

## The future UK Solar PV market - answering Dragons

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Chris Hoskins MD at Ploughcroft Solar appeared last night on Dragons Den to raise £120,000 for approximately 25% of his existing Solar PV installation business. The business was already relatively well established with about 5,000 installations in the Yorkshire and Lancashire area. Primarily he wanted the money for marketing to make Ploughshare what the Dragons called "a national player" in this market.

It seemed the Dragons didn't know a great deal about the market except that it was growing rapidly and almost everyone and his dog was going to have a solar PV panel on their house fairly soon. So they were tripping over themselves to offer him his cash.

Did they (at least publicly) ask him about competition in this market? It appeared not yet a search of the full Microgeneration Certification Scheme (MCS) database for Solar PV companies generated more than 20,000 company records! Still I don't want to appear negative - good luck to Chris, he's certainly thinking big. Some companies have gone 'national' in terms of their coverage. Of course their overheads have consequently also gone up significantly and, to make a broad generalisation, they often are not able to compete on price with local companies doing this at a local scale.

Our advice would be to use an experienced local installer with a decent track record of doing something similar - these are the guys who are likely to be best value. But make sure you pick a solar PV module manufacturer that is going to be around in 25 years time! The warranty on your panels is critical and you don't want your manufacturer being difficult to contact or, worse still, going bust!

Anyway, back to the Den - who asked the best question? For me Peter Jones - "How big is the current market?". Unfortunately Chris didn't have an answer. What should he have said? We've done a bit of research to get some suggestions..

To date there are about 50,000 domestic PV installations with roughly average increases of 5000 per month (12% month-on-month increase). In June 2010 there were 2708 domestic PV registrations - a year later there were 42515. This represents (as Chris said last night) something like a 1400% increase in 12 months. However this type of increase was largely predicted by the government (DECC). More difficult is to know where things are going to go over the next 10 years. Will these numbers continue to rise steeply or will, if the expected tariff level gets cut in April, they start to plateau off?

To try and estimate the potential market, currently largely driven by external incentives (the Government FiT), we need to make a big assumption about future government policy - let's assume that any government will continue a policy of encouraging households to install solar PV. So there will be some sort of relatively strong incentive for households to keep installing PV. If this is not the case and the incentive disappears then the numbers are very likely to drop-off very sharply to a low base level.

If you assume the numbers per month will continue to rise at a constant at least to 2017 you get the purple line on Figure 1 below. This seems to be similar to the early DECC projections mentioned in the PriceWaterhouseCoopers (PwC) report at <http://www.ukmediacentre.pwc.com/imagelibrary/downloadMedia.ashx?MediaDetailsID=1748> (see page 12-13). **This gets close to around 700,000 installations which, if you assume the average capacity is 3.3kW, generates close to 2300 MW by 2020.**

If the rate of adoption increases you get closer to the sort of projection PwC were suggesting (the green line on Figure 1) based on their analysis of industry expectations which leads to nearer 1.4M installations and generates about 4500 MW by 2020.

Our GEN projected trend (in red) is less optimistic in terms of total numbers with a plateau effect happening sooner. It suggests a steeper rise in installations over the next 1.5 years (with a spike in Spring 2012 as a result of potential reductions in the tariff from April 2012 onwards) as a result of FiT and potential Green Deal incentives. From 2013 the trend would plateau and monthly increases would reduce for the remainder of the period reflecting weaker regulatory incentives. Overall the total number of installations by 2020 would be closer to 500,000 households (or an estimated 1650 MB capacity) across GB.

