

US consumers poised to capitalize Residential solar in 2011

By Justin Molavi

Among other factors, adverse conditions in global solar panel markets make solar energy's future bright.

Falling solar
module prices
will lower the
costs of solar

If you want to look into the future of sustainable energy in the United States, look at solar power. If you want to look into the future of solar power, look at the prices for solar panels. If you want to look at the future of solar panels, look to China.

Generally, most solar manufacturing capacity takes place in China, where low-cost labor allows companies to produce cheaper products. Beyond cheap labor, lucrative partnerships with governments in that country allow solar panel companies to take out favorable loans from state-run banks, according to a recent New York Times article. ["Solar Panel Maker Moves Work to China," Jan. 14. Online.] These conditions have placed China at the epicenter of solar panel production, and manufacturing capacity there comprised more than half of global production in 2010. US-based energy analysis firm GTM Research puts China's share of the US solar panel market at 23 percent in 2010, with that number projected to continue rising, according to the same article.

Back at home, recent developments in solar technology as well as the

proliferation of solar companies in states like California, Arizona, Colorado, and New Jersey have put residential solar on the minds of many US homeowners. Companies such as San Francisco-based SunRun have led the push for integrating solar energy into consumers' homes, while innovative pricing plans along with government incentives to go green have put formerly prohibitively expensive upgrades within reach for many homeowners. IBISWorld estimates the Solar Power Generation industry grew at an annual rate of 6.9% in the five years to 2010 as consumers and businesses generated power from solar. Also, developments in solar panel demand overseas are shaping up to reduce the up-front costs of solar installation.

If the above conditions have you burning to go green, here's a few things to consider before cancelling your utility service. Regardless of any hype surrounding the matter, solar affordability ultimately depends on the cost of solar panels, electricity prices and the financing methods available for system purchases.

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Cost of solar panels

Currently, Chinese solar manufacturing companies have yet to move surplus inventory created during the recession. These companies over-produced solar panels in 2007 and 2008 with the expectation that solar markets would thrive during 2009. As a result, low-cost panels are available, which in turn lowers the up front costs of solar power generation for customers. Panel prices have fallen from the high range of \$3.50 to \$5.00 a watt noted during 2008 to an expected \$1.55 per watt in 2011.

Further, these upstream solar panel producers have largely been selling to European countries over the past five years, where impressive solar power generation growth has been pushed by generous country-specific subsidies. Known as feed-in tariffs (FITs), the subsidies pay solar power producers well above retail rates. Countries such as Germany, Spain and Italy all boast FIT programs. Unfortunately for solar panel producers, the European debt crisis and related financial difficulties have caused governments to impose austerity programs in an effort to reign in large deficits. Since governments are paying a high premium for solar power, many European governments have cut back on FITs. For example, Germany's FIT was reduced twice in 2010 to a total of 15% for freestanding solar facilities and 16% for building-mounted systems. Further cuts are expected.

Decreased demand from solar power-generation firms in European countries will reduce industry revenue for solar panel manufacturers. In turn, these manufacturers will lower prices to meet dwindling demand and seek out other markets in which to sell their products. Solar markets outside of Europe (i.e. America) lack generous subsidies like

Panel prices per watt (average)*

Year	Dollars
2011	1.55
2012	1.36
2013	1.33
2014	1.31
2015	1.27
2016	1.28

*Estimate

SOURCE: IBISWORLD

FITs. As a result, relative slow growth in these other solar markets will also serve to lower panel prices. While the US government's 30% federal tax program will still induce large solar power producers to develop US solar projects and these players will still demand solar panels, new technologies eschew photovoltaics (PV) in favor of concentrating solar power (CSP). CSPs are cheaper on a per kWh basis than PV plants, and large power producers are likely to use this technology as opposed to PV, which will also lower the cost of solar panels by shifting demand.

To reference Econ. 101 for a moment, the cost of solar panels depends largely on the supply of solar panels on the market. The question remains, however, whether US panel dealers will keep their prices low to entice solar customers. While lower prices might motivate consumers to give solar a go, they would also translate into lower profit margins for panel dealers.

Still, the aforementioned inventory surplus combined with low growth in personal disposable income since 2005 and current unemployment rates makes solar companies likely to endure lower profit margins in order to revive their businesses.

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Electricity prices

As a general rule of thumb, the higher electricity prices climb, the more likely consumers will be to turn to solar. Consequently, forecasting the likelihood of consumers' solar adoption requires projecting the price of electricity. To get a sense of the likely direction electricity prices may take in the future, one must look at the past.

Although residential electricity prices stayed relatively steady during the past year, falling only marginally from 11.55 cents per KWh in 2009 to 11.54 cents in 2010, other variables paint a different picture for the next five years. Electricity prices have broadly climbed since 2005, where electricity prices averaged 9.45 cents per KWh.

Electricity prices depend on two key factors. The first is demand from the residential sector. As households demand more electricity, electricity prices usually increase. In turn, residential demand hinges on personal disposable income. Higher personal disposable income generally increases electricity demand as households consume more energy and vice versa. Currently, consumers have more money in their pockets than during previous, recession-fraught years. As such, per capita disposable income is set to increase 0.6% in 2011 after slow growth in 2010 and declines during the recession. For those considering solar in the next five years, high disposable income could be seen as a harbinger of increased demand, which will consequently increase traditional electricity costs.

Financing

In the realm of residential solar systems, companies commonly lure would-be renovators with power purchase agreements (PPAs). A PPA is typically used to "lease" a solar system with the aim of making solar a more affordable option for consumers. It achieves this by

Electricity prices*

Year	Dollars
2011	11.64
2012	11.76
2013	11.77
2014	11.74
2015	11.82
2016	11.88

*Estimate

SOURCE: IBISWORLD

Personal disposable income*

Year	Dollars
2011	32,778
2012	33,302
2013	33,878
2014	34,529
2015	35,264
2016	35,980

*Estimate

SOURCE: IBISWORLD

breaking down the purchasing and installation costs of a solar system into a monthly energy bill similar to the bill a consumer receives from an electric or gas company. In some cases, customers may pay zero down to get a system depending on their PPA. Solar companies also use federal tax credits to make their PPA even more affordable for customers, while state-level incentives may be used to lower the producer's costs and, in some cases, the consumer's costs as well.

The question remains: Will the new solar-powered bill be comparable to the old, traditional bill? While the expiration of federal government subsidies might be more of a long-term problem (for now they are set to expire in 2016), individual states' subsidies might be squeezed

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during this year as budget deficits become more apparent. Furthermore, energy prices might not increase if the economy continues to experience slow growth.

The bottom line for people looking to power their homes via solar is this: Power companies profit at the expense of consumers who lack either the wherewithal or capital (or both) to find alternative sources of energy to power the things they need to live comfortably. Sunshine, on the other hand, is free. Increased market acceptance of solar combined with changing attitudes about sustainable living have spurred industry

growth during recent years and put the thought of getting off the grid in many consumers' minds. Ultimately, however, larger economic trends related to panel manufacturing as well as a broad economic recovery will reveal whether the next five years will result in a boom in residential solar power.

Given current conditions in solar panel production overseas and projections for electricity prices, the future for solar use in America looks bright indeed.

Josh McBee contributed to this report.

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