

Date: 18-July-2022

Dear Carla,

It was a pleasure to speak to you and hopefully we can help you achieve your goal of becoming as self-sufficient when it comes to energy usage.

Our recommendations

- Batteries
- Solar PV diversion unit to HOT Water Cylinder
- Infrared Heating

It has probably been a while, since you installed your Solar PV system, and the inverter may need replacing soon. As part of our service, of installing batteries, we will install a Hybrid-Inverter, that will work in two parts.

1. Convert your DC power from Solar panels to AC.
(What your current inverter is doing).
2. Also convert your DC stored power in your batteries to AC.

The other technologies mentioned above, will follow up, based on a secondary meeting.

Feeding in tariff (FITs)

NOTE – your current feeding in tariff and export tariff is unaffected, please discuss with our sales team if you need further clarification.



Solar PV – Generation & Analysis

As an accredited MCS approved installer, we use a SAP calculation to determine your estimated generation of electricity through your solar PV system.

Rule of thumb

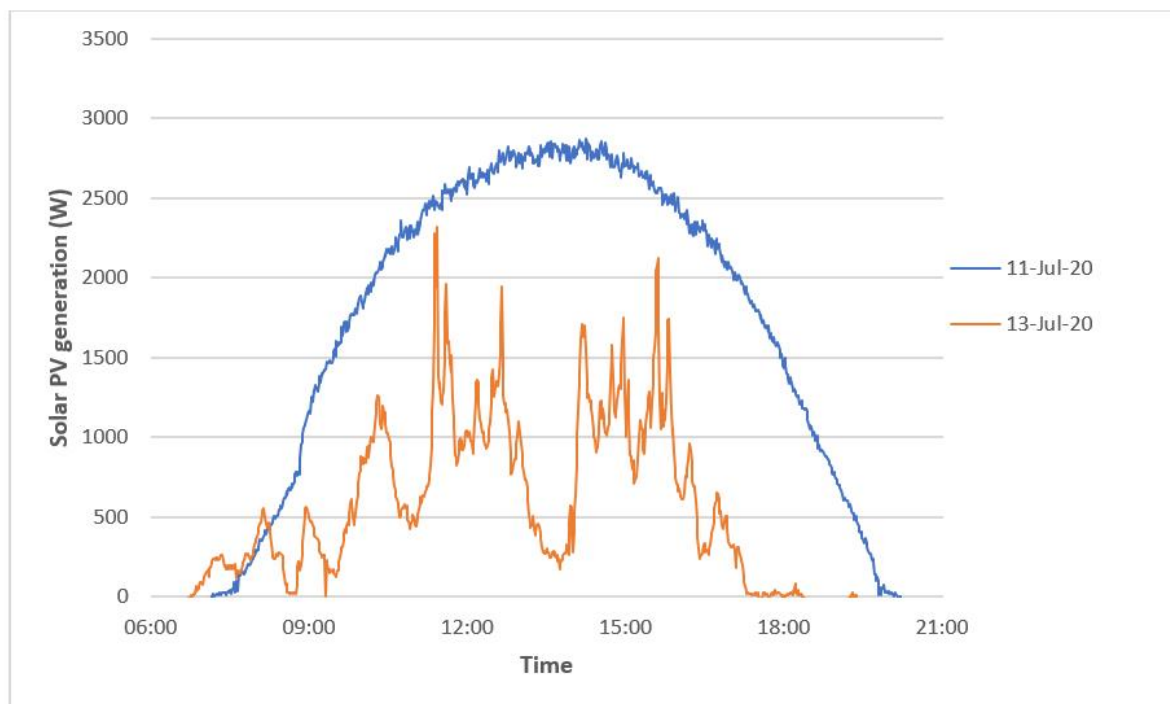
For every 1KWp of Solar Panels installed.

South	= 850	KWh a year
East/West	= 710-735	KWh a year (dependent on slope)
Flat	= 735	KWh a year

[Note the above is based on installations in the Northwest of England, other regions differ as the SAP calculation is higher for the south, and lower for further North]

Our team will determine your SAP calculation using google earth and other software.

