

Knowledge is power

How can home energy monitoring change your life?

By AMY MUSSER

What if I told you that you could use 30 percent less energy in your home without giving up anything at all? No five-minute military showers, you can keep using the AC, and you can watch all the TV you want. How is this possible?

About a third of the energy that a typical home uses is just pure waste. It's not being used for anything useful, and you wouldn't notice if you stopped using it. The only reason you are using it is that you don't know any better.

In this case, knowledge really is power. Or rather, the power to stop using so much power. And home energy and automation systems are going to allow you to take control.

You've probably heard of "phantom loads." These are appliances that use electricity whenever they're

plugged in, even if you're not using them. Computer equipment, AV components, and phone chargers are notorious offenders. But some of these things are worse than others.

Using a simple tool like the Kill-a-Watt monitor, we discovered that our office printer was using less than 10 watts in sleep mode, but we had a computer that was using nearly 100 watts. That told us what was most important to turn off, and ultimately we targeted that computer for replacement.

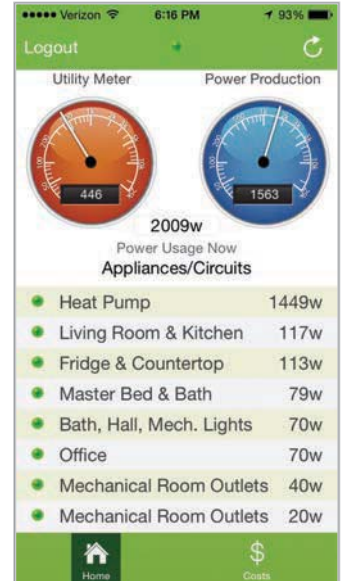
Phantom loads are pure waste. The electricity they use doesn't do anything useful, and it increases your air conditioning bill at the same time. Luckily, most phantom loads in homes can be easily found using handheld monitors (like the Kill-a-Watt) that you can buy at a hardware store for about \$20. This is a great project for kids that involves a little math and helps them

learn about energy conservation.

But this is all just the tip of the iceberg. With our expanding ability to gather and manage data and control things wirelessly, we are about to experience a revolution in how we use power. The revolution is actually here now, if you choose to participate. My husband and I have been using a whole-house monitoring system called SiteSage (available for \$500 to \$800) in our net-zero energy home for the past four years. These are great systems for finding both phantom loads and almost phantom loads.

Beyond phantom loads, Americans use a whole lot of power very inefficiently: the benefits we get from these things are very small in

Real-time energy use and production data via iPhone app. (right)
Handheld power monitor. (opposite)



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proportion to the power that they consume. But until you know what they are, we can't make smart decisions about what to do about them. You can read articles about what the typical offenders are, but there's nothing like using the power of the Internet to manage your own data.

Our monitor records power use on every circuit of our home, and the data is saved to an app that we can access via Internet and on our phones. It will email us if our dryer starts using more energy per load, reminding us to check the lint filter and vent. It also alerts us if we appear to have left the refrigerator door open. We can set it to notify us if a particular appliance starts using more energy than before, or if we are off-track for reaching our energy use goals for the month. It automatically analyzes our data and tells us how we compare to other homes in North Carolina and suggests circuits that may have phan-



tom loads.

Right now, you still have to log in and look at what's happening with your house, although the app does make it really easy for you by analyzing the data and suggesting where you may have a problem. And there are systems that will let you control your thermostat or turn off lights from inside the app. In the future, apps might be able to just turn off the power to phantom loads automatically, unless you tell them to specifically keep it on (no one wants to miss their DVR recordings).

It's also possible that the power company could pay you to cycle your air conditioning or water heater off when the power plant is peaking, allowing them to avoid building new plants or bringing inefficient backup systems online. The data is already there – we just need to decide how we want to use it.

Amy Musser is founder/principal of Vandemusser Design PLLC and Asheville-based home energy efficiency company. A licensed mechanical engineer, she provides design assistance, certification and audits to support high performance homes.

Mountain Meadows

on Crooked Creek

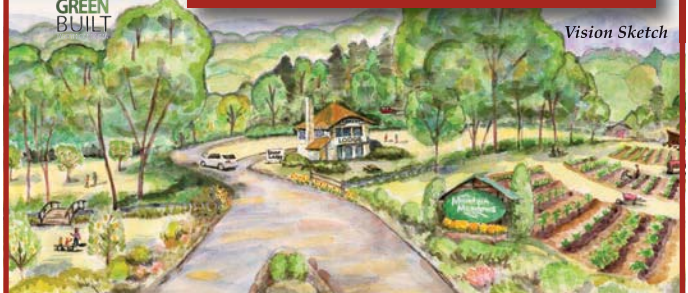
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- ▲ 28 home-sites on 58 acres
- ▲ 25% of our lots are SOLD
- ▲ 23 minutes north of Asheville, just off I-26 W
- ▲ Pavilion being built on 5 ½ acres of Common Area
- ▲ South facing with 75% trees ▲ High-Speed cable
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Vision Sketch



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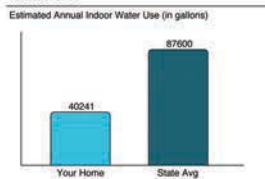


Green Gauge Assessment

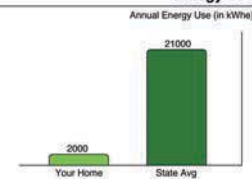


Homeowner Name: 2 Greenest dr, Asheville, NC 28811
828-555-5555 Built in 2013
4 bedrooms 1899 square feet
Green Built Platinum, LEED Platinum, NGBS Emerald, ENERGY STAR v.3.0, NC HERO Code

Water Use



Energy Use



Green Building Materials

Roofing: Lifetime Warranty Asphalt & Green roof
Counters: Bamboo & Quartz, solid gold
Siding: Recycled/Reclaimed & Hard
Decking: Locust
Cabinets: Made of old metal siding

Energy and Water Efficiency

Shower Heads: 1.25 GPM
Sink Faucet Aerators: 0.35 GPM
Toilets: 1.00 GPF
Washing machine is Energy Star labeled

Indoor Air Quality

CO Detector Present
ASHRAE Compliant Ventilation System: Erv / Hrv
Bath Fan Exhausts to Outside
Kitchen Rangehood Exhausts to the Outside
Radon System: Active
High efficiency air filter: Merv 8 or greater
Sealed crawlspace

Site & Outdoors

Turf Grass: None
Natives and Edibles: Over 50% of Landscape
Rain Catchment: +500 Gallons
Notable Features:
Fruit Trees, Permeable Driveways, Rain Garden, Vegetable Garden, Xeriscaping, Drought Resistant Ground Cover, Designed Permaculture, Wetland, Meadow/native Non-turf Grasses, Mature Trees Or Forest, South Facing Roof For Future Solar, Frog Pond

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A program of the Western North Carolina Green Building Council
www.WNCGBC.org

Info@WNCGBC.org

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- Landscaping
- Indoor water use
- Walkability
- Environmentally-preferable materials



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