Solar Panels: The Basics of Free Energy for Your Home Part 1

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Electricity is expensive, and expands each of our carbon footprints. The average US household spent $1,419 for a year's worth of electricity in 2010, with each kilowatt hour (kWh) costing about 11.8 cents.[i] That average annual bill breaks down into roughly $118.25 per month for the average US household for about 920 kWh.[ii] What's one of the best ways to reduce fossil fuel based electricity consumption? Of course, purchasing energy efficient appliances and light bulbs is a start, but many today are also installing residential solar panels to generate their own electricity. Though they require an up-front investment, statistics show that they're well worth it in lower energy bills and peace of mind for those with aspirations of developing their green house plans.

What's the Return on Investment for Residential Solar Panels?

The question every prospective solar owner asks is whether it's worth the investment. Let's see if we can provide an answer based on prices and efficiencies today.

To start, it's important to note that roof-top solar panels on homes could supply as much as 25% of the electricity needed in at least 40 states.[iii] For the average household, that means chopping your electric bill from $118.25 to $88.69 for a savings of $29.56 per month or $354.72 per year. Remember that those are just average numbers. Electricity costs vary widely by location, as do the sizes and power-generating capability of solar photovoltaic systems installed.

At present, solar power provides a tiny fraction of electricity used in the North America – less than 0.1% in the US, for instance. However, the cost of residential solar panels continues to fall and could be competitive with traditional electricity by 2015. That should set the stage for solar power providing at least 10% of the nation's electricity by 2025.

So how much do solar panels for homes cost? Installing residential solar panels fell by 17% in 2012, and another 11% in the first half of 2011.[iv] While that's good news for homeowners, the costs are still relatively high. Right now, the overall price of

solar panels for homes ranges from 16-32 cents per kWh, which is quite a bit more than the average of 11.8 cents per kWh for conventional electricity. However, the US Department of Energy is hoping its efforts will see that price becoming competitive with market rates by 2015.[v]

In the end, by current pricing information, residential solar panels that cost $18,000 would have a payback period of nearly 20 years. As pricing continues to decline, however, the payback period should greatly shorten.[vi]

Important note: These figures do not account for state and federal incentives that can cover substantial portions of installation costs, up to 50% in some cases. As a result, ROI on solar panels is often significantly shorter than 20 years, resulting in big energy savings for those owners. Additionally, having a solar PV system on your home will increase its resale value, which can often offset any up-front costs. In fact, according to the National Bureau of Economic Research (NBER), solar panels add between 3% and 4% to a home's value, with other studies showing an even more sizable effect on home prices.[vii]

The moral of the story is that solar is usually a very good investment for homeowners. Check out our guide to Green Energy Saving Tax Incentives, Rebates, & Programs to find out more about how you can save on your solar PV installation. You'll also find a big collection of useful information on renewable energy from One Block Off the Grid's Home Solar 101: A Homeowner's Guide to Going Solar. Then check back next week for our continued discussion on selecting the right solar photovoltaic system for your home.

Image via Flickr: Fort Meade

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