



SIMPLEENERGYWORKS

Solar's Dirty Little Secrets...



By Randy Velker

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Dirty Little Secret #2

DLS2 Solar Energy is Expensive!

This may come as no surprise. If however you decide to get a quote from a [solar installer](#) you may find that the shock causes you to fall over backwards and land on the ground. The cost of a system large enough to power a normal sized house can be significant (to say the least). The average installed price for a residential house is over \$8 per watt (\$8.23/watt). 5000 watts (5 kilowatts) will offset the electrical usage of an “average” house. Simple math will show that the bid will be around \$40,000 for this type of a system.

Holy Smokes! That will make a \$100 electrical bill per month seem like a bargain. Divide that out by the \$1200 per year electrical bill and the system pays for itself in only 33.3 years. Ouch.

No wonder so many folks have a “bad taste” in their mouth about solar electricity. They look at simple math and conclude that for solar electricity to make sense somebody is going to have to pay for it (in either taxes or subsidies).

This is the number one problem that folks have with [solar power](#). If the price were better then everyone would be using solar power! Who could be

against a technology that uses the sun and never needs another fuel source? And why would they be “against” it?

Well...The cost is expensive- but there are a few things that we need to keep in mind about that cost.

1. The first thing to keep in mind is that because of the increase in production of Solar equipment in the past few years the prices are already dropping dramatically. Prices for the equipment have dropped almost 40% in the last 12 months alone. As new factories start building solar modules and equipment the price will continue to plummet.

The global recession has allowed [Photovoltaic](#) prices to drop. Many manufacturers in China (and elsewhere) who were ramped up and producing “stuff” have switched over their manufacturing to the production of PV modules. This certainly makes PV equipment much less expensive. It is also a much better product to be shipping “into America” than plastic trinkets and toys (which eventually blow out our landfills).

2. The second thing to realize is that we have enjoyed (and still enjoy) relatively cheap energy because of the subsidies that are currently in place. “Fossil” fuel has been receiving and still receives tax breaks and incentives which are significantly larger than any subsidies for “clean” energy. Bloomberg New Energy Finance (BNEF) just released a report showing that the worldwide subsidies for fossil fuel (coal, oil) in 2009 was around \$557

Billion while the worldwide subsidies for renewable energies (all types) was \$43 Billion. So the tax credits and tax breaks and subsidies for Fossil fuel is over 11 times that of the subsidies that were given to all types of renewable energies (one must also keep in mind that the vast bulk of those “green” subsidies were for ethanol).

The main problem with subsidizing fossil fuel is that the “environmentally dirty” (comparatively) fuels are limited and running out. They are finite and will only become MORE expensive as the supplies are used up (Oil probably much quicker than coal). The real question needs to be asked is why are fossil fuels being subsidized as all? The fossil fuel industries have been around for hundreds of years and are the most profitable businesses in the world. 7 of the 10 largest companies in the world are fossil fuel companies. Do they really need to be subsidized? Haven't they learned to stand on their own? These types of subsidies hide the true cost of fossil fuels and makes it much more difficult for a new “green” energy to be able to compete.

Why have these fossil fuel companies also been given a GET OUT OF JAIL FREE card for their pollution? The cost of the health damage that is done by burning coal for instance is never given back to the coal burners (or utilities). Those costs are given to individuals with asthma and other breathing difficulties. Many of those with health issues end up with government insurance (passing the bill to the hardworking American taxpayer).

Keeping the shipping routes open and safe for the “fossil fuel industry” is another cost that is handed directly to the hardworking American taxpayer. Over \$800 billion dollars per year is taken from the taxpayers to keep the middle east safe and the oil supply continuous. This huge liability to the taxpayer is directly related to the oil supplies in the middle east. “Green” renewable energy here at home would eliminate the need for America to Police the world. This tremendous price tag is almost never related to energy, but it is related. If the middle east had no oil we would not be involved at all. So renewable energy as an industry is directly related to “national security.”

Not only shouldn't we be subsidizing Fossil fuels, but we should be subsidizing renewable energy simply from a pragmatic “national security” viewpoint. If we were self sufficient inside the border of America, there would be no need to pay for a worldwide “security force.” Much of the money being used up by the military overseas would be able to be directed back home (where it is needed).

3. The third thing to realize about this “Solar Sticker Shock” is that there are ways to knock that price down. There are companies selling currently that are focusing on the skilled homeowner. Do It Yourself is a legitimate option which can save a savvy homeowner many thousands of dollars. Of course there are electrical skills and guidelines which must be followed, but it is possible to install a [Photovoltaic system](#) and save thousands from the original estimate.