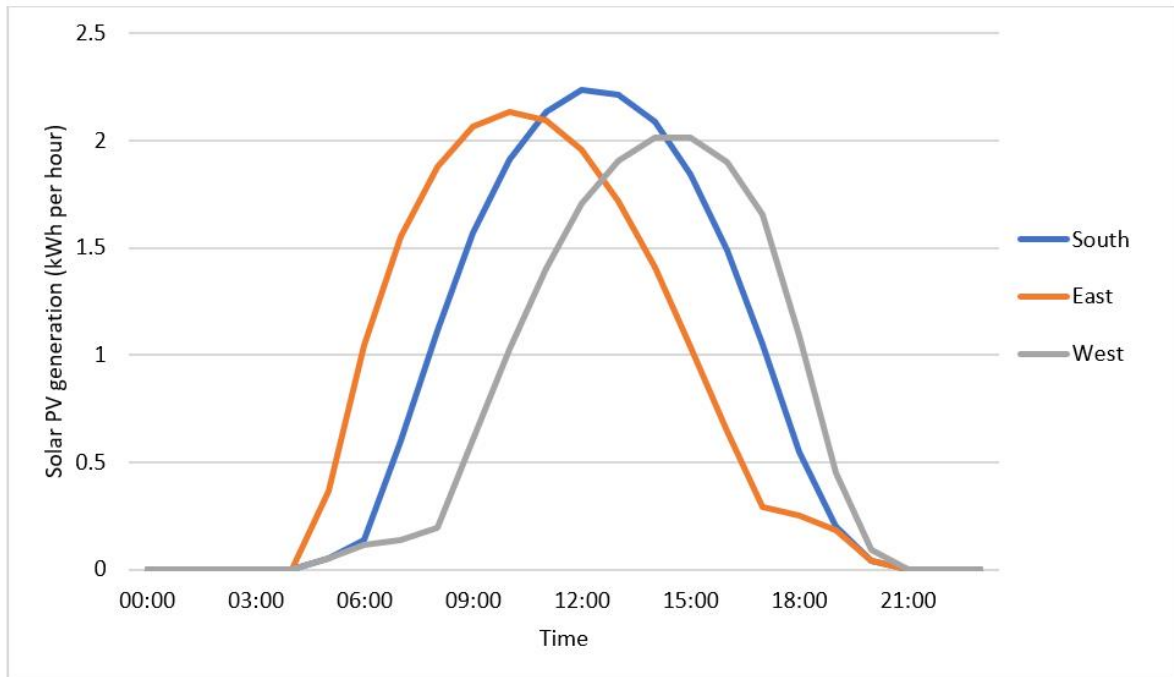
How much electricity do solar panels produce?



Solar panels generate electricity during the day. They generate more electricity when the sun shines directly on the solar panels. **Figure 1** shows PV generation in watts for a solar PV system on 11 July 2020, when it was sunny throughout the day and on 13 July when there was a mixture of sun and cloud.



South Or East & West



A south facing solar PV system will tend to generate more around noon. The sun rises in the east and so east-facing PV panels will have maximum generation part-way through the morning. A west-facing array will tend to generate most electricity part-way through the afternoon as shown to the right.

Solar PV – Additions

You may have installed your Solar PV for quite a while now, and as part of our service, our team will give a full check and ensure everything is working as normal and should be. This involves reviewing your generation over a 3-year period. Our new Hybrid inverter will come with Ethernet/ Wi-Fi connection so you will be able to analyse your generation and savings.

You may or may not have the following additions, if you need any of the following, please confirm upon your order.

- Bird Protection/Guard
This is something we recommend stopping birds nesting within the panels. This can be added if you deem it necessary, ranging from **£250 - £450**
- The inverter comes with a 5 Year warranty, we can add additional 5-year warranty to make the inverter warranty to a total of 10 years. The cost for this is **£75**.



