Weaver Manor Goes Solar a – 6 month update

As a reminder on Monday 13th June we had a new solar system installed. The system is a 10 Panel 3.95KWh system with a 3.6KWh inverter that converts the Direct Current (DC) generated by the panels and converts this to Alternating Current (AC) that is used by every electrical appliance, including lighting, within the house.

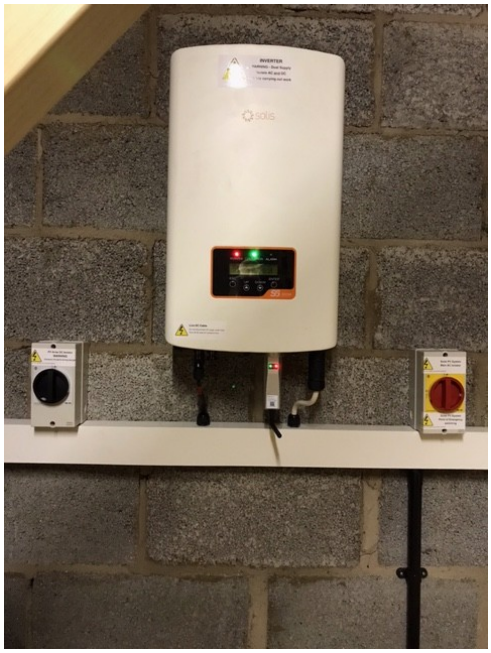

Image 1: The Inverter installed in the Loft

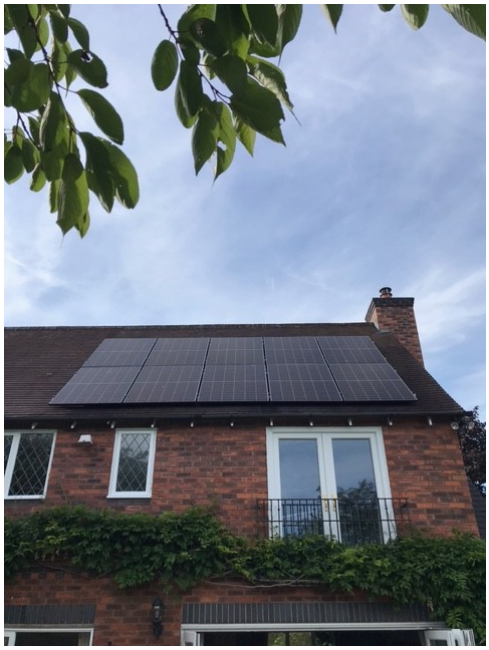

Image 2: Solar Panels fixed to the roof

The last 6 months has been really interesting and we have generated over 2 Megawatt hours (MWh) since the system went live in June; 2.248MWh to be accurate.

Now as we mentioned in our original post we weren't able to have batteries installed during the initial installation so unfortunately we have not been able to use all of the electricity generated ourselves, in fact we have only used 802KWh (36%) of it, which is really sad given the increased cost of electricity!

These findings after 6 months means it is worth a recap of our gut feel about this from the original article :

"However that is the easy bit because if you don't use what you generate then it gets fed straight in to the Grid, Free of Charge…… well unless you sign up for a Smart Export Guarantee (SEG) or in old money a Feed in Tariff. You are probably thinking that this also sounds pretty simple, but then you have to factor in that to sign up for a SEG it takes 8-10 weeks for the energy provider (it doesn't need to be the one you purchase your energy from) from completion of the application, which you can only do when your installer has applied for your Microgeneration Certification Scheme (MCS) or the EN 45011 or EN ISO/IEC 17065 2012!

Now I wish we were still only paying just over £0.20 a unit but even with prices where they are today, even with the very welcome Government price cap limit of £0.34 per unit of electricity what we have saved on those 802KWh is £272.68. The sad and very, very frustrating part is that we haven't been able to use all of the energy we have generated. If we had been able to use all of this energy by having batteries installed then we would have save a whopping £764.32 on the 2.248MWh that we have generated since we went live giving a difference of just under £500!

Over the last 6 months we have desperately tried to get companies to come and provide us with a quotation and timeline for the installation of a modest 5.2KWh battery system. This task has been almost impossible as there is a global shortage of battery systems. The best we have been able to achieve so far is a quotation of £5,500 with an 8-12 week lead time and a significant deposit required to secure the stock.

However the reality is that a 5.2KWh system probably wouldn't be big enough to allow us to harvest all of the electricity we generate. We would probably need something more like a 10-15KWh battery system to capture all of our output. If we wanted to be off grid (draw little to no electricity from the Grid) we would probably require in excess of a 20KWh system, which believe me is not an inexpensive activity.

