



# The Huntsville Times

## Solar power cuts energy costs

Sunday, September 21, 2008

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Panels and hot water systems grow in popularity

If you're eager to cut the energy bill at home, as many people are these days because of higher prices, then get ready for some illuminating tips.

Solar photovoltaic systems, a solar hot water system and geothermal heat pumps are increasingly on homeowners' shopping list these days, say Chris Shearburn, owner of Southern Solar Systems in Huntsville and John Allen, president of the Huntsville/Madison County Builders Association.

The heaviest interest is in solar panels. Although they're still pricey, Shearburn says that may change if a state tax incentive comes through next year and panel prices come down. Solar panels collect the sun's energy and convert it directly into electricity that can be consumed or fed back into the utility grid. This results in less energy that has to be purchased from the utility company so your power bill will shrink.

Solar hot water systems, which are getting more attention, also use the sun's energy to heat water pumped through a heat exchanger in the hot water system of a residence or business, Shearburn says. The system reduces how much energy a standard hot water heater would use to heat water, which cuts the utility bill.

Geothermal hot pumps also use thermal energy to improve a standard heat pump's efficiency, Shearburn says. A heat pump strains to operate well when the weather is very hot or very cold outside. To combat this inefficiency, a geothermal heat pump uses a 'ground loop,' which is a piping loop that is buried in the ground at a specific depth to keep the fluid in the pipe at a temperature of about 55 - 60 F. This fluid is then pumped to the heat pump so that heat can be easily rejected to the loop in the summer for cooling, or heat can be easily pulled from it in the winter for heating. This will greatly improve the performance of your heat pump and save you money on your electric bill.

Of these choices, Shearburn says the best seller is solar hot water systems because they're the most affordable and have a payback rate of 10 years or less.

As a cost scenario, he says his company recently outfitted a Habitat for Humanity house in Tusculumbia with a 2 kW photovoltaic system (about \$15,000) and standard hot water system (about \$5,000). Both prices include installation.

For newbies, Shearburn recommends the solar hot water system as a good starting place because it's more affordable. Geothermal heat pumps are also affordable and provide the best savings with new construction or replacing an HVAC unit.

Currently, solar panels still have the longest payback, but prices are coming down with increased production and as the technology is becoming more efficient. The panels are not as efficient on cloudy or rainy days, but year-round benefit is still good.

Higher fuel prices and the availability of these products increasingly gain interest with more buyers.

Shearburn foresees a market about to explode.

"It has survived so far off of government subsidies," he says. "However, the technology is getting better and better, and as a result the cost is dropping. Each year we see these systems become less expensive and better performing. It will soon stand on its own without relying on government tax credits or grants."

In the construction industry, Allen says building techniques, materials and thermal performance all aid energy-efficient construction. Of all a homeowner's monthly costs, he says energy cost is the most variable. Efficient construction of a house can even help a buyer afford more house, and he says more consumers are considering energy costs these days.

"Two specific options that consumers are looking into with more fervor are geothermal heat pumps, as well as solar power," Allen says. "The No. 1 energy user in a home is the heating and cooling unit. A geothermal heat pump works very similar to the standard air source heat pumps that you see in most homes. The heat pump thermal process takes, for instance in the cooling season, heat from the heat sink of the atmosphere (air) through a heat transfer fluid, that is refrigerant."

For a geothermal heat pump, "using the earth's natural 'cool' earth is a much more energy-efficient way to move heat in and out of a structure, thereby using much less energy, typically 20 to 50 percent less, than a standard air source heat pump."

Solar panels could provide enough energy to power the entire house and take it off the utility grid, depending on area climate. Average costs appear to be running at \$7,000 to \$8,500 per kilowatt of power generation compared to a 5-kilowatt gas generator costing about \$500.

"This initial cost is extremely high and has a very longterm payback for the consumer at this point in time," Allen says. But he also foresees costs falling and an improvement in technology.

Says Allen, "Energy efficiency is really about the consumer choosing energy saving options over other less efficient options."

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