

Solar Energy

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Smart people learn from their mistakes and wise people learn from the mistakes of others. I believe in that cliché. Theresa and I want to thank the many people in the Lake Charles Woodworkers Club who provide us with some serious handholding. You have prevented us from making mistakes in our woodworking projects.

Unfortunately, there is no one to help us install solar electricity in Louisiana. If you want to install solar energy in your home, you are on your own. The closest solar installer is Meridian Energy Systems (<http://www.meridiansolar.com>) in Austin, Texas. I designed my own solar system and I made many expensive mistakes. I am still learning and making mistakes. However, I have a better idea on how to design my next solar home, thanks to SEI.

I attended a one-week Solar Energy International (SEI) workshop in Austin, Texas on photovoltaics design and installation (<http://www.solarenergy.org>). We had two very knowledgeable instructors. One of the instructors was Scott Ely from Earthsense ([www.earthsense.com](http://www.earthsense.com)), the educational division of Sunsense. Another student and I were the only two students who had working solar systems. One student said that SEI was a traveling salvation show, attracting more converts from the dark-side to a sustainable energy future!

The SEI workshop was full of revelations. The most startling surprise was that off-grid solar electricity comprises only a small part of solar business. Interconnecting a PV system with the utility grid commands the lion's share of the solar business. Large companies are more likely to embrace cheaper power options more swiftly than homeowners. General Electric, PB Solar and Mitsubishi and Nanosolar are focusing on installing solar cells on the rooftops of large commercial buildings (Pearce). These are not low voltage systems. Commercial solar applications are typically from 400 volts to 600 volts.

“The most important factor in deciding to install a grid-tied solar system is whether your state or area has net metering. Net metering means the utility will trade electricity with you, giving you credit for any excess power your renewable energy system produces for the grid. When your grid-tied system is producing more than you use, the excess power automatically flows back to the grid, literally spinning your electricity meter backward and adding credits to your account. Net metering is so important that you probably don't want to consider a residential grid-tied system in a location that doesn't offer it, unless you aren't concerned with saving money (Livingston and Hollis).”

The SEI workshop was held in Austin, Texas. The state of Texas has its own power grid and the city of Austin owns its own power plants. Austin is encouraging companies and homeowners to use solar electricity. Austin is offering rebates and net metering.

Austin will retire one of its power plants in a few years. Additionally, Austin's peak power consumption is at 5 p.m. in August. Peak performance for solar is during the hot months of summer. All that is needed is a westward oriented roof to catch the afternoon's sunrays. The city of Austin is giving a \$5/watt rebate on solar electricity, up to \$15,000. Additionally, Austin will even pay for a solar feasibility study for residents of Austin.

Go to [www.dsireusa.org](http://www.dsireusa.org) to learn more about net metering policies in Louisiana. You will find that Louisiana does not have any net metering laws. “The treatment of NEG is still under discussion, although it appears likely customers will receive credit at avoided cost.”

I assume that the Austin power company sees the handwriting on the wall. The world is running out of oil. Of course, we have been hearing that line since my father was a geologist in the 1930s. It is unbelievable, but logical. \$50 per barrel is no longer the next major upside target for oil. It is now emerging as a floor for a barrel of oil. Motorists like

myself are in the classic “buy-the-dip” mode. It is great when gas goes below \$2/gallon; however, a temporary dip means very little in the long run. We have been coasting along for decades with fossil fuels, now we are paying dearly.

“As oil prices have gone up and other energy sources remain limited, nations are increasingly searching for safe, reliable long-term sources of power. Solar energy is long-lasting, going years without cells needing replenishment. Moreover, existing solar cell manufacturers have been slow to ramp up supply. Demand, meanwhile, has soared -- fueled by government subsidies to support the non-polluting technology (Marshall).” China, for example, is trying to rectify the shortage of oil by mandating 10% reliance on solar for all energy needs by 2008 (Weiss). Japan and Germany are also buying solar panels in large quantities.

Large solar cell wholesalers are struggling to ensure supply of solar cell modules. BP Solar says it is 70 megawatts short, the equivalent of about \$250 million in revenue (Pearce). Meridian Energy Systems in Austin told me that they are waiting three months for large solar panels. Additionally, the cost of solar panels has increased substantially. Meridian’s cost is almost identical to last year’s retail prices.

The conventional wisdom is that solar electricity is too expensive and years away from widespread use. That may be changing. Two Silicon Valley solar cell start-ups, Nanosolar and Miasolé, are at the threshold of delivering more cost-effective technologies to the red-hot solar market. Both Nanosolar and Miasolé say they've made technology breakthroughs.

“Solar companies rely on the same photovoltaic process: Sunlight in the form of photons hits a light-absorbing semiconductor material in the solar cell, exciting electrons and creating an electric current...But Nanosolar and Miasolé have shed silicon as their semiconductor material -- its crystal form is bulky and inflexible. Instead, they're using a copper alloy, copper-indium-gallium-diselenide, that can be deposited on more flexible material -- transforming bulky solar panels into thin foils (Marshall).” The challenge now is to produce in bulk to achieve economies of scale.

Perhaps SEI is a salvation show, attracting converts from the dark-side and to a sustainable energy future! “Many of us dream of tapping alternative energy sources so we can live ‘off the grid.’ But you don’t need to unplug from the utility grid in order to use solar panels to produce your own power. For most of us, a simpler grid-tied system is a better choice than an off-the-grid setup. Instead of costly batteries, you can use the grid to ‘store’ your excess solar power. In most states, net metering laws require your utility to credit you whenever your system produces more power than you use. This means that when the sun is shining, your electric meter may spin backwards (Livingston and Hollis)!” I know that I will be going back to SEI to learn more about renewable energy. Renewable energy is the future.

