Solar Panel Experience - John, Leeway Ave. Great Shelford

We live in a bungalow in Great Shelford and had a solar panel system installed by Greenscape Ltd., as part of Cambridgeshire Solartogether program, in April 2021. Our reasons for installing solar panels were, like many people, two-fold;

1. to reduce energy costs
2. attempt to reduce our carbon footprint

We did a little research on what the expected financial returns might be but this was not a driving factor. As all cooking is done via electric appliances we were keen to make use of as much "free" solar energy as possible. Our hot water and radiator heating is done by a gas boiler. The recent massive increases in energy costs have obviously affected the financial forecast.

The bungalow faces WSW and following a site survey by Greenscape it was decided to install 16 x 340w panels and 9.6kWh (4 x 2.4kWh) of battery storage. The panels cover the whole roof and the inverter and batteries are installed in the attic. The path of the sun means that during summer evenings we are shaded by large trees on the railway embankment. During winter this is not so noticeable as the sun sets further south and the trees don't have leaves.

The panels and batteries were installed in one day. Our consumer unit is in the kitchen (directly below the position of the inverter in the attic) so wiring from the attic to the consumer unit was easy and caused no cosmetic damage. The scaffolding was installed about a week before installation and was taken away about a week after the install. We have installed a smoke/heat detector in the attic for peace of mind.

Following the installation there was a delay of about 6 weeks before we were able to "sell" our exported energy, mainly due to the time for the agreement with UK Power Networks to accept the exported energy. At the time of the install our energy supplier was Scottish Energy and their export tariff was 4p per kWh. We have since moved to Octopus Energy (we already had a smart meter) and now receive 15p per kWh.

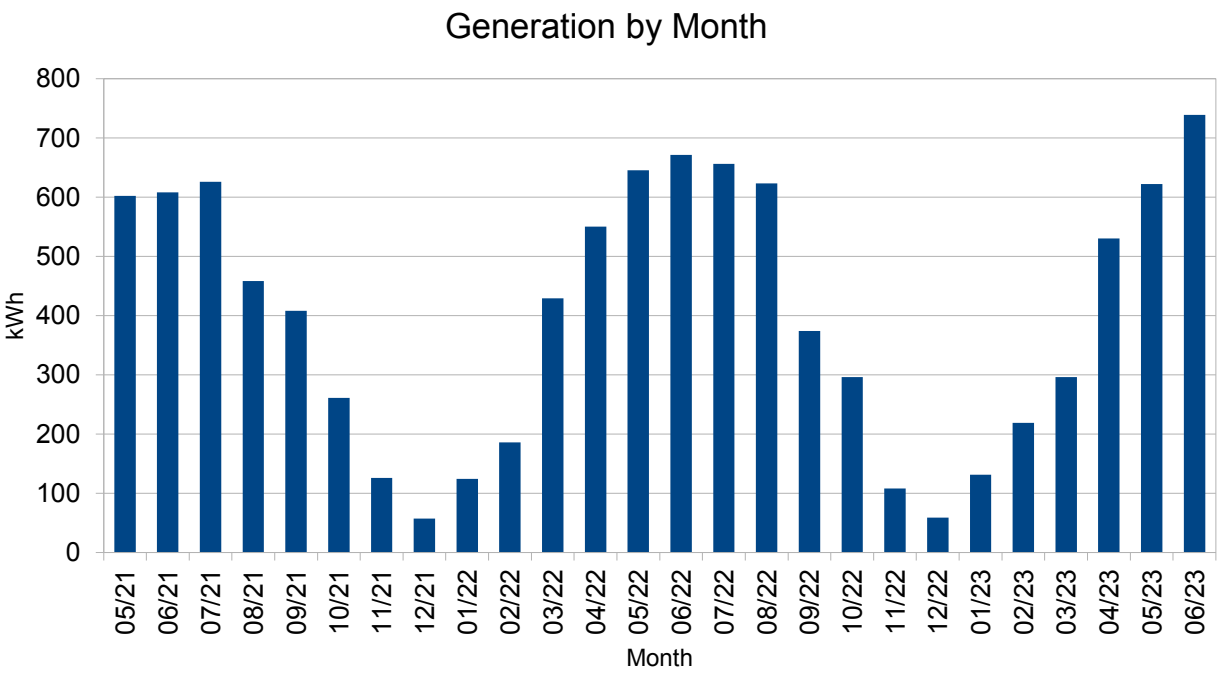
Solar Production and our energy usage.

