



by Dan Evans

Investing in renewable energy is an important step to take if we're to build a sustainable future for our planet. However, it's not the only step. Conserving energy is equally important and can yield immediate benefits to your pocketbook. There are some easy, affordable ways to achieve significant energy savings for your home or business facility. Some of these you can do yourself for very little money, yet the savings can be as much as 30-40 percent.

Hot Water Heater

A typical 80 gallon hot water heater uses 9KW per hour to heat water. That's about 90 cents an hour. If it operates for only two hours a day, that's \$54 per month. This is a great place to start saving. If your heater tank is in the garage, the attic or the crawlspace, an insulating blanket can reduce heat loss by up to 50 percent, which means the heaters won't run as often. A timer can be purchased at a hardware store for less than \$50 that will control how often the unit heats (installation by a licensed electrician is recommended). You can set it to heat every morning for only one hour prior to taking showers. This would limit the cost to less than \$27 per month, a 50 percent savings.

A heat recovery system can be installed that recovers excess heat energy from your outdoor compressor unit to heat your water tank. These systems are available from various HVAC companies from \$1,000-\$2,000.

Attic

If you have a home that is more than 10 years old that has an open attic space, this is another good place to consider for saving energy. As years go by, insulation begins to break down from radiation, heat and humidity. The barrier that protects your conditioned space from basically the outside heat or cold becomes ineffective. Installing more insulation may be necessary and is a fine idea. In addition, consider installing a radiant barrier. Radiant barriers are available in two forms: a material that looks like two-sided foil, with micro-perforations (Radiant-Guard or Comfort Guard, for example), and a metallic paint called LO/MIT. Both products block about 75 percent of the sun's infrared radiation and can cool the attic significantly, resulting in reduced hardship on your HVAC system. Manufacturers estimate 20-40 percent energy savings with these products, at a relatively low cost of installation. Do-it-yourselfers can purchase radiant barrier materials on eBay and save a fortune.

LO/MIT is also available in a formula that can be applied directly to flat roofs of commercial buildings, extending the roof life and reducing energy costs by as much as 30 percent.

Duct System

Leaky ductwork is a huge problem and energy waster. Ductwork is typically located in the attic space or in the

crawlspace. By code, all places where ducts are joined together need to be coated sufficiently in mastic (a thick, rubber-like sealant). Where the duct-board supply and return plenums are joined to the air handler, there must be a sheet metal union between them, affixed with screws to the air handler, and sealed completely with duct tape and mastic. Very often the plenums are joined to the air handler with only duct tape, always resulting in leakage at some point.

A client called complaining of high energy bills and requested a consultation. This was a modest home – 1,800 square feet. Their utility bill averaged more than \$300 each month annually, yet they kept their thermostat at 80 degrees in summer and 68 in winter. I suspected immediately that they had a duct problem. Their air handler was in the attic. It was a hot summer day, yet the attic felt fairly comfortable – yikes. Sure enough, the supply plenum set directly against the air handler chassis was secured only with duct tape and a little mastic. No metal collar between them. Cold air blew into the attic through two large holes at the corners of the duct-board plenum. This poorly installed ductwork – passed by some code inspector – had cost these poor people thousands of dollars over several years.

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Crawlspace

It is a proven fact that crawlspaces in the Southeast, where humidity is high for five to six months out of the year, should be dried out and sealed tight as a drum to prevent humidity from entering. This is known as "encapsulation," and can be a DIY project for a lot less money, but it's not pleasant work. If your ductwork is in the crawlspace, an encapsulation should be seriously considered, not just for energy savings but for health reasons. Poke your head inside your crawlspace and imagine living in there. If your ducts are there, you might as well be, because you're likely breathing that air.