- We have included an ethernet/Wi-Fi connection to the inverter so you can monitor the system remotely. Cost dependent on the discussion and IT provisions (**no cost**).
- Solar PV Diverter
A solar diverter is what it says: a device through which any solar power not being used in your home is diverted to an electrical appliance, generally an immersion heater in your hot water and / or an electric heater. The load must be resistive. The cost is based on the number of cylinders and the size of cylinder, our guide price is **£450** per cylinder tank.

DC Batteries Vs AC Batteries

In a nutshell, DC batteries are more preferred if you already have a Solar PV system installed.

DC batteries are “ONLY” charged by your existing solar PV system.

AC batteries can charge the batteries from the Solar PV and the Grid itself; this is beneficial if you have an economy 7 meter, however your Solar PV installed system does this part for you.

NOTE – AC Coupled batteries will require additional paperwork and an additional cost as the electrical wiring is different from the DC coupled system.



Batteries Installed with Solar PV

Batteries Only					
Year	Projected Electricity Cost/ Kwh	Battery Saving	Deemed Export Payment	Saving/ Income p.a.	Payback
1	0.00	892.50	88.40	980.90	980.90
2	0.00	937.13	92.82	1029.95	2010.85
3	0.00	983.98	97.00	1080.98	3091.82
4	0.00	1033.18	101.36	1134.54	4226.37
5	0.00	1084.84	105.92	1190.76	5417.13
6	0.00	1139.08	110.69	1249.77	6666.90
7	0.00	1196.04	115.67	1311.71	7978.60
8	0.00	1255.84	120.88	1376.71	9355.32
9	0.00	1318.63	126.32	1444.94	10800.26
10	0.00	1384.56	132.00	1516.56	12316.82
11	0.00	1453.79	137.94	1591.73	13908.55
12	0.00	1526.48	144.15	1670.62	15579.17
13	0.00	1602.80	150.63	1753.43	17332.61
14	0.00	1682.94	157.41	1840.35	19172.96
15	0.00	1767.09	164.50	1931.58	21104.55
16	0.00	1855.44	171.90	2027.34	23131.89
17	0.00	1948.22	179.63	2127.85	25259.74
18	0.00	2045.63	187.72	2233.34	27493.08
19	0.00	2147.91	196.16	2344.07	29837.15
20	0.00	2255.30	204.99	2460.29	32297.44
21	0.00	2368.07	214.22	2582.28	34879.73
22	0.00	2486.47	223.86	2710.33	37590.05
23	0.00	2610.80	233.93	2844.72	40434.78
24	0.00	2741.33	244.46	2985.79	43420.57
25	0.00	2878.40	255.46	3133.86	46554.43
	0.00	42596.44	(Total Bill Saving over 25 Years)		
illustration based on:					
1. Price:		£5,750.00	GBP		
2. System Size:		4.00	KWp		
3. Electricity Generation:		3,400	kWh		
4. CO ₂ saving:		1,850	kg/year		
5. Electricity Price		£0.35	GBP		
6. Usage percentage		60%			
7. Financial Reward in Year		17.06%			



PV Battery Storage

Batteries connected to solar PV, will give you a bigger saving on your investment as you would benefit from saving your own generated electricity to use at a later stage.

The following is the breakdown for batteries available for additional storage:

1 set would be £4000	which would be for 1 x 5.12 KWh
2 sets would be £5750	which would be for 2 x 5.12 KWh = 10.24 KWh
3 sets would be £7500	which would be for 3 x 5.12 KWh = 15.36 KWh

The sizes of the battery are dependent on the manufacturer and may vary.

Rule of thumb

System size x 4 (Ratio of 1:4) is the maximum we would suggest for the most optimum solar PV system with Batteries.

NOTE – every home will have different usage patterns. Factors such as, how many people live in the home, age groups, time spent in the home and the number of panels and location of the panels, all play a part in the generation and savings calculations.