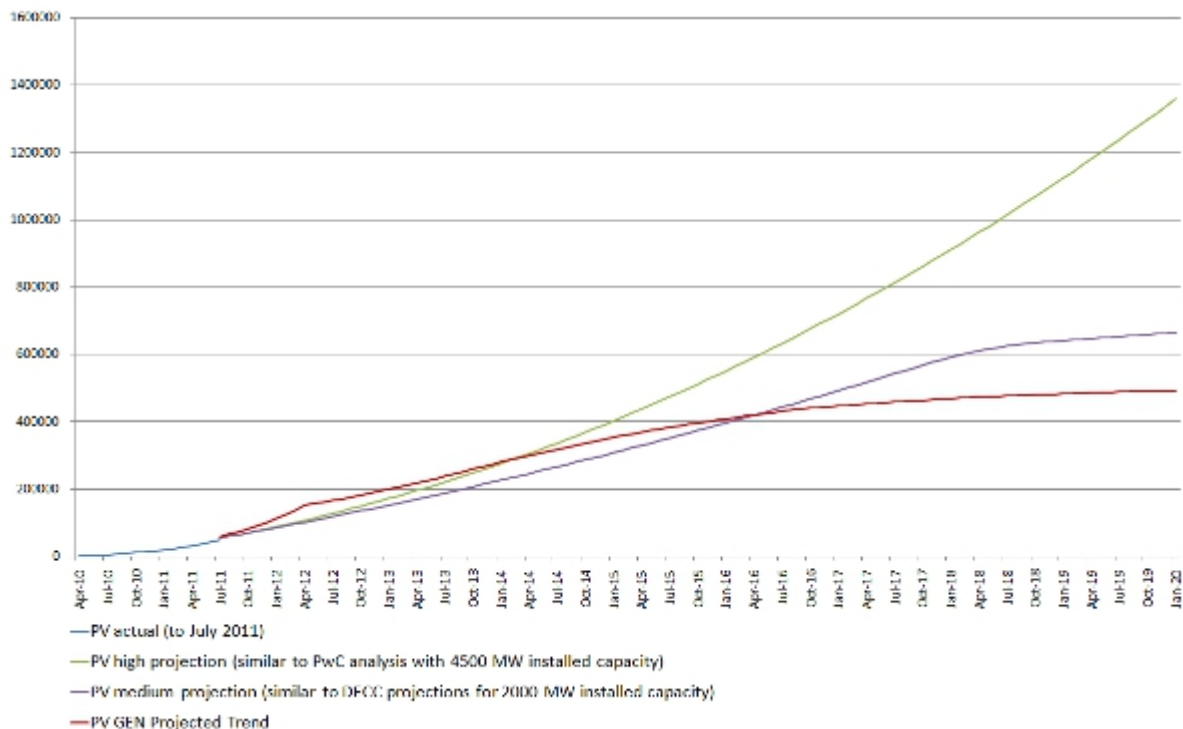


Figure 1: Graph showing scenarios of projected domestic installations in households in Great Britain of solar PV to 2020

Looking at the issue from the supply side, let's do some rough (and I stress 'rough') calculations to estimate market size.

There are 26 million households in Great Britain. If we assume that privately financing solar PV up-front will appeal more to those with significant savings, then how is wealth distributed? The ONS Wealth report ([http://www.statistics.gov.uk/downloads/theme\\_economy/wealth-assets-2006-2008/Wealth\\_in\\_GB\\_2006\\_2008.pdf](http://www.statistics.gov.uk/downloads/theme_economy/wealth-assets-2006-2008/Wealth_in_GB_2006_2008.pdf)) indicates that the total number of households classified as the 40% wealthiest is approximately £7 million. That's 27% of the 26M households in GB. Let's assume that the vast majority are owner-occupiers.

How many of these have a suitable unshaded south-ish facing site (roof or patch of land) of more than 10 square metres? This is not easy to estimate - about 20% of all households are flats although this proportion will be significantly lower for wealthy owner-occupiers. We estimate that 20% of households might have a suitable site.

How many have heads of household aged between 35 and 70? Let's estimate 85%.

How many are likely to know they will be staying in their house for 20+ years? We 'sort of' know the answer to this - Government housing stats suggest that 30% of all owner-occupier households stay in their property for longer than 20 years. Whether they knew they wouldn't be moving for a while is another matter! The figure for the wealthiest 40% of households is likely to be higher. And there will be people buying solar PV that do intend to move within this timescale. So let's be extremely generous with this filter and say 80%. [Nb. This is a contentious issue and many solar PV providers would argue that house prices will rise for properties implementing these solutions. The problem right now is that there is no sound evidence to indicate this yet - it's perfectly possible they may not have a major impact on house prices.]