House Envelope

Most homes have leakage between the interior conditioned space and the outside. This is actually important because you want fresh air to enter your home. However, some leaks are better than others. Let me explain. Having a modest air gap, say, under the front door is much better than having a gaping hole into the attic where all that blown in insulation is and 150 degree heat and humidity. Believe me, most everyone has way more than a few gaping holes into their attic or crawlspace. A few good examples are canister lights (many have openings at the top to vent heat); plug receptacles installed in uninsulated interior walls (hole is drilled in wall header to accommodate wire that is run to receptacle); holes where pipes are inserted through walls; and holes cut out for exhaust fans, light fixtures; and so on.

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A great DIY job is to go around your home, locate obvious holes and seal them with caulk, spackle or foam sealant. Do not plug openings that are integrated into canned lights. Instead, consider changing out these lights with LED recessed light fixtures – they have equal light at 1/5th the power and last up to 10 years.

Lighting

By now, most everyone has heard of CFL light bulbs – compact florescent lights. These are an improvement over incandescent bulbs, but not the best overall. LED and magnetic induction lights are now available in a wide range of shapes and sizes to replace just about any bulb type. For decorative bulbs, LEDs are often a better choice than CFLs. They use less than half the power, have no mercury in them and last two to three times longer. Magnetic induction lights have been around for decades; however, few people have even heard of them. They produce superior light, are extremely energy efficient, and last 10 years or more. They are the best choice to replace HID (high intensity discharge) lights used for exterior residential and commercial lighting. For example, a 150W induction light produces brighter light than a 400W metal halide (5000 Kelvin vs 3700) and has a rated life cycle of 100,000 hours compared to 10,000 for the typical metal halide bulb.

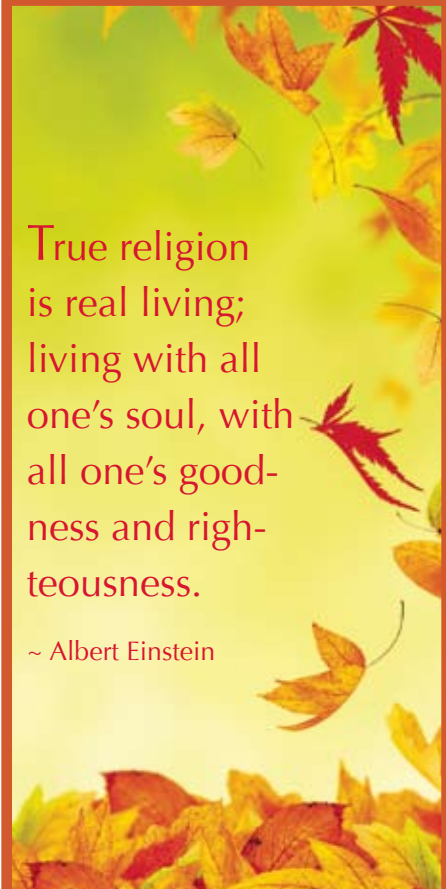
Dehumidification

Did you know that for every degree you reduce demand on your heat pump (setting thermostat up a degree in summer or down a degree in winter), results in 6 percent energy reduction? For example, if you were able to adjust your thermostat from 74 to 75 for the entire month of July, and still be comfortable, your July bill would likely be 6 percent less than it would have been at 74. At 76, 12 percent less, and so on. The key, of course, is comfort. We all want to be comfortable in our homes, especially when sleeping.

Humidity is primarily the culprit

for our discomfort. Since our HVAC systems are usually responsible for removing the humidity, often we need to set that temperature lower to run the system long enough to dehumidify. Adding a dehumidification unit can help, but they too often cost as much to run as the heat pump, since they also use refrigeration components to work. A terrific solution is a solar-activated, desiccant wheel dehumidifier. These units require very little power to operate and take advantage of solar thermal energy, which is also used to heat your domestic hot water. With your home at 50 percent humidity, even 78 degrees can feel very comfortable. With the solar tax credits, the cost of the system is extremely affordable. Large commercial units for office, warehouse or indoor pool areas are also available.

For more info, contact Dan Evans at Solar Plus Energy Pros in Murrells Inlet, 843-446-0978, or visit SolarPlusEnergyPros.com.



True religion is real living; living with all one's soul, with all one's goodness and righteousness.

~ Albert Einstein