Different sizes & additional batteries

We have listed the four typical or most frequent sizes below.

The battery examples presented can be assembled into a series of batteries up to our recommended ratio of 1:4.

For instance, a 6KWP can have up to 24KWh batteries.



- 2.4KWh - Smallest Module
- 4.8KWh – Double Module (Stacked)



- Our recommendation is a 5.12KWh battery



- 13.5KWh Tesla Powerwall

EV Charge points



EV (Electric Vehicle) - We offer sales, installation, service, and maintenance for a 7.3KW EV charging station (for a domestic home). We are an OLEV-approved EV charging station installer. The cost varies depending on the unit's location and can range from **£750** to **£1250**.

[We can also install commercial EV Charge points]

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myenergi wallbox PROJECT EV HYPERVOLT

<p>FEATURED BESTSELLER</p> <p>EV Chargers</p> <p>ZAPPI-207TB - 1-PHASE TYPE 2 WITH 6.50 METER CABLE</p>	<p>BESTSELLER</p> <p>EV Chargers</p> <p>HYPERVOLT HOME 2.0 EV CHARGER</p> <p>£679.00</p>	<p>BESTSELLER</p> <p>EV Chargers</p> <p>HYPERVOLT HOME 2.0 EV CHARGER WHITE W/ 7.5M TETHERED LEAD</p>	<p>BESTSELLER</p> <p>EV Chargers</p> <p>HYPERVOLT HOME 2.0 EV CHARGER WHITE W/ 10M TETHERED LEAD</p>	<p>FEATURED BESTSELLER</p> <p>EV Chargers</p> <p>ZAPPI-207TB - 1-PHASE TYPE 2 W/ 6.5M CABLE & HUB BUNDLE</p>
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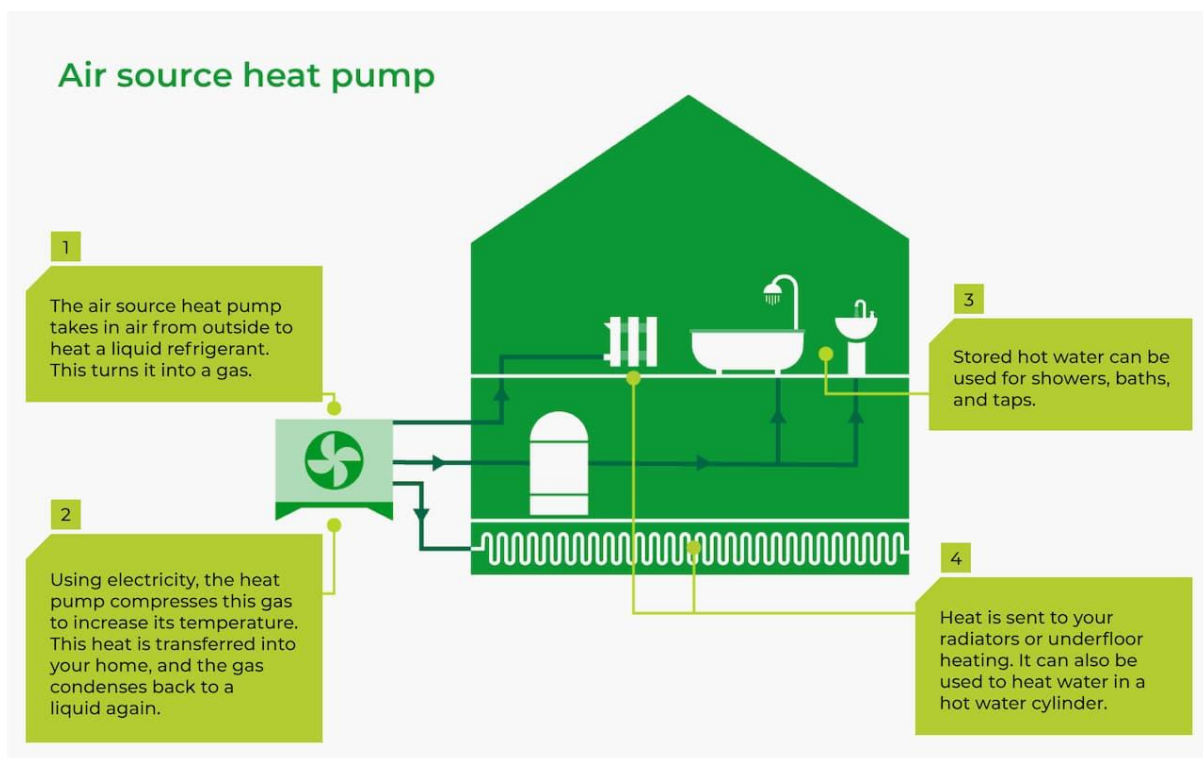
Air Source Heat Pump (ASHP)