How many have a long-term outlook where they are open to locking up their cash for more than 10 years before getting a return? Given we're talking about the wealthiest 40%, let's say the majority have this view given their financial position - so for simplicity 100%.

Further questions that would impact on demand are:

(1) How many are likely to be sympathetic to green issues?"

(2) Do they have sufficient awareness / knowledge / time / enthusiasm / confidence to progress a project?

Both could further reduce the number but we'll ignore these issues for now.

Leaving aside the issue that the 25% of households with available sites may not be the same as the 30% of households that are staying in their house for 20 years, we can generate a total estimate for the number of

households with domestic solar PV potential of approximately 1M households. In terms of financials, given the average price of a PV solution could drop significantly over time (perhaps to nearer £7,000 by 2020) we'll assume a conservative average installation price per household over this period of £9,000. This still generates a total GB market size of £9 billion.

Of course the reality is that only a proportion of the £1M households will actually take-up the opportunity due to factors like awareness, time availability, enthusiasm, confidence etc. So our projection on Figure 1 (GEN projected trend in red) is to achieve 50% of this total market (500,000 households) by 2020.

This all assumes, as we said at the start, that Government incentives will be relatively strong over this period. Given the state of the economy this may be an optimistic assumption!

There is also the key issue of how fast the take-up is likely to be? Will take-up of solar PV in 2015 be as rapid as it is today? This will be largely down to Government incentives. It's difficult to look beyond April 2012 right now when tariffs are anticipated to drop. We would predict a marked spike in take-up between now and Spring 2012. Changes in terms of solar PV incentives could be implemented as part of the Green Deal due to be launched in October 2012. But what these would be is not known right now. Prices for solar PV modules may continue to fall as planned and tariffs over the longer-term are predicted to fall in response to this.

Are they geographically distributed evenly? Despite the capacity for generation being greatest in the South-West of England, the distribution of wealth is skewed towards the South-East of England. But there are now a fairly large number of installers distributed across the UK. So the potential for PV sales through the installer network could be assumed to be relatively evenly distributed at a regional scale.

What about households that are not owner-occupiers? These are unlikely to be classified as 'domestic registrations'. Private or public landlords may well bulk purchase the kit on behalf of their tenants at discounted prices. This option would be available to a proportion of the 8M GB households that are not owner-occupiers. If we suggest 10% of landlords would be keen to do this (800,000 households) and, of these, 15% would be suitable sites, this would add a further 120,000 households.

What about the size of the market for solar PV 'rent-a-roof' schemes? Right now these schemes are still pretty new and households are not familiar with them. But, if they become more widespread and popular - and they are attractive to house buyers who like the idea of inheriting a contract for a 'rent-a-roof' scheme in return for cheaper electricity - then this approach could appeal to a much wider market segment. This would include the 13M owner-occupiers not in the wealthiest 40% of households and also the 8M households where the property is owned by public and private landlords. The 21M households in this market dwarfs the size of the private finance option and there are much fewer filter factors.

The only critical filters to apply would be whether there are suitable sites to put them and the potential appetite that public and private landlords have for such schemes. Given the nature of these properties they are much less likely to have suitable sites compared with the wealthiest owner-occupier households above although, if you can do centrally coordinated projects across large numbers of properties, the financials may stack up to justify

smaller scale projects. The attitude of landlords is likely to be heavily influenced by their enthusiasm to take up-front risks for down-the-line gains and the overall financial returns available - which we assume will stay strong for the next 10 years. If we use a filter figure of 5% (instead of 25%) this still creates a market of 1M households. Given the ability to negotiate bulk discount rates for these projects, let's use an average figure of £5k per household - still a market worth £5 billion.

So, going back to Peter Jones' question on Dragons Den last night, what's the size of this market? Chris could have said "It's worth £9 billion over the next 10 years for privately financed, domestic scale solar PV projects across GB and approximately £5 billion for rent-a-roof PV schemes. And that's without considering commercial scale installations." Of course this assumes the UK Government doesn't let the sun go down on the domestic PV market over the next 10 years - no small assumption under current conditions!