I look forward to getting an update from Richard in the next few months on his installation as this will give a much clearer understanding of the utilisation of the generated output.

Now if we again refer back to the original article we can talk about what happens to all of that lovely energy that we have generated and been unable to use below:

"Once this is all done your SEG provider will provide you with a cheque, yes they do still exist, every quarter at the rate of £0.01-£0.11 per unit. Now that might seem great until you realise that most people will be paying somewhere between £0.15-£0.25 per unit from their suppliers. Our tariff costs us a smidge over £0.20 per unit with Eon Next and their SEG rate is £0.055 or 5.5p per unit, which to me is outrageous!

Well the outrage has certainly not subsided because I arranged a SEG with my electricity provider Eon Next. This process should take 8-12 weeks but in fact it took 20 weeks and the rate that they will pay us is, drum roll please…….. £0.03, yep 3p a unit!

Now I know you are there thinking so the company that provides me electricity at, a Government capped, 34p a unit steals, sorry I mean, buys unused energy that we generate at 3p a unit. Trust me it is that alone which should make me place an order for a 10KWh battery system to minimise the amount they are able to steal, whoops sorry again for the faux par, buys from me!!!! Many of you will think how can they do this and we are very firmly behind you in that. IT IS A NATIONAL DISGRACE!

Now there is an interesting little twist to this in that I have found a device called an "Energy Diverter" which has a little device called a CT (Current Transformer) unit which clamps around the energy output cable that feeds energy back in to to grid. This CT clamp senses thousands of times a second if energy is being exported back to the grid and diverts it to power particular item/items in the house! Interested?

Well these units we primarily developed to heat Immersion Tanks with excess energy provided by solar systems but in reality it will power any Resistive Load. (Resistive loads are any load that resists the current flow) This includes lighting and heating elements such as the aforementioned immersion heaters, kettles, electric fires, electric underfloor heating units etc. These units range between £200-£500 and must be installed by a certified electrician so provide a very cost effective way of using more of the energy that is being generated.

We have purchased a unit and will look to get it installed on our immersion tank and if the reports are to be believed will provide us with all the hot water we require. We will report on how this has worked out in our next update at the end of June.

Again referring back to the original article there lies what I think is the most interesting finding for us that relates to how our mentality and habits have changed over the last few months

"The other interesting thing is that the amount of energy that you generate on any given day fluctuates massively. In our first week we have been reasonably lucky that the weather has been OK, however our generation figures have varied between 7.6KWh on Saturday 18th June and 27.5KWh on Monday 20th June. Also generation is pretty insignificant before 7.30am and after 6.30pm due to the South East direction of our panels so utilising the times between those hours to do Washing, Dishwasher runs, Ironing etc means we are trying to maximise the use of our own generated electricity".

We always knew that once we hit the short winter days that the figures would change and they have. We have had days where we have generated as little as 300Watts, which to coin a well known phrase, doesn't even keep the lights on and it is those days where you really need the larger battery capacities if you don't want to be paying much or any electricity bills! However get one of those cold and bright December days and we have generated 8.9KWh.

Now herein lies the nub of it for us: The real savings in electricity usage are as much to do with mindset, sensible adjustments to living methods and using more energy efficient items and methods than they are to do with Solar technology per se and trust me we have spent the last 6 months running round finding things turn on or to wash or put in the dishwasher when the sun has been shining to be as efficient as possible. It literally sends us round the twist when we look at the figures!

The additional things we have done to reduce what we use are; 1. replaced all out lighting with LED bulbs, 2. purchased a Slow Cooker to reduce Oven and Hob use and batch cook, 3. Used the microwave to heat meals where possible, 4. Used a Thermos flask to store and use excess boiled water when the kettle was overfilled (we always try to fill to what we will use in that moment), 5. Turn lights off as we go so we only have lights on in parts of the house where we are at the time. These changes have helped reduced our December usage down by 88 units (nett of what we used from the 112KWh we generated which was an additional 65KWh which saved us £22.10) against last year and at 34p/KWH that equates to just under £30, giving a total saving of £52on our December bill, something we hope to achieve again in January.

In truth without batteries you cannot use all that you produce and even then you need a lot of batteries which costs a small fortune to get to the point where your usage bills pretty much disappear. (The electricity supply companies still get you here by the way as well because as well as the unit rates increasing they have been allowed to also massively hike up their Daily Charge. For us the daily charge tripled from 15.85p to 46.28p in October when we came off our fix and our unit rate went from 20p to 34p (again thank you to the government because that would have been 51p without their intervention so long may that continue).

Hopefully as can be seen above there are still lots of things we can all do to reduce the amount of energy we use every day.