There have been some technological improvements which have made the process of installing a photovoltaic system much safer and easier for a homeowner to attempt. This method is not for everyone, but for a skilled and motivated homeowner it is a real option. Many people who are interested in “green jobs” are getting involved with solar electricity by installing a system on their own home first. With the experience that comes from installing the system on their own home they take the next step and install one on their friends (and so on...).

There are some websites which cater to homeowners and which sell complete kits that are ready to be installed. Visit SimpleEnergyWorks.com (for example) for video training and ready to install kits for shingled roofs.

4. The fourth thing to remember about the “high price of solar” is that smaller systems are now a possibility as well. Systems can now be designed and installed which are very small (and therefore much less expensive). These systems are very versatile and can be expanded as funds become available. So... A large system can be installed in multiple smaller steps (to ease the initial financial burden). This has not previously been a possibility (before 2008), but with the new technologies now available (ie micro-inverters) an expandable system is simple and affordable.

5. The fifth thing to remember is that there are currently many incentives available to those who purchase a renewable energy system. Until 2016 there is a 30% tax CREDIT with no upper limit. So, if you

purchased a \$50,000 photovoltaic system you could use the tax credit and get a \$15,000 tax credit off the actual taxes that you owe. It can be rolled over to next years taxes if you do not have enough of a tax liability. On top of this tax credit there are many other local, state and utility incentives which can stack on top of the 30% federal ITC (tax credit).

Many state rebates are very lucrative and can make a system pay for itself in under 5 years. To research and find the local rebates and incentives that may be available in your area simply visit www.desireusa.org . They keep a comprehensive database of all federal, state and local incentives that a renewable energy system may be eligible for.

One of the incentives that was passed by congress was the ability for businesses to depreciate all photovoltaic systems in only 5 years (MACRS). On top of that they also passed a law which gives a bonus depreciation of 50% of the basis on the first year that the photovoltaic system is in service. These incentives can be significant and you should certainly contact a solar installer or your accountant to explore the tax benefits of installing a photovoltaic system.

Your utility might even have a program where they purchase the electricity that your [photovoltaic solar system](#) produces at a premium (more than retail cost). With this type of a system set up many solar system installers can achieve paybacks of below 5 years.

Payback in 5 years may not seem like much to you, but how long will it take for your money in the bank to “pay itself back?” At 10% interest it will take almost 10 years. Is your money earning 10% interest in the bank? Of course not. Can a photovoltaic system pay for itself in less than 5 years? Absolutely, even faster with the rebates stacked on top of each other. That is over 20% a year return on your invested money. Then, when the system has paid for itself, you will have FREE energy for the next 20-35 years.

6. The sixth thing to remember about this “solar sticker shock” is that there are ways for the initial investment of the system to be sidestepped.

a. The first way that companies are sidestepping the initial huge investment is to use an energy efficiency mortgage (EEM). This is simply a refinance of your current house with the new photovoltaic system included in the refinance. Your new mortgage rate which includes the photovoltaic system (plus electricity bill) will be less than your old mortgage rate (plus electricity bill). In other words, you will have a solar system generating all of your electricity and you will be paying less per month for living expenses (mortgage + electrical bill).

b. The second way to bypass the solar sticker shock is to lease a solar system. This is normally done by the host company (or residence) providing a 5-10% initial payment and the roof space. Another company (or group of investors) will actually own the photovoltaic system but you will rent the

equipment from them. The host gets to use all of the electricity from the photovoltaic system. Typically the energy which is supplied from this type of an agreement is provided for less than the existing electrical rates. These systems allow investors to own the [PV systems](#) and Hosts (who own the building and use the electricity) to use renewable energy and save money on their electrical bill. Most of these systems are better than “cash-flow neutral” initially, and will be saving a ton of money when (if) the electrical rates increase in the next few years. Remember, these systems lock in your rate of electricity for the next 20-25 years. The initial cost must be compared to what electricity will cost in 20 years (which is difficult for anyone to predict accurately).

About the Author



Randy Velker is a solar designer/installer in Middle Tennessee. He is the owner of Simple Energy Works LLC which plans, designs and installs commercial and residential photovoltaic systems. They are also pioneering PV leasing in Tennessee. He lives in Crossville with his wife and seven children, and they use electricity produced

by their Grid-Tied Photovoltaic solar system. They also track all of their energy usage using the Current Cost Envi real time energy monitor.

He is interested in renewable energy and “Green” technologies only when they make sense (financially, environmentally, etc.) - and not a moment before!

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