

SOLAR PV SYSTEM SITE SURVEY FORM

Customer details

Name

Address

Telephone

Email address

Installation details

Same as customer details (Y/N)

Yes: ☐ No: ☒

Address

(If "Y" copy all from Customer details) "No" add new address

Postcode (location of PV array)

Building use:
(Domestic / Commercial / Industrial/Other)

Building use:

Type of property:
(Semi-detached/Terrace/Detached)

Type of property:

Age of property

75 YEARS

Is the property a listed building or in a conservation area?

Listed building: Yes: ☐ No: ☒

Conservation area: Yes: ☐ No: ☒

Annual electricity consumption (kWh)

3403 kWh

Planning permission required and/or obtained

Yes: ☐ No: ☐ obtained: ☒

Preferred size of system required (kWp)

4.2 kWp

ENA Engineering Recommendations (G98/G99/G100)

G98: ☐ G99: ☒ G100: ☐

Internal Survey

Incoming supply and type of earthing system details

TN-S: ☐ TN-CS: ☒ TT: ☐

DNO/DSO/Energy supplier

Electricity North West : ☐
Northern Powergrid: ☐
Scottish & Southern Energy Networks: ☐
UK Power Networks: ☒
SP Energy Networks: ☐
National Grid Electricity Distribution: ☐

Confirmation of suitability of protective equipotential bonding (Gas/Water/Structural)

Gas: ☒ Water: ☒ Structural: ☐

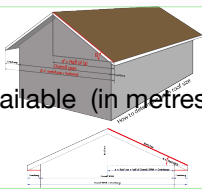
Maximum demand of electrical installation

75 A

Is the electrical installation capable of additional loading?

Yes: ☒ No: ☐

SOLAR PV SYSTEM SITE SURVEY FORM

General conditions existing electrical installation	
Spare way available I consumer unit for PV supply (Y/N)	Yes: <input checked="" type="radio"/> No: <input type="radio"/>
Proposed location of inverter and other associated equipment	
Available routes for PV wiring systems	
Access to loft if required	
Equipment to be installed within the loft considering lighting, weight, ventilation and access for installation and maintenance	
External Survey	
Location and area proposed for PV array	
Roof or Ground-mounted system	Roof: <input checked="" type="radio"/> Ground-mounted system: <input type="radio"/>
 <p>Roof area available (in metres)</p>	
Condition and construction of the roof taking account of additional load and wind uplift	
Wind uplift calculation carried out (Y/N)	Yes: <input checked="" type="radio"/> No: <input type="radio"/>
Orientation and pitch of roof	
Potential shading	
Shade analysis carried out (Y/N)	Yes: <input checked="" type="radio"/> No: <input type="radio"/>
Access and egress for selection and installation of access equipment such as scaffolding	
If ground-mounted, area available (in meters)	
Other Information	
Additional informations evidence attached (photographs/Drawings/EIC/EICRs)	photographs: <input checked="" type="checkbox"/> Drawings: <input checked="" type="checkbox"/> EIC/: <input checked="" type="checkbox"/> EICRs: <input type="checkbox"/>

SYSTM PERFORMANCE	
STEP 1	Establish the rating of the PV array in kilowatts peak (kWp)
STEP 2	Determine the postcode zone
STEP 3	Determine the array inclination (pitch)
STEP 4	Determine the array orientation
STEP 5	Look up kWh/kWp (Kk) from the appropriate location specific treble
STEP 6	Determine the shading factor (SF) of the array

SOLAR PV SELF-CONSUMPTION in %	
STEP 1	Occupancy Type This is a behavioural parameter that is used when the property is occupied or unoccupied
STEP 2	Annual Electricity Consumption (kWh) The total amount of the electricity consumed in the property over the last 12 months
STEP 3	Annual Electricity from solar PV (kWh) The total amount of the electricity generated by the solar PV over the 12 months

Note:

Step 1 is established by using the MCS guidance document MGD 003 (Table 4-1)

Step 2 can be established by using the last 12 months electricity bills/readings. If there are not available, the MCS guidance document MGD 003 has a flowchart to determine the properties annual electricity consumption. We will most result in the designer using an estimated reading of 3500 kWh.

Step 3 is the estimated annual electricity generated (AC in kWh/year using the six steps

I am going to give an example of calculating solar PV self-consumption

Let's assume the following senior:

- A property is generally occupied by at least one person between 9:00am and 5:00pm on weekdays.
- The last 12 months annual electricity consumption, taken from customer bills, is 4658 kWh
- The estimated annual electricity generation from the Solar PV system is 2881 kWh

Firstly, establish the occupancy archetype using the MCS guidance document MGD 003 (Table 4-1) as I remarked it below. And our senior's I showed by red border

Table4-1 Description of Occupancy chart (Archetypes)	
Home all day	The domestic property is generally occupied by at least one occupant between 9:00am and 5:00pm on weekdays
In half the day	The domestic property is typically empty for half the day e.g either all morning or all afternoon on weekdays
Out all day	The domestic property is typically empty on weekday.
Occupancy unknown	If typical occupancy behaviour is unavailable, refer to the "in half the day" data table.

