

## Renewed confidence: solar PV and other renewable energy installations

*Do you have clients who are making decisions about installing renewable energy systems? With the UK government no longer offering feed-in tariffs (FiTs) for domestic installations, it might be a tough investment decision to make.*

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Recently I gave a presentation at Ecobuild on the future of renewable energy in a post-subsidy world. Looking at solar (photovoltaics), wind, biomass and heat pumps in particular, I discussed how different models for investment might work. In the 'good old days' (the last five years!) solar and wind project investments were most profitable by being as big as possible, up to incentive boundaries, to benefit from economies of scale. In most cases this meant building ever bigger solar or wind farms with no specific end user/customer for the power, except the local network. The two primary sources of income would be from the FiT or the government's Renewables Obligation Certificate (ROC) payments, with the other being the power purchase agreement of supplying to the grid. The price paid for electricity under a power purchase agreement supplied to the network is about 5 p per kWh.



In a world *without* subsidies the only source of income is the price paid for the electricity supply. In most cases that simply isn't going to be enough, at least in the near term.

So we have to make renewable electricity viable without subsidies. We can do this in two main ways: first, we can reduce the price of renewable power, which is already happening. Second, and more importantly in the short term, we can increase the price paid for the electricity generated.

The easiest way to increase the price is to supply the electricity directly to an end user such as a factory or office. An end user will be typically paying a retail price of 11-14 p per kWh for electricity and it is therefore possible to sell power to them for much more than the current 5 p rate and still save money. Everyone's a winner!

There is a catch. You can only sell an end user as much power as they need. This means that solar and wind systems are likely to be smaller and more bespoke to customer demand and will therefore require careful analysis. When we are looking at this for clients we take the half-hourly metered data to understand what their minimum daytime demand is. This dictates how big a solar or wind installation should be alongside other metrics.

The good news is that there are likely to be a lot more solar and wind projects in the future, but they are more likely to be a lot smaller and more complex. This in itself is probably good news for electrical installers as the work will be more valuable and more bespoke. For solar it is likely to drive more rooftop installations, supplying the occupier in the building. Rooftop installations are more complex than ground-mount systems due to the access, safety, connections (electrical and physical) and the roof layout itself.



To add to the complexity and opportunity, energy storage is now becoming available, commonly in the form of lead acid or Li-ion batteries. This is really exciting for the power sector as a whole, and in renewables it offers a range of opportunities for solar and wind projects that are serving sites. For example, it may mean that you can increase the size of a solar/wind system and simply store excess energy when you don't need it and then use it when you do. Further, due to the additional charges that apply for electricity at peak periods of demand there are extra savings that can be made.

Whilst I have focused on renewables here, this is a microcosm of what is happening in the wider electrical system. The sector is becoming much more fragmented as more of us become producers as well as consumers of electricity and begin to manage our energy use

more actively. This represents a massive opportunity and challenge for the electrical sector as a whole, but particularly at the building/site scale.



## Further references:

If you're designing or installing solar PV, you might find the IET's *Code of Practice for Grid Connected Solar Photovoltaic Systems* useful.

Work is underway to develop a Code of Practice for energy storage. Please see the IET Standards webpage to be involved in consultations in this area:

<http://www.theiet.org/resources/standards/>. A Technical Briefing on the subject is due to be published shortly.

## Calling all electricians and installers who have fitted smart home solutions!

We're interested to hear from anyone who is fitting, or has fitted, renewable energy solutions for domestic dwellings or small business. We would also be interested to hear whether you've fitted any 'smart home' technology, which comprises anything from light dimmers to smart meters to energy control systems. Please contact Wiring Matters with some information about the project and your experience: [wiringmatters@theiet.org](mailto:wiringmatters@theiet.org)