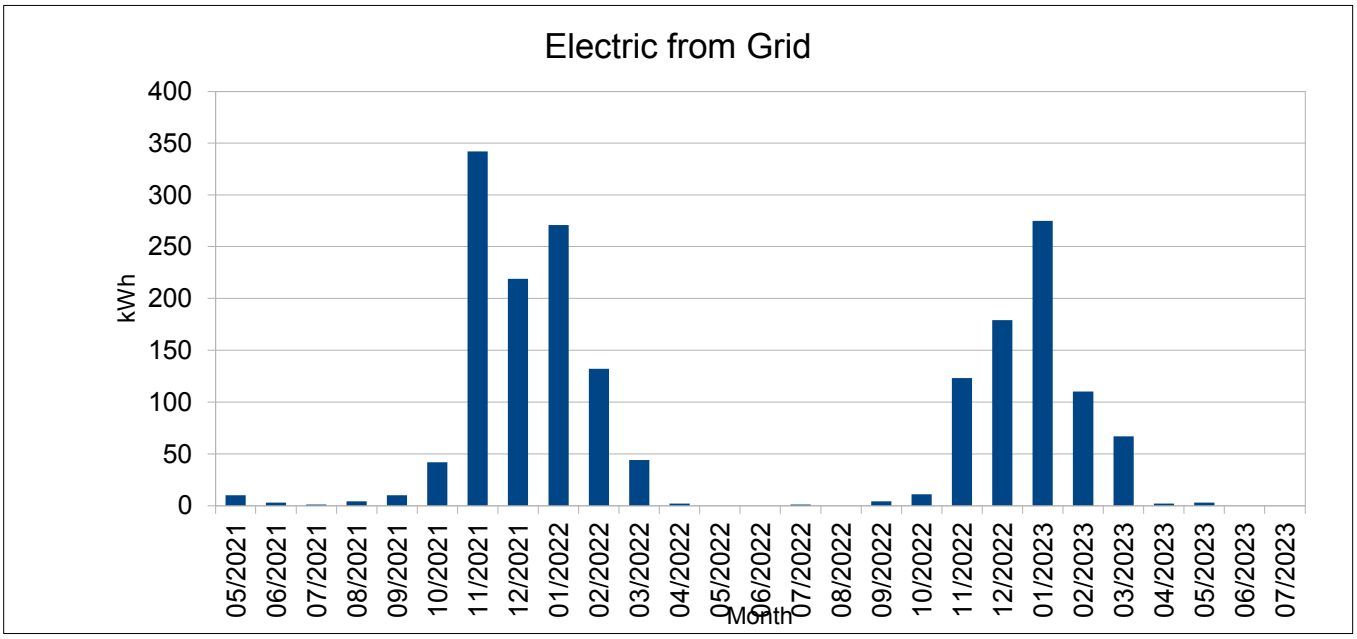
Solar Production	Generation	Used	Exported
April 2021- Jun 2023	10,881	5,008	5,873

Household Energy Usage	Total	Generated	Imported
April 2021- Jun 2023	7,038	5,008	2,030

Estimated averages, April 2021 to June 2023

Daily Generation	Daily Usage	Daily Self use	Daily Imported
c. 15 kWh	c. 9 kWh	6 kWh	c. 3 kWh

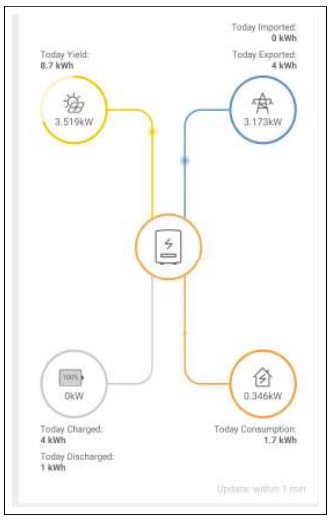




The two graphs clearly show the seasonal differences in energy generation and energy usage and that maximum energy usage ties in with minimal energy generation!

Monitoring and Maintenance

The inverter is Wi-Fi connected and the manufacturers (Solis) of the inverter provide a web interface and a smartphone app (SolisCloud) that can be used to monitor current and historical status and alarms. This is a screenshot of the SolisCloud app showing generation, battery state, usage and export:



There has only been one maintenance issue to date. During the very cold weather in January 2023 the batteries were not taking charge. Greenscape were able to rectify the issue remotely.

We do get a lot of birds sitting on our roof so we do periodically clean the panels. As we have a bungalow we can clean the panels using a long handled (3.0m) window cleaning brush. Bird proof netting was installed along with the panels, we have roof pan tiles so there is sufficient space for birds to get under the panels in the troughs of the tiles.

Financials

Here is a very basic summary of the costs and receipts for exported energy. We've used 25p/kWh as an estimate of the electric costs over the whole period.

The total cost of the installation	£9,600.00
Export Income to date	£550.00
Estimate of self use, 5000 kWh at 25p per kWh	£1,250.00
Estimated income to date	£1,800.00

Our thoughts and observations

- We are very pleased with the system.
- We did get quotations from other suppliers. The Greenscape quotation (via Solartogether) was considerably cheaper.
- Greenscape were good to work with and have provided very good support on the occasions we've had to contact them.
- As you can see from the graphs above, very little generation is made during the winter months, but for all intents and purposes we don't import any electric from April to October.
- Even on sunny days, with maximum generation and a full battery, if many appliances are turned on together, small amounts of electric may be imported. The batteries seem to have a maximum discharge of about 3.5 kW. Therefore if the total usage is more than 3.5 plus the maximum generation value, the balance needs to be imported.
- Batteries will only discharge to 10-20%, we have 9.6 kWh of battery meaning about 7.68kWh is available to use.
- Exporting doesn't make a lot of money, but there is satisfaction in using generated or stored energy rather than importing from the grid.
- Friends have recently installed a system using 400w panels, our panels are 340w, which shows the improvements in the technology over time.