The same thing applies with helping a house lose "weight."

Now, let's look at a few of those tips.

Tip 1: Install a programmable thermostat. A really common tip is to install a programmable thermostat, turn it down when you go to work or sleep, and save a mortgage payment! (Home automation company Nest Labs claims up to 30% energy savings in the U.S. and the U.K.) The truth is something quite different:

- According to the Environmental Protection Agency (EPA), programmable thermostats may not affect energy consumption. In a 2009 letter to stakeholders, the current team lead for Energy Star product development wrote: "EPA has been unable to confirm any improvement in terms of the savings delivered by programmable thermostats and has no credible basis for continuing to extend the current Energy Star specification."
- Seven percent is the rosiest savings result anyone has come up with (in a study by RLW Analytics for GasNetworks, a New England–based energy company).

■ In cost savings, a programmable thermostat returns $25 per year in a heating climate, according to a New York state study prepared by Vermont Energy Investment Corp.

■ Nest currently has a class action lawsuit on its hands contesting the company's advertised savings.

Tip 2: Caulk and seal, baby! Caulking windows and weatherstripping is another common energy-saving recommendation. But as a building scientist, I know that window and door leaks aren't nearly as important as air leaks in basements and attics. The big air leaks occur at the home's top and bottom due to stack effect. A more complete explanation is beyond the scope of this article, but basically, wall air leaks don't matter that much without pressure (namely, wind) acting on them. The savings? Not worth the investment of time spent caulking and foaming.

Tip 3: Install new windows. For a while in the 1990s it seemed that if you bought new windows you could retire on the energy savings alone. Marketing was so successful that even today many believe it's their biggest savings opportunity.

Manufacturers used to claim up to 50% energy savings. No more; they got sued over it, and the Federal Trade Commission insisted that they stop. The truth: Only 2% to 7% savings is possible, according to a lot of data from Michael Blasnik, a well-known energy data analyst (who recently joined Nest as a senior building scientist). At that rate, it may take 100 to 300 years to get your money back.

Tip 4: Get new light bulbs. This is one tip that is legitimate if you have incandescent bulbs and the home's occupants leave lights on for fairly long periods each day. Changing old-school, incandescent light bulbs to either compact fluorescents (CFLs—the squiggly ones) or LEDs (the "new-school" ones) is a good way to reduce a home's electricity bill. The problem: This will likely only amount to about $5 to $15 savings per month. This is real savings, but it can get lost in the noise. Would you notice that kind of savings? I wouldn't. If I played a few nights' extra video games, or had a house guest for several days, or used a space heater for a few days, I might cancel that out. It's like dieting three days a week instead of just on the weekends.

So yes, encourage your clients to change those bulbs, and the savings will justify throwing perfectly good bulbs away. But give fair warning: Your clients may not be amazed when they look at their electricity bill.

YOU'RE KILLING ME, SMALLS

I don't mean to burst the bubble on saving energy. On the contrary, my goal is to help align expectations. The small things will have almost invisible benefits, while a comprehensive home-performance package can lead to surprising changes in energy use and comfort. This tailored package must be based on accurate diagnostics and a solutions-oriented interview process. But that's a subject for another day.

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