Air source heat pumps are a way to heat your home or commercial building that could give you a greener alternative to boiler heating systems. They are low maintenance – and will cut your heating costs.

Air source heat pumps use air as their main source of energy. They take energy from the air outside (even when it is super cold) and convert it into heat. Basically, they work in the same way that fridges and air-conditioning units do, just in reverse.

How air source heat pumps work?



Domestic ASHP – Costings

Air Source Heat Pump costs can vary from £12 500 - £17 500, dependent on the size of the house and existing heating system.

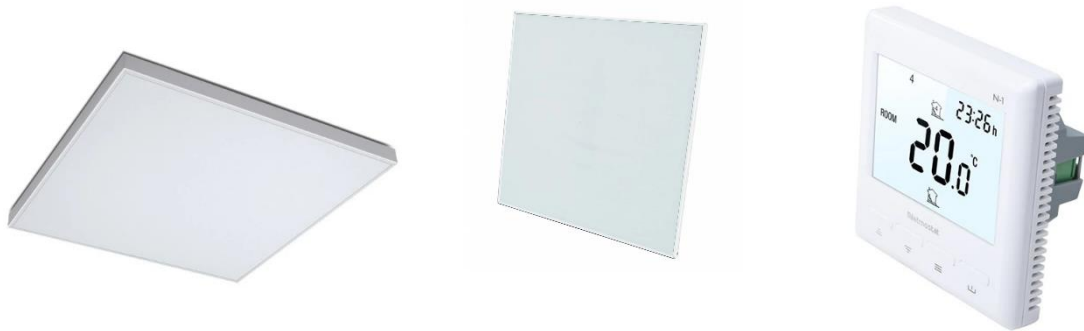
There is a Heat loss calculation and a visit by one of our heat engineers will be required. For this service we do charge **£500**, which is deducted from your final cost.

Infra-Red Heating

This technology is used within Office building up to a 3m height room.



Once we have confirmed your requirements, we can provide a more comprehensive quote and information.



Far InfraRed Heaters for Armstrong Suspended Ceiling 700W White Glass plus Programmable Thermostat, N-1 Netmostat via Wi-Fi with mobile phone app starting from

- | | |
|----------------------------------|---------------------------------|
| ○ 1 Panel | £ 129.00 |
| ○ 4 Panel | £ 516.00 |
| ○ Programmable Thermostat | £ 79.00 |
| ○ Installation | £ Available Upon request |

Infrared Heated Mirrors

Shown below is an 800Watt 120X60cm **£359.00**



Next Steps

- We hope we can go ahead with this project.



- We will invoice you for “Full Design & Survey Service - £500”, which is deducted from your final cost.
- AC Batteries would need to start the paperwork required by the DNO – Electricity Northwest West, and this could take anything from 7 – 30 days.
- EV charging points, can you confirm if this is any interest to you?
- Regarding the savings regarding installing batteries, I would like to sit down with you and discuss, as there are further variables to consider.
- “PV Additions” – we would discuss this in person.
- Infrared Heating panels – we can discuss when we have face to face meeting.