Secondly, use the tables in MCS guidance document MGD 003 "I already gave you all excel sheet" (Lookup tables 7-1 to 7-27). For this worked example we will use Table below.

Occupancy: Home all day. Annual electricity consumption: 4,500 kWh to 4,999 kWh										
		Battery Energy Storage Usable Capacity, kWh								
		PV	≥1.1	≥2.1	≥3.1	≥4.1	≥5.1	≥6.1	≥7.1	≥8.1
		Only	<2.1	<3.1	<4.1	<5.1	<6.1	<7.1	<8.1	<9.1
Annual generation from solar PV system, kWh	0 kWh to 299 kWh	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%
	300 kWh to 599 kWh	86.7%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%
	600 kWh to 899 kWh	74.7%	90.9%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%
	900 kWh to 1,199 kWh	66.8%	86.5%	93.8%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%
	1200 kWh to 1,499 kWh	61.1%	82.5%	91.2%	94.5%	95.0%	95.0%	95.0%	95.0%	95.0%
	1500 kWh to 1,799 kWh	56.1%	78.3%	88.0%	92.4%	94.3%	95.0%	95.0%	95.0%	95.0%
	1800 kWh to 2,099 kWh	51.9%	73.8%	84.0%	89.4%	92.3%	93.7%	94.4%	94.7%	94.9%
	2100 kWh to 2,399 kWh	48.6%	69.6%	80.0%	86.0%	89.8%	91.9%	93.1%	93.6%	94.1%
	2400 kWh to 2,699 kWh	45.7%	65.7%	76.0%	82.3%	86.8%	89.6%	91.3%	92.2%	92.8%
	2700 kWh to 2,999 kWh	43.2%	62.2%	72.3%	78.7%	83.5%	86.7%	88.8%	90.1%	90.9%
	3000 kWh to 3,299 kWh	40.9%	59.0%	68.6%	75.1%	79.9%	83.5%	85.9%	87.4%	88.4%
	3300 kWh to 3,599 kWh	38.8%	55.8%	65.0%	71.4%	76.3%	80.0%	82.5%	84.1%	85.0%
	3600 kWh to 3,899 kWh	36.9%	53.0%	61.7%	67.9%	72.7%	76.4%	78.9%	80.5%	81.5%
	3900 kWh to 4,199 kWh	35.3%	50.5%	58.7%	64.7%	69.3%	72.9%	75.3%	77.0%	78.0%
	4200 kWh to 4,499 kWh	33.9%	48.4%	56.2%	61.8%	66.3%	69.9%	72.4%	74.1%	75.2%
	4500 kWh to 4,799 kWh	32.7%	46.3%	53.9%	59.4%	63.9%	67.4%	70.0%	71.6%	73.0%
	4800 kWh to 5,099 kWh	31.8%	44.4%	51.7%	57.3%	61.8%	65.3%	67.8%	69.5%	71.0%
	5100 kWh to 5,399 kWh	30.8%	42.5%	49.6%	55.2%	59.7%	63.2%	65.7%	67.5%	68.9%
	5400 kWh to 5,699 kWh	29.6%	40.7%	47.5%	52.9%	57.5%	61.2%	63.8%	65.5%	66.7%
	5700 kWh to 5,999 kWh	28.5%	38.9%	45.3%	50.5%	55.4%	59.4%	62.3%	63.7%	64.5%

From the example in this table we can see that the solar PV self-consumption is 43% which equates to 1238 kWh (43% x 2881). As a comparison, if the property was empty during weekday, then the self-consumption would be much lower, at 20%.

Grid electricity independence (PV only) is calculated used the following formula:

$$grid\ electricity\ independence(\%) = \frac{Solar\ PV\ electricity\ consumption(kWh)}{Annual\ electricity\ demand(kWh)}$$

Using the values from our example:

$$\frac{1238}{4658} \times 100 = 27\% \text{ of grid electricity independence}$$

As part of the MCS requirements, designers/installers are required to pass the result of the design processes above to the customer in the form of table below (I already gave you this table as well).

The results of the performance estimate

A. Installation data		
Installed capacity of PV system - kWp (etc)	5	kWp
Orientation of the PV system - degrees from south	3	°
Inclination of system degrees from horizontal	7	°
Postcode	DE56 2GS	
region	Zone 6	
B. Performance calculations		
kWh/kWp (Kk) from table	998	kWh/kWp
Shade Factor (SF)	1.0	%
Estimated annual output (kWp x Kk x SF)	4940.1	kWh
C. Estimated PV self-consumption - PV Only		
Assumed occupancy archetype	In half the day	
Assumed annual electricity consumption, kWh	3500	kWh
Expected solar PV self-consumption (PV Only)	1334.00	kWh
Grid electricity independence / Self-sufficiency (PV Only) (Without battery)	23.91	%
D. Estimated PV self-consumption - With EESS		
Assumed usable capacity of electrical energy storage device, which is used for self-consumption	5.4	kWh
Expected solar PV self-consumption (With EESS)	3496.00	kWh
Grid electricity independent / Self-sufficiency (with EESS)	